Granite Reef Wash Drainage Study
& Preliminary Design Improvements Project

Project No. F0201
Contract No. 2006-227-COS

Drainage Design Report – Volume 1

March 7, 2008

Prepared for:

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EXPIRES 3/31/2011

A. Hydrology Update – Existing Conditions/Base Model

1. **100-year, 6-hour HEC-1 Model Output**

2. **Exhibit 1 – HEC-1 Schematic Drawing**

3. **Indian School Road 72" Storm Drain Update**

4. **Interception Area – Updates to original HEC-1 Model**
   a. **Figure 2 – Residential Flow Patterns and Flow Split Locations**
   b. **Summary Description (Purpose and Methodology)**
   c. **HEC-1 Changes – Schematic**
   d. **Sub Basin Boundary Changes – Schematic**
   e. **DDMS Model Input, Summary Tables & Rainfall Data**
   f. **Flow Split Analyses**
      i. **Osborn Road & Granite Reef Road**
      ii. **Osborn Road & Mulberry Street**
      iii. **Osborn Road & 86th Street (alley)**
      iv. **Earll Drive & Granite Reef Road**
      v. **Earll Drive & 86th Street**
      vi. **Thomas Road & Granite Reef Road**
      vii. **Thomas Road & 86th Street**

5. **McDowell Road/Granite Reef Road Flow Split – HEC-1 Update**
   a. **Summary Description**
   b. **HEC-1 Changes – Schematics**
   c. **Photo Log (color)**
   d. **Calculations – Summary Table**
   e. **2002 Survey Data**
   f. **Flow Split Hydraulic Calculations Output**

6. **McDowell Road/85th Street Flow Split – Update to HEC-1 Model (none)**
   a. **Summary Description**
   b. **Evaluation**

BASE6

1. 100-year, 6-hour HEC-1 Model Output

1. 100-year, 6-hour HEC-1 Model Output

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998               *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   22JAN08  TIME  17:59:11  *
*                                      *
****************************************
```

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

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

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

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

```
1                                    HEC-1 INPUT                                          PAGE  1

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

  1           ID   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
  2           ID   ******************************************************************************
  3           ID   **                                                                          **
  4           ID   **                     Updated Granite Reef ADMP                            **
  5           ID   **                                                                          **
  6           ID   ******************************************************************************
  7           ID   ******************************************************************************
  8           ID   PROJECT:                Granite Reef Wash DMP Update
  9           ID   CLIENT:                 City of Scottsdale
 10           ID   PREPARED BY:            Psomas
 11           ID   PROJECT No:             COS                Psomas 06077-01
 12           ID   FILE NAME: BASE6.DAT                     CREATED DATE: Feb 26, 2007
 13           ID   MODIFIED: Jul 24, 2007 (RAK/JKK PSOMAS)
 14           ID        * ORIGINAL CARDS STARRED-OUT
 15           ID        * COMMENT CARDS ADDED
 16           ID   STORM:                  100-year 6-hour Storm
 17           ID   DEVELOPMENT CONDITIONS: Future Conditions
 18           ID
 19           ID
 20           ID
 21           ID
 22           ID   DDM MCUHP1
              *
              *  ADDITIONAL 6FT STORM DRAIN IN INDIAN SCHOOL ROAD WAS ASSUMED
              *  TO BE CONSTRUCTED.
              *
              * ******************************************************************************
              *  ELEMENT LETTER DESIGNATION LOCATED BETWEEN:
              *     A. MCKELLIPS ROAD AND SALT RIVER
              *     B. MCDOWELL ROAD AND MCKELLIPS ROAD
              *     C. THOMAS ROAD AND MCDOWELL ROAD
              *     D. INDIAN SCHOOL ROAD AND THOMAS ROAD
              *     E. CHAPARRAL ROAD AND INDIAN SCHOOL ROAD
              *     F. MCDONALD DRIVE AND CHAPARRAL ROAD
              *     G. AZ CANAL AND MCDONALD DRIVE
              * ******************************************************************************
              *
 23           ID
 24           IT       5                   1000
 25           IO       5
              *
              *DIAGRAM
              *
 26           IN      15
 27           JD    3.20    0.01
 28           PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 29           PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 30           PC   0.962   0.972   0.983   0.991   1.000
 31           JD   3.179    0.50
 32           JD   3.120    2.80
 33           PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
 34           PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
 35           PC   0.950   0.963   0.975   0.988   1.000
 36           JD   2.950    16.0
 37           PC   0.000   0.009   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
1                                    HEC-1 INPUT                                          PAGE  2
```

REFERS TO SRPMIC LANDS BEING MODELED AS FULLY DEVELOPED COMMERICAL IN FCDMC 2002 STUDY AND THIS 2008 COS STUDY.
STM

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

  38          PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
  39          PC   0.946   0.960   0.973   0.987   1.000
  40          JD   2.598    90.0
  41          PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  42          PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  43          PC   0.927   0.945   0.964   0.982   1.000
  44          JD   1.824   500.0
  45          PC   0.000   0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
  46          PC   0.212   0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
  47          PC   0.907   0.930   0.954   0.977   1.000
              *
              *

  48          KK     G03   BASIN
  49          BA   0.093
  50          LG    0.23    0.25    5.60    0.26      55
  51          UC   0.367   0.275
  52          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  53          UA     100
              *
              *
              * *** DIVERSION DG03 ***********************************************************
              *
              * See the diversion calculations in Appendix D of the Data Collection Notebook
              * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
              *
              * DDM   ***** Preserved *****

  54          KK    DG03
  55          DT   DG03I
  56          DI       0       7      22      43      70     101     124     180     217     264
  57          DQ       0     3.5      11      22      35      51      63      92     112     137
              *
              *
              * Route is a Minor Arterial Road with a median.
              *

  58          KK   RG03S
  59          RS       1    FLOW       0
  60          RC    .035   0.015    .035    1322  0.0024
  61          RX       0       1      40      41     105     106     146     147
  62          RY       8       2       1      .5      .5       1       2       8
              *

  63          KK     G01   BASIN
  64          BA   0.049
  65          LG    0.21    0.25    4.80    0.38      57
  66          UC   0.588   0.598
  67          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  68          UA     100
              *
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG03.
              * THE HARD-CODE VALUE IS 50% OF CG03'S CONTRIBUTING AREA.
              * SEE DIVERSION DG03.
              *
              * DDM   ***** Preserved *****
```



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

  69          KK    CG01
  70          KM        MCDONALD DRIVE AND GRANITE REEF ROAD
  71          HC       2   0.096
              *
              *
              * *** DIVERSION DG01 ***********************************************************
              *
              * See the diversion calculations in Appendix D of the Data Collection Notebook
              * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
              *
              * DDM   ***** Preserved *****

  72          KK    DG01
  73          DT   DG01I
  74          DI       0      10      29      57      92     134     144     194     233     278
  75          DQ       0       7      21      41      66      96     103     139     166     198
              *
              *
              * Route is a Minor Arterial Road.
              *

  76          KK   RG01S
  77          RS      16    FLOW       0
  78          RC   0.035   0.015   0.035    2625  0.0014
  79          RX       0       1      40      41     105     106     146     147
  80          RY       8       2       1      .5      .5       1       2       8
              *

  81          KK     F04   BASIN
  82          KM
```

```
 83          KM    This basin's original area was 0.073 sq mi.  The infield area is bermed
 84          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
 85          KM    from the subbasin calculations to account for the storage.
 86          KM
 87          BA   0.060
 88          LG    0.15    0.25    4.80    0.42      68
 89          UC   0.567   0.659
 90          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 91          UA     100
             *
             *

 92          KK     G04   BASIN
 93          KO       3
 94          BA   0.045
 95          LG    0.25    0.25    4.80    0.35      51
 96          UC   0.296   0.261
 97          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 98          UA     100
             *
             *
             * Route is a Subdivision Road.
             *
1                                          HEC-1 INPUT                                          PAGE  4

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

 99          KK    RG04
100          RS       4    FLOW       0
101          RC    .035   0.015   0.035    1336  0.0033
102          RX       0       1      28      29      57      58      86      87
103          RY       8       2       1     0.5     0.5       1       2       8
             *

104          KK     G05   BASIN
105          BA   0.045
106          LG    0.24    0.15    7.00    0.14      53
107          UC   0.317   0.283
108          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
109          UA     100
             *
             *
             * Route is a Subdivision Road.
             *

110          KK    RG05
111          RS       7    FLOW       0
112          RC   0.035   0.015   0.035    1994  0.0026
113          RX       0       1      28      29      57      58      86      87
114          RY       8       2       1     0.5     0.5       1       2       8
             *

115          KK     G06   BASIN
116          KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
117          BA   0.127
118          LG    0.10    0.35    2.65    1.70      80
119          UC   0.254   0.140
120          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
121          UA     100
             *
             *
             *
             * *** STORAGE ROUTING LG06 ********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****

122          KK    LG06
123          DT   LG06D     8.0
124          DI       0     100    1000   10000
125          DQ       0     100    1000   10000
             *
             * *** CG06 LOCATED AT MCDONALD DRIVE AND PIMA ROAD ****************************
             *
             * *** DIVERSION DG06 ******************************************************
             *
             * THIS DIVESION IS DUE TO THE DETENTION BASIN.
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE  5

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

126          KK    DG06
127          DT   DG06I
128          DI       0      50     100     200     300     500     700     900    1000
129          DQ       0      25      49      75     132     195     230     259     287
             *
             *
             * *** STORAGE ROUTING LG06A *******************************************
             * See the storage calculations in Appendix D of the Data Collection Notebook
```

```
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

 130            KK   LG06A
 131            DT  LG06AD    4.25
 132            DI       0     100    1000   10000
 133            DQ       0     100    1000   10000
                *
                *

 134            KK     G02   BASIN
 135            BA   0.075
 136            LG    0.21    0.25    4.80    0.38      52
 137            UC   0.592   0.517
 138            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 139            UA     100
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG06.
                * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
                * SEE DIVERSION DG06.
                *
                * DDM   ***** Preserved *****

 140            KK    CG02
 141            KM        MCDONALD DRIVE AND 86TH STREET
 142            HC       4   0.229
                *
                *
                * Route is a Minor Arterial Road.
                *

 143            KK    RG02
 144            RS       4    FLOW       0
 145            RC   0.035   0.015   0.035    1358  0.0018
 146            RX       0       1      26      27      62      63      88      89
 147            RY       8       2       1     0.5     0.5       1       2       8
                *

 148            KK     F06   BASIN
 149            BA   0.103
 150            LG    0.23    0.25    4.80    0.36      49
 151            UC   0.604   0.427
 152            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 153            UA     100
                *
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE  6

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


 154            KK    CF06
 155            KM        MONTEBELLO AVENUE AND 86TH STREET
 156            HC       2
                *
                *
                * Route is a Minor Arterial Road.
                *

 157            KK    RF06
 158            RS       3    FLOW       0
 159            RC   0.035   0.015   0.035    1299   0.002
 160            RX       0       1      26      27      62      63      88      89
 161            RY       8       2       1     0.5     0.5       1       2       8
                *

 162            KK     F05   BASIN
 163            BA   0.088
 164            LG    0.24    0.25    4.80    0.36      52
 165            UC   0.554   0.401
 166            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 167            UA     100
                *
                * DDM   ***** Preserved *****

 168            KK    CF05
 169            KM        JACKRABBIT ROAD AND 86TH STREET
 170            HC       2
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
                * ALL EXCESS OVERLAND AMOUNT FLOWS SOUTH.
                *
                *
                * STORM DRAIN ANALYSIS SHOWS A CAPACITY OF 185 CFS, 1/3 IS INTERCEPTED AT
                * THIS LOCATION.(61 cfs) 20% Clogging Factor means 49 cfs here.
                * (61 x .8 = 49cfs)
                *
                * *** DIVERSION DF05 ***********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****
```

```
171          KK    DF05
172          DT   DF05I
173          DI       0       1      50     100     200     300     400     500    1000    2000
174          DQ       0      .9      10      51     151     251     351     451     951    1951
             *
             *
             * THE INFORMATION FOR THE STORM DRAIN WAS MEASURED IN THE FIELD.
             * THE PIPE IS A 66" RCP, SLOPE WAS ESTIMATED TO BE 0.004 FT/FT.
             *
1                                          HEC-1 INPUT                                                PAGE  7

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


175          KK   RF05W
176          RK    1302   0.004   0.013            CIRC     5.5
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05 & DG01.
             * THE HARD-CODE VALUE IS 80% OF CG01 AND 10% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DG01 AND DF05.
             *
             * DDM   ***** Preserved *****

177          KK    CF04
178          KM        JACKRABBIT ROAD AND GRANITE REEF ROAD
179          HC       3    0.17
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
             *
             *
             * *** DIVERSION DF04 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

180          KK    DF04
181          DT   DF04I
182          DI       0       9      30      57      93     136     150     198     336     400
183          DQ       0       5      16      30      50      73      82     105     170     200
             *
             *
             * DIVERSION RECOVER D05
             *

184          KK    F05R
185          DR   DF05I
             *
             * Route is a Minor Arterial Road.
             *

186          KK   RF05S
187          RS       4    FLOW       0
188          RC   0.035   0.015   0.035    2167  0.0032
189          RX       0       1      26      27      62      63      88      89
190          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             *

191          KK     F03   BASIN
192          BA   0.170
193          LG    0.21    0.25    4.80    0.37      58
194          UC   0.683   0.445
195          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
196          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05.
             * THE HARD-CODE VALUE IS 90% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DF05.
             *
             * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                                PAGE  8

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


197          KK    CF03
198          KM        ORANGE BLOSSOM LANE AND 86TH STREET
199          HC       2   0.556
             *
             *
             * Route is a Minor Arterial Road.
             * Normal Depth Routing did not work for this Route.
             *

200          KK    RF03
201          RD
202          RC   0.035   0.015   0.035     482  0.0035
203          RX       0       1      26      27      62      63      88      89
204          RY       8       3       2       0       0       2       3       8
```

```
                *
                *
                *
                * DIVERSION RECOVER G06
                *

 205            KK    G06R
 206            DR   DG06I
                *
                *
                * Route is a Minor Arterial Road along Pima Road.
                *
                *

 207            KK   RG06S
 208            RS      18    FLOW       0
 209            RC   0.035   0.015   0.035    5286  0.0028
 210            RX       0       1      26      27      62      63      88      89
 211            RY       8       3       2       0       0       2       3       8
                *

 212            KK     F07   BASIN
 213            KM         SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
 214            BA   0.250
 215            LG    0.10    0.29    2.65    1.70      80
 216            UC   0.538   0.415
 217            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 218            UA     100
                *
                *
                * *** STORAGE ROUTING LF07 ***********************************************
                *
                * See the detention calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE  9

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

 219            KK    LF07
 220            DT   LF07D    15.2
 221            DI       0     100    1000   10000
 222            DQ       0     100    1000   10000
                *
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DG06.
                * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
                * SEE DIVERSION DG06.
                *
                * DDM   ***** Preserved *****

 223            KK    CF07
 224            KM         CHAPARRAL ROAD AND PIMA ROAD
 225            HC       2   0.314
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANAYLSIS SHOWS THE MAXIMUM FLOW IN THE STORM DRAIN AT THIS
                * LOCATION IS 16 CFS.  20% clogging factor = 13 cfs (16cfs * .8 = 13 cfs).
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                *
                * *** DIVERSION DF07 *****************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

 226            KK    DF07
 227            DT   DF07I
 228            DI       0       1      16     100     200     400     600     800    1000    2000
 229            DQ       0       0       0      87     187     387     587     787     987    1987
                *
                *
                * Route is a Storm Drain 36" RCP with a Slope of 0.001 ft/ft
                *
                *

 230            KK   RF07W
 231            RD    1315   0.001   0.013            CIRC       3
                *
                *

 232            KK     F02   BASIN
 233            BA   0.046
 234            LG    0.23    0.25    4.80    0.36      55
 235            UC   0.521   0.538
 236            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 237            UA     100
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF07.
                * THE HARD-CODE VALUE IS 10% OF CF07'S CONTRIBUTING AREA.
                * SEE DIVERSION DF07.
```

```
                    *
                    * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                                    PAGE 10

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

 238                KK    CF02
 239                KM        CHAPARRAL ROAD AND 86TH STREET
 240                HC       3    .627
                    *
                    * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                    * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THIS STORM DRAIN
                    * AT THIS LOCATION IS 63 CFS AND 16 CFS IS IN THE STORMDRAIN FROM THE EAST.
                    * 20% clogging factor means 50 cfs (63cfs * 0.8 = 50cfs).
                    *
                    * ALL OVERLAND FLOW CONTINUES SOUTH.
                    *
                    * *** DIVERSION DF02 ********************************************************
                    *
                    * See the diversion calculations in Appendix D of the Data Collection Notebook
                    * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                    *
                    * DDM   ***** Preserved *****

 241                KK    DF02
 242                DT   DF02I
 243                DI       0       1      50     100     200     300     400     500    1000    2000
 244                DQ       0       1      10      50     150     250     350     450     950    1950
                    *
                    *
                    *
                    * ROUTE IS A 5FT RCP STORM DRAIN WITH A SLOPE OF 0.001 FT/FT
                    *

 245                KK   RF02W
 246                RK    1310   0.001    0.02            CIRC       5
                    *
                    *
                    * DIVERSION RECOVER F04
                    *

 247                KK    F04R
 248                DR   DF04I
                    *
                    *
                    * Route is a Minor Arterial Road.
                    *
                    *

 249                KK   RF04S
 250                RS      11    FLOW       0
 251                RC   0.035   0.013   0.035    2652  0.0023
 252                RX       0       1      26      27      62      63      88      89
 253                RY       8       3       2       0       0       2       3       8
                    *
                    *
                    * THE WEST SIDE OF THE ROAD IS DIVERTED WEST AND THE EAST SIDE OF THE ROAD
                    * FLOWS SOUTH INTO CF01.  THE TOTAL FLOW DOES NOT EXCEED THE CROWN OF THE ROAD
                    * SO THE SPLIT IS 50-50.
                    *
                    * *** DIVERSION DRF04 *******************************************************
                    *
                    * See the diversion calculations in Appendix D of the Data Collection Notebook
                    * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                    *
                    * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                                    PAGE 11

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

 254                KK   DRF04
 255                DT  DRF04I
 256                DI       0       1      20      50     100     200     300
 257                DQ       0      .5      10      25      50     100     150
                    *

 258                KK     F01   BASIN
 259                BA   0.030
 260                LG    0.22    0.25    4.80    0.39      53
 261                UC   0.467   0.490
 262                UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 263                UA     100
                    *
                    *
                    * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF04 & DF02.
                    * THE HARD-CODE VALUE IS 25% OF CF04 AND 10% OF CF02'S CONTRIBUTING AREA.
                    * SEE DIVERSION DF04 AND DF02.
                    *
                    * DDM   ***** Preserved *****

 264                KK    CF01
 265                KM        CHAPARRAL ROAD AND GRANITE REEF ROAD
 266                HC       3    .101
```

```
                *
                *
                * THE DIVERSION AT THIS LOCATION IS SOUTH (SEE SPLITFLOW ANALYSIS)
                *
                *
                * *** DIVERSION DF01 ***********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

 267            KK    DF01
 268            DT   DF01I
 269            DI       0       7      21      42      75     111     139     188     254     335
 270            DQ       0       0       0       0       0       0       6      18      35      57
                *
                *
                * DIVERSION RECOVER DF02
                *

 271            KK   DRF02
 272            DR   DF02I
                *
                *
                * Route is a Minor Arterial Road.
                *
1                                          HEC-1 INPUT                                          PAGE 12

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


 273            KK   RF02S
 274            RS       3    FLOW       0
 275            RC   0.035   0.015   0.035    1338  0.0022
 276            RX       0       1      26      27      62      63      88      89
 277            RY       8       2       1     0.5     0.5       1       2       8
                *
                *

 278            KK     E07   BASIN
 279            BA   0.084
 280            LG    0.25    0.25    4.80    0.36      49
 281            UC   0.442   0.305
 282            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 283            UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF02.
                * THE HARD-CODE VALUE IS 90% OF CF02'S CONTRIBUTING AREA.
                * SEE DIVERSION DF02.
                *
                * DDM   ***** Preserved *****

 284            KK    CE07
 285            KM        HIGHLAND AVENUE AND 86TH STREET
 286            HC       2     .661
                *
                *
                * Route is a Minor Arterial Road.
                *

 287            KK    RE07
 288            RS       1    FLOW       0
 289            RC   0.035   0.015   0.035    1335  0.0025
 290            RX       0       1      26      27      62      63      88      89
 291            RY       8       2       1     0.5     0.5       1       2       8
                *

 292            KK     E05   BASIN
 293            KM
 294            KM    This basin's original area was 0.060 sq mi.  The infield area is bermed
 295            KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
 296            KM    from the subbasin calculations to account for the storage.
 297            KM
 298            BA   0.047
 299            LG    0.21    0.25    4.80    0.37      57
 300            UC   0.375   0.292
 301            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 302            UA     100
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 13

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


 303            KK    CE05
 304            KM        CAMELBACK ROAD AND 86TH STREET
 305            HC       2
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 92 CFS.
                * THE TOTAL FLOW WAS DIVIDED BY E05, E04, AND THE BASIN WEST OF THE PROJECT
```

```
            * AREA, SO 31 CFS AT THIS LOCATION.
            * 20% clogging factor means 25cfs at this location (31cfs * 0.8 = 25cfs).
            * ALL OVERLAND FLOW CONTINUES SOUTH.
            *
            * *** DIVERSION DE05 ***********************************************************
            *
            * See the diversion calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            *
            * DDM   ***** Preserved *****

306         KK    DE05
307         DT   DE05I
308         DI       0       1      50     100     200     300     400     500    1000    2000
309         DQ       0       1      25      75     175     275     375     475     975    1975
            *
            *
            *
            * ROUTE IS A 5FT RCP WITH A SLOPE OF 0.0021 FT/FT.
            *

310         KK   RE05W
311         RK    1490  0.0021    0.02            CIRC       5
            *

312         KK     E04   BASIN
313         BA   0.038
314         LG    0.22    0.25    4.80    0.39      47
315         UC   0.621   0.655
316         UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
317         UA     100
            *
            *
            *
            * *** STORAGE ROUTING LE04 ****************************************************
            *
            * DDM   ***** Preserved *****

318         KK    LE04
319         DT   LE04D     1.5
320         DI       0     100    1000   10000
321         DQ       0     100    1000   10000
            *
            * DIVERSION RECOVER DF01
            *
```



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

322         KK  DRF01I
323         DR   DF01I
            *
            *
            *
            * Route is a Minor Arterial Road.
            *

324         KK   RF01S
325         RS      24    FLOW       0
326         RC   0.035   0.015   0.035    2619  0.0031
327         RX       0       1      26      27      62      63      88      89
328         RY       8       2       1     0.5     0.5       1       2       8
            *
            *
            * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF01 & DE05.
            * THE HARD-CODE VALUE IS 5% OF CF01 AND 5% OF CE05'S CONTRIBUTING AREA.
            * SEE DIVERSION DF01 AND DE05.
            *
            * DDM   ***** Preserved *****

329         KK    CE04
330         KM        CAMELBACK ROAD AND GRANITE REEF ROAD
331         HC       3   0.071
            *
            *
            * THERE IS A DIVERSION SOUTH (SEE SPLITFLOW CALCULATIONS)
            *
            * *** DIVERSION DE04 ***********************************************************
            *
            * See the diversion calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            *
            * DDM   ***** Preserved *****

332         KK    DE04
333         DT   DE04I
334         DI       0       3      31      59      91     126     151     184     222     267
335         DQ       0       0       0       0       0       0       3       9      18      30
            *
            *
            * DDM   ***** Preserved *****

336         KK   DUMMY
337         HC       3
```

```
                 *
 338             KK     E08   BASIN
 339             BA   0.031
 340             LG    0.24    0.25    4.80    0.35      51
 341             UC   0.488   0.531
 342             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 343             UA     100
                 *
                 *
                 *
                 * Route is a Minor Arterial Road with a wall on the west side.
                 *
1                                          HEC-1 INPUT                                          PAGE 15

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

 344             KK    RE08
 345             RS       5    FLOW       0
 346             RC   0.035   0.015   0.035    1326  0.0029
 347             RX       0       1      19      25      30      49      79      80
 348             RY      10     1.5       0       0       0       0     1.5       8
                 *

 349             KK     E06   BASIN
 350             BA   0.036
 351             LG    0.24    0.25    4.80    0.36      53
 352             UC   0.500   0.548
 353             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 354             UA     100
                 *
                 * DDM   ***** Preserved *****

 355             KK    CE06
 356             KM        CAMELBACK ROAD AND PIMA FRONTAGE ROAD
 357             HC       2
                 *
                 *
                 *
                 * Route is a Minor Arterial Road with a wall on the west side.
                 *

 358             KK    RE06
 359             RS      13    FLOW       0
 360             RC   0.035   0.015   0.035    3333  0.0014
 361             RX       0       1      19      25      30      49      79      80
 362             RY      10     1.5       0       0       0       0     1.5       8
                 *

 363             KK     E03   BASIN
 364             BA   0.070
 365             LG    0.23    0.25    4.80    0.36      53
 366             UC   0.917   1.373
 367             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 368             UA     100
                 *
                 *
                 * DIVERSION RECALL DF07
                 *

 369             KK   DRF07
 370             DR   DF07I
                 *
                 * Route is a minor arterial along Pima Rd.
                 *
1                                          HEC-1 INPUT                                          PAGE 16

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

 371             KK   RF07S
 372             RS       7    FLOW       0
 373             RC   0.035   0.015   0.035    5280  0.0023
 374             RX       0       1      40      41     104     105     145     146
 375             RY       8       3     1.5     .75    0.75     1.5       3       8
                 *
                 *
                 *

 376             KK     E09   BASIN
 377             KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
 378             BA   0.223
 379             LG    0.10    0.29    2.65    1.70      80
 380             UC   0.546   0.446
 381             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 382             UA     100
                 *
                 *
                 * *** STORAGE ROUTING LE09 ***********************************************
                 *
                 * See the detention calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 * DDM   ***** Preserved *****
```

```
383          KK    LE09
384          DT   LE09D    13.6
385          DI       0     100    1000   10000
386          DQ       0     100    1000   10000
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF07.
             * THE HARD-CODE VALUE IS 90% OF CF07'S CONTRIBUTING AREA.
             * SEE DIVERSION DF07.
             *
             * DDM   ***** Preserved *****

387          KK    CE09
388          KM        INDIAN SCHOOL ROAD AND PIMA ROAD
389          HC       2    .511
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
             * PROJECT AREA, WHICH IS 19 CFS AT THIS LOCATION.(MODIFIED TO 28 CFS BY PSOMAS)
             *
             * 20% clogging factor means 15cfs, (19cfs * 0.8 = 15cfs).(MODIFIED TO 22 CFS
             * BY PSOMAS)
             * THE PROPOSED ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
             * THE FLOW WILL THEN BE DOUBLED TO 30cfs.(MODIFIED TO 45 CFS BY PSOMAS)
             *
             * ALL OVERLAND FLOW CONTINUES SOUTH AT THIS DIVERSION LOCATION.
             *
             * *** DIVERSION DE09 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****
```



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

390          KK    DE09
391          KM        MODIFIED (2/14/07 RAK)
392          DT   DE09I
393          DI       0       1      50     100     200     300     400     500    1000    2000
             * ***DQ     0       1      20      70     170     270     370     470     970
394          DQ       0       1       5      55     155     255     355     455     955    1955
             *
             *
             *
             * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
             * PSOMAS BASED ON DIBBLE PLANS)
             * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
             *

395          KK   RE09W
396          KM        MODIFIED (2/14/07 RAK)
             * ***RK   779  0.0009   0.013            CIRC     8.5
397          RK     779  0.0011   0.013            CIRC     8.5
             *
             *
             *
             * DIVERSION RECOVER DE05
             *

398          KK  DRE05I
399          DR   DE05I
             *
             *
             * Route is a Minor Arterial Road.
             *

400          KK   RE05S
401          RS       6    FLOW       0
402          RC   0.035   0.015   0.035    3053  0.0021
403          RX       0       1      26      27      62      63      88      89
404          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE05 & DE09.
             * THE HARD-CODE VALUE IS 95% OF CE05 AND 10% OF CE09'S CONTRIBUTING AREA.
             * SEE DIVERSION DE05 AND DE09.
             *
             * DDM   ***** Preserved *****

405          KK    CE03
406          KM        INDIAN SCHOOL ROAD AND PIMA FRONTAGE ROAD
407          HC       4    .858
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
```

```
                 * PROJECT AREA, WHICH IS 38cfs AT THIS LOCATION.(MODIFIED TO 56 CFS BY PSOMAS)
                 *
                 * 20% clogging factor means that 31cfs (38.4 cfs * 0.8 = 31cfs) (MODIFIED TO
                 * 45 CFS BY PSOMAS)
                 * THE ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
                 * THE FLOW WILL THEN BE DOUBLED TO 62cfs.(MODIFIED TO 90 CFS BY PSOMAS)
                 *
                 * ALL OVERLAND FLOWS CONTINUE SOUTH.
                 *
                 * *** DIVERSION DE03 ***********************************************************
                 *
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 18

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


 408             KK    DE03
 409             KM        MODIFIED (2/14/07 RAK)
 410             DT   DE03I
 411             DI        0       1      50     100     200     300     400     500    1000    2000
                 * ***DQ     0       1       5      38     138     238     338     438     938
 412             DQ        0      .1       2      10     110     210     310     410     910    1910
                 *
                 *
                 * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
                 * PSOMAS BASED ON DIBBLE PLANS)
                 * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
                 *
                 *

 413             KK   RE03W
 414             KM        MODIFIED (2/14/07 RAK)
                 * ***RK  1504  0.0009    0.02            CIRC     8.5
 415             RK    1504  0.0011    0.02            CIRC     8.5                        5
                 *

 416             KK     E02   BASIN
 417             BA   0.149
 418             LG    0.24    0.25    4.80    0.37      50
 419             UC   0.683   0.539
 420             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 421             UA     100
                 *
                 * THE CONTRIBUTING AREA IS HARD-CODED DUE TO DIVERSION DE03.
                 * THE HARD-CODE VALUE IS 5% OF CE03'S CONTRIBUTING AREA.
                 * SEE DIVERSION DE03.
                 *
                 * DDM   ***** Preserved *****

 422             KK    CE02
 423             KM        INDIAN SCHOOL ROAD AND 86TH STREET
 424             HC       2    .183
                 *
                 *
                 * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                 *
                 * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                 * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
                 * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
                 * PROJECT AREA, 58cfs AT THIS LOCATION.(MODIFIED TO 84 CFS BY PSOMAS)
                 *
                 * 20% clogging factor means 46cfs (58cfs * 0.8 = 46cfs).(MODIFIED TO 67 CFS
                 * BY PSOMAS)
                 * THE 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE
                 * THIS DOUBLES THE FLOW TO 92cfs.(MODIFIED TO 134 CFS BY PSOMAS)
                 *
                 * ALL OVERLAND FLOW CONTINUES SOUTH.
                 *
                 * *** DIVERSION DE02 ***********************************************************
                 *
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 19

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


 425             KK    DE02
 426             KM        MODIFIED (2/14/07 RAK)
 427             DT   DE02I
 428             DI        0       1      50     100     200     300     400     500    1000    2000
                 * ***DQ     0      .1       2       8     108     208     308     408     908
 429             DQ        0      .1       2       4      66     166     266     366     866    1866
                 *
                 *
                 * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
                 * PSOMAS BASED ON DIBBLE PLANS)
                 * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
                 *
```

```
430          KK   RE02W
431          KM        MODIFIED (2/14/07 RAK)
             * ***RD   355  0.0009    0.02            CIRC     8.5
432          RD     355  0.0011    0.02            CIRC     8.5
             *

433          KK     E01   BASIN
434          BA   0.058
435          LG    0.20    0.25    4.80    0.38      60
436          UC   0.492   0.494
437          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
438          UA     100
             *
             *
             * DIVERSION RECOVER DE04
             *

439          KK  DRE04I
440          DR   DE04I
             *
             *
             * Route is a Minor Arterial Road.
             *

441          KK   RE04S
442          RS       1    FLOW       0
443          RC   0.035   0.015   0.035    2636  0.0026
444          RX       0       1      26      27      62      63      88      89
445          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE04 & DE02.
             * THE HARD-CODE VALUE IS 100% OF CE04 AND 25% OF CE02'S CONTRIBUTING AREA.
             * SEE DIVERSION DE04 AND DE02.
             *
             * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                          PAGE 20

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

446          KK    CE01
447          KM        INDIAN SCHOOL ROAD AND GRANITE REEF ROAD
448          HC       3   .1656
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
             * PROJECT AREA, 76.8 cfs AT THIS LOCATION. (MODIFIED TO 112 CFS BY PSOMAS)
             *
             * 20% clogging factor means 61cfs (76.8cfs * 0.8 = 61.4 cfs) (MODIFIED TO
             * 90 CFS BY PSOMAS)
             * THE ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
             * THE FLOW WILL THEN BE DOUBLED TO 123cfs. (MODIFIED TO 179 CFS BY PSOMAS)
             *
             * THIS DIVERSION IS STORMDRAIN ONLY, ALL OVERLAND FLOW IS SOUTH.
             *
             * *** DIVERSION DE01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

449          KK    DE01
450          KM        MODIFIED (2/14/07 RAK)
451          DT   DE01I
452          DI       0       1      50     100     200     300     400     500    1000    2000
             * ***DQ     0      .1       2       4      77     177     277     377     877
453          DQ       0      .1       2       4      21     121     221     321     821    1821
             *
             * DIVERSION RECALL E01
             *

454          KK   DRE01
455          DR   DE01I
             *
             *
             * Route is a Subdivision Road.
             *

456          KK   RE01S
457          RS       9    FLOW       0
458          RC   0.035   0.015   0.035    2567  0.0032
459          RX       0       1      28      29      57      58      86      87
460          RY       8       2       1     0.5     0.5       1       2       8
             *
1                                        HEC-1 INPUT                                          PAGE 21

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

```
461          KK     D05   BASIN
462          KM
463          KM    This basin's original area was 0.168 sq mi.  The infield area is bermed
464          KM    so it is self-detained.  The infield area (0.01 sq mi) was subtracted
465          KM    from the subbasin calculations to account for the storage.
466          KM
467          BA   0.158
468          LG    0.23    0.25    4.80    0.38      51
469          UC   0.692   0.540
470          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
471          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE01.
             * THE HARD-CODE VALUE IS 70% OF CE01'S CONTRIBUTING AREA.
             * SEE DIVERSION DE01.
             *
             * DDM   ***** Preserved *****

472          KK    CD05
473          KM        OSBORN ROAD AND GRANITE REEF ROAD
474          HC       2   0.284
             *
             * *** DIVERSION DD05 ***********************************************************
             *
             *  THIS DIVERSION IS AT GRANITE REEF ROAD AND OSBORN ROAD.
             *  THE MAIN PATH IS SOUTH ON GRANITE REEF ROAD.
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

475          KK    DD05
476          KM        MODIFIED (5/1/07 RAK) BASED ON FLOW SPLIT ANALYSIS
477          DT   DD05I
             * ***DI     0       5      16      50      93     112     174     217     270
478          DI       0       6      21      34      52      73      99     130     166     231
             * ***DQ     0       2       8      25      47      58      95     121     154
479          DQ       0       0       1       3       7      13      19      28      38      57
             *
             *
             * Route is a Minor Arterial Road.
             *

480          KK   RD05S
481          KM        MODIFIED (5/7/07 RAK) TO REPRESENT FLOW FROM OSBORN RD TO EARLL DR
482          KM        ALONG GRANITE REEF RD
             * ***RS      8    FLOW       0
             * ***RC 0.035   0.015   0.035    2669  0.0026
483          RS       4    FLOW       0
484          RC   0.035   0.015   0.035    1320  0.0026
485          RX       0       1      26      27      62      63      88      89
486          RY       8       2       1     0.5     0.5       1       2       8
             *
```



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

487          KK     D13   BASIN
488          KM        CREATED (5/7/07 RAK) TO REPRESENT SUBBASIN FLOW TO CD13
489          BA   0.044
490          LG    0.24    0.25    4.80    0.35      46
491          UC   0.557   0.605
492          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
493          UA     100
             *

494          KK    CD13
495          KM        CREATED (5/7/07 RAK) TO REPRESENT THE CONCENTRATION POINT LOCATED AT
496          KM        EARLL DRIVE AND GRANITE REEF ROAD
497          HC       2   0.259
             *

498          KK    DD13
499          KM        CREATED (5/7/07 RAK) BASED ON FLOW SPLIT ANALYSIS
500          DT   DD13I
501          DI       0       2      13      37      83     150     240
502          DQ       0       0       7      23      48      85     134
             *

503          KK   RD13S
504          KM        CREATED (5/7/07 RAK) TO REPRESENT FLOW FROM EARLL DR TO THOMAS RD
505          KM        ALONG GRANITE REEF RD
506          RS       4    FLOW       0
507          RC   0.035   0.015   0.035    1349  0.0026
508          RX       0       1      26      27      62      63      88      89
509          RY       8       2       1     0.5     0.5       1       2       8
             *

510          KK     D04   BASIN
511          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED 1' CONTOUR MAPPING
             * ***BA 0.060
             * ***LG  0.23    0.25    4.80    0.36      53
             * ***UC 0.638   0.762
```

```
512          BA   0.013
513          LG    0.24    0.25    4.80    0.35      46
514          UC   0.443   0.624
515          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
516          UA     100
             *
             * *** CD04 IS LOCATED AT THOMAS ROAD AND 82ND STREET ****************************
             *
             * Route is a Major Arterial Road.
             *

517          KK    RD04
518          RS       2    FLOW       0
519          RC   0.035   0.015   0.035    1084  0.0018
520          RX       0       1      40      41     104     105     145     146
521          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
1                                          HEC-1 INPUT                                          PAGE 23

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

522          KK     D01   BASIN
523          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED 1' CONTOUR MAPPING AND ADDITIONAL
524          KM        CONCENTRATION POINT
             * ***BA 0.082
             * ***LG  0.24    0.25    4.80    0.36      53
             * ***UC 0.667   0.622
525          BA   0.081
526          LG    0.24    0.25    4.80    0.35      47
527          UC   0.728   0.911
528          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
529          UA     100
             *
             * DDM   ***** Preserved *****

530          KK    CD01
531          KM        THOMAS ROAD AND GRANITE REEF ROAD
532          HC       3   0.208
             *
             *
             *
             * *** DIVERSION DD01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

533          KK    DD01
534          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED ON FLOW SPLIT ANALYSIS
535          DT   DD01I
             * ***DI     0       9      28      89     168     259     392     475     568
             * ***DQ     0       4      13      41      73     104     152     182     217
536          DI       0      21      22      27      44      96     173     267
537          DQ       0       0       2       6      20      39      65      98
             *
             *
             *
             * Route is a Major Arterial Road.
             *

538          KK   RD01E
539          RS       1    FLOW       0
540          RC   0.035   0.015   0.035    1315  0.0024
541          RX       0       1      40      41     104     105     145     146
542          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
             * DIVERSION RECALL D05
             *
1                                          HEC-1 INPUT                                          PAGE 24

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

543          KK   DRD05
544          DR   DD05I
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

545          KK   RD05E
546          RS       2    FLOW       0
547          RC   0.035   0.015   0.035     560  0.0018
548          RX       0       1      26      27      62      63      88      89
549          RY       8       3       2       0       0       2       3       8
             *
             * *** DIVERSION DD052   ********************************************************
             *
             *  THIS DIVERSION IS AT GRANITE REEF ROAD AND MULBERRY.
             *  THE MAIN PATH IS SOUTH ON MULBERRY.
             *  SEE APPENDIX D FOR DIVERSION CALCULATIONS.
```

```
                *
                * DDM   ***** Preserved *****

550             KK   DD052
551             KM        MODIFIED (5/1/07 RAK) BASED ON FLOW SPLIT ANALYSIS
552             DT  DD052I
                * ***DI     0      37      44      59      80     110     147     178     222
553             DI       0       5       8      13      26      44      68      97     132     173
                * ***DQ     0      37      40      47      58      74      95     122     155
554             DQ       0       5       8      10      20      33      50      69      93     120
                *
                *
                * Route is a Subdivision Road. (MULBERRY)
                *
                * ***KKRD05S2
                * ***RS      1    FLOW       0
                * ***RC 0.035   0.015   0.035    3035  0.0030
                * ***RX      0       1      28      29      57      58      86      87
                * ***RY      8       2       1     0.5     0.5       1       2       8
                *

555             KK  RD05S2
556             KM        MODIFIED (2/14/07 RAK) TO ROUTE TO EARLL DR & 86TH ST
557             RS       2    FLOW       0
558             RC   0.035   0.015   0.035    1705  0.0032
559             RX       0       1      28      29      57      58      86      87
560             RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * ***KK   D02   BASIN
                * ***BA 0.139
                * ***LG  0.23    0.25    4.80    0.36      51
                * ***UC 0.592   0.457
                * ***UA      0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0
                * ***UA    100
                *
                *
                * ***THE CONTRIBUTING AREA WAS HARD-CODED BECAUSE OF DIVERSION DD01 & DD052.
                * ***THE HARD-CODE VALUE IS 60% OF CD01 AND 40% OF DD052'S CONTRIBUTING AREA.
                * ***SEE DIVERSION DD01 AND DD052.
                *
                * ***DDM   ***** Preserved *****
                * ***KK  CD02
                * ***HC      3   0.361
                *
                *
                * ***Route is a Major Arterial Road.
                *
                * ***KK  RD02
                * ***RS      2    FLOW       0
                * ***RC 0.035   0.015   0.035    1063  0.0045
                * ***RX      0       1      40      41     104     105     145     146
                * ***RY      8       3     1.5     .75    0.75     1.5       3       8
                *
                *
                * DIVERSION RECALL E02
                *
```



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

561             KK   DRE02
562             DR   DE02I
                *
                *
                * Route is a Subdivision Road.
                *

563             KK   RE02S
564             RS       6    FLOW       0
565             RC   0.035   0.015   0.035    2617  0.0028
566             RX       0       1      28      29      57      58      86      87
567             RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * DIVERSION RECALL D052
                *

568             KK  DRD052
569             DR  DD052I
                *
                *
                * Route is a Minor Arterial Road.
                *
                *

570             KK  RD05E2
571             RS       1    FLOW       0
572             RC   0.035   0.015   0.035     767  0.0013
573             RX       0       1      26      27      62      63      88      89
574             RY       8       3       2       0       0       2       3       8
                *
                *
```

```
575          KK     D06   BASIN
576          BA   0.109
577          LG    0.24    0.25    4.80    0.35      52
578          UC   0.671   0.602
579          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
580          UA     100
             *
             * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE02 & DD052.
             * THE HARD-CODE VALUE IS 80% OF CE02 AND 60% OF DD052'S CONTRIBUTING AREA.
             * SEE DIVERSION DE02 AND DD052.
             *
             * DDM   ***** Preserved *****

581          KK    CD06
582          KM        OSBORN ROAD AND 86TH STREET
583          HC       3   0.254
             *
1                                        HEC-1 INPUT                                          PAGE 26

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

584          KK    DD06
585          KM        CREATED (4/17/07 RAK) TO REPRESENT THE FLOW SPLIT AT OSBORN RD & THE
586          KM        86TH ST ALLEY
587          DT   DD06I
588          DI       0     1.4    12.3    44.8    98.6   169.5   255.6   356.7   432.3
589          DQ       0    0.75     2.3     9.8    26.6    50.4    81.7   121.1   152.2
             *
             * ***Route is a Minor Arterial Road.
             *
             *
             * ***KK  RD06
             * ***RS      1    FLOW       0
             * ***RC 0.035   0.015   0.035     609  0.0033
             * ***RX      0       1      26      27      62      63      88      89
             * ***RY      8       3       2       0       0       2       3       8
             *

590          KK   RD06S
591          KM        * MODIFIED (2/14/07 RAK) TO REROUTE TO EARLL DR & 86TH ST PER FIELD
592          KM        * VISIT, MAPPING & CONVERSATION WITH LOCAL RESIDENTS
593          KM        MODIFIED (4/17/07 RAK) TO BE THE SOUTHERN ROUTE OF THE FLOW SPLIT
594          RS       1    FLOW       0
595          RC   0.035   0.015   0.035    1310  0.0030
596          RX       0       1      26      27      45      46      71      72
597          RY       8       3       2     0.5     0.5       2       3       8
             *

598          KK   DRD13
599          DR   DD13I
             *

600          KK   RD13E
601          KM        CREATED (5/7/07 RAK) TO REPRESENT FLOW FROM GRANITE REEF RD TO 86TH ST
602          KM        ALONG EARLL DR
603          RS       4    FLOW       0
604          RC   0.035   0.015   0.035    1310  0.0024
605          RX       0       1      26      27      62      63      88      89
606          RY       8       2       1     0.5     0.5       1       2       8
             *

607          KK    D02A   BASIN
608          KM        CREATED (2/14/07 RAK) USING DDMS-W TO REPRESENT PORTION OF SUBBASIN DO2
609          KM        NORTH OF EARLL DR
610          BA    0.07
611          LG    0.23    0.25    4.80    0.36      51
612          UC   0.471   0.379
613          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
614          UA     100
             *
1                                        HEC-1 INPUT                                          PAGE 27

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

615          KK    CD10
616          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DRIVE AND 86TH STREET
617          HC       4   0.258
             *

618          KK    DD10
619          KM        CREATED (2/14/07 RAK) TO REPRESENT THE FLOW SPLIT AT EARLL DR & 86TH ST
620          KM        1/3 TO THE SOUTH AND 2/3 TO THE EAST
621          KM        MODIFIED (4/17/07 RAK) BASED ON FLOW SPLIT ANALYSIS
622          DT   DD10I
             * ***DI      0      15      30      60     120     240     480     960
623          DI       0     1.6     9.2    34.4   115.1   208.7   349.6   542.5
             * ***DQ      0      10      20      40      80     160     320     640
624          DQ       0     1.6     5.9    12.5    52.0    84.3   142.6   229.1
             *

625          KK   RD10S
626          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW SOUTH ALONG 86TH ST
627          RS       2    FLOW       0
```

```
628          RC   0.035   0.015   0.035    1320  0.0030
629          RX       0       1      28      29      57      58      86      87
630          RY       8       2       1     0.5     0.5       1       2       8
             *

631          KK    D02B   BASIN
632          KM         CREATED (2/14/07 RAK) USING DDMS-W TO REPRESENT PORTION OF SUBBASIN D02
633          KM         SOUTH OF EARLL DR
634          BA    0.07
635          LG    0.23    0.25    4.80    0.36      51
636          UC   0.504   0.452
637          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
638          UA     100
             *

639          KK    CD02
640          KM         THOMAS ROAD AND 86TH STREET
641          HC       3   0.351
             *

642          KK    DD02
643          KM         CREATED (5/8/07 RAK) BASED ON UPDATED ON FLOW SPLIT ANALYSIS
644          DT   DD02I
645          DI       0      46      55      70     101     153     260     391     492
646          DQ       0       0       1       3      11      25      46      73      96
             *

647          KK   RD02E
648          RS       2    FLOW       0
649          RC   0.035   0.015   0.035    1063  0.0045
650          RX       0       1      40      41     104     105     145     146
651          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
```



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

652          KK     D07   BASIN
653          KO       3
654          BA   0.049
655          LG    0.25    0.25    4.80    0.35      51
656          UC   0.508   0.576
657          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
658          UA     100
             *

659          KK   DRD06
660          KM         CREATED (4/17/07 RAK)
661          DR   DD06I
             *

662          KK   RD06E
663          KM         CREATED (4/17/07 RAK) TO REPRESENT FLOW EAST ALONG OSBORN RD
664          RS       1    FLOW       0
665          RC   0.035   0.015   0.035     609  0.0033
666          RX       0       1      26      27      62      63      88      89
667          RY       8       3       2       0       0       2       3       8
             *
             * DDM   ***** Preserved *****

668          KK    CD07
669          KM         OSBORN ROAD AND 87TH STREET
670          HC       2   0.133
             *
             *
             * Route is a Minor Arterial Road.
             *

671          KK    RD07
672          RS       2    FLOW       0
673          RC   0.035   0.015   0.035    1330  0.0025
674          RX       0       1      26      27      62      63      88      89
675          RY       8       2       1     0.5     0.5       1       2       8
             *

676          KK   DRD10
677          KM         CREATED (2/14/07 RAK)
678          DR   DD10I
             *

679          KK   RD10E
680          KM         CREATED (2/14/07 RAK) TO REPRESENT FLOW EAST IN RESIDENTIAL CHANNEL
681          KM         ALONG EARLL DR
682          RS       1    FLOW       0
683          RC   0.035   0.015   0.035     420  0.0048
684          RX       0       1      26      46      52      60      85      86
685          RY       8       3       2       2       0       3       4       8
             *
```



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

686          KK    CD11
```

```
687          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DR AND 87TH ST
688          HC       2   0.240
             *

689          KK    RD11
690          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW EAST IN THE ALLEY (EARLL DR)
691          RS       1    FLOW       0
692          RC   0.035   0.015   0.035     835  0.0048
693          RX       0       1      26      46      52      60      85      86
694          RY       8       3       2       2       0       3       4       8
             *
             * DIVERSION RECALL DE03
             *

695          KK   DRE03
696          DR   DE03I
             *
             *
             *
             * Route is a Subdivision Road.
             *

697          KK   RE03S
698          RS       6    FLOW       0
699          RC   0.035   0.015   0.035    3444  0.0032
700          RX       0       1      28      29      57      58      86      87
701          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

702          KK     D08   BASIN
703          BA   0.054
704          LG    0.24    0.25    4.80    0.36      53
705          UC   0.658   0.955
706          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
707          UA     100
             *
             *
             * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE03.
             * THE HARD-CODE VALUE IS 95% OF CE03'S CONTRIBUTING AREA.
             * SEE DIVERSION DE03.
             *
             * DDM   ***** Preserved *****

708          KK    CD08
709          KM        OSBORN ROAD AND PIMA FRONTAGE ROAD
710          HC       2   0.877
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *
```



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

711          KK    RD08
712          RS       1    FLOW       0
713          RC   0.035   0.015   0.035    1290  0.0039
714          RX       0       1      19      25      30      49      79      80
715          RY      10     1.5       0       0       0       0     1.5       8
             *

716          KK    D03A
717          KM        CREATED (2/14/07 RAK) TO REPRESENT SUB BASIN D03 NORTH OF EARLL DR
718          BA   0.052
719          LG    0.20    0.25    4.50    0.45      52
720          UC   0.471   0.497
721          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
722          UA     100
             *

723          KK    CD12
724          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DR AND PIMA FRONTAGE RD
725          HC       3
             *

726          KK    RD12
727          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW SOUTH ALONG TRAIL (PIMA RD)
728          RS       2    FLOW       0
729          RC   0.035   0.015   0.035    1500  0.0027
730          RX       0       1      19      25      30      49      79      80
731          RY      10     1.5       0       0       0       0     1.5       8
             *
             *
             * ***KK   D03   BASIN
             * ***BA 0.103
             * ***LG  0.20    0.25    4.50    0.45      52
             * ***UC 0.613   0.608
             * ***UA     0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0
             * ***UA   100
             *
             *
             *
             *
```

```
                 * DIVERSION RECOVER DE09
                 *

 732             KK  DRE09I
 733             DR   DE09I
                 *
                 *
                 * Route is a Minor Arterial Road along Pima Rd.
                 *
1                                          HEC-1 INPUT                                                    PAGE 31

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


 734             KK   RE09S
 735             RS       7    FLOW       0
 736             RC   0.035   0.015   0.035    5501  0.0037
 737             RX       0       1      26      27      62      63      88      89
 738             RY       8       2       1     0.5     0.5       1       2       8
                 *
                 *

 739             KK     D09   BASIN
 740             KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
 741             BA   0.216
 742             LG    0.10    0.29    2.65    1.70      80
 743             UC   0.463   0.379
 744             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 745             UA     100
                 *
                 *
                 * *** STORAGE ROUTING LD09 ************************************************
                 *
                 * See the detention calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 * DDM   ***** Preserved *****

 746             KK    LD09
 747             DT   LD09D    13.6
 748             DI       0     100    1000   10000
 749             DQ       0     100    1000   10000
                 *
                 *
                 * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION DE09.
                 * THE HARD-CODE VALUE IS 90% OF CE09'S CONTRIBUTING AREA.
                 * SEE DIVERSION DE09.
                 *
                 * DDM   ***** Preserved *****

 750             KK    CD09
 751             KM        THOMAS ROAD AND PIMA ROAD
 752             HC       2   0.686
                 *
                 *

 753             KK    D03B
 754             KM        CREATED (2/14/07 RAK) TO REPRESENT SUB BASIN D03 SOUTH OF EARLL DR
 755             BA   0.052
 756             LG    0.20    0.25    4.50    0.45      52
 757             UC   0.500   0.514
 758             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 759             UA     100
                 *
                 *
                 * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                                    PAGE 32

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


 760             KK    CD03
 761             KM        THOMAS ROAD AND 87TH STREET
 762             HC       4   2.191
                 *
                 *
                 *
                 * Route is a Minor Arterial Road.
                 *

 763             KK    RD03
 764             RS       1    FLOW       0
 765             RC   0.035   0.015   0.035    1307   0.004
 766             RX       0       1      26      27      62      63      88      89
 767             RY       8       2       1     0.5     0.5       1       2       8
                 *

 768             KK     C11   BASIN
 769             BA   0.050
 770             LG    0.25    0.25    4.40    0.45      49
 771             UC   0.358   0.322
 772             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 773             UA     100
                 *

 774             KK     C10   BASIN
```

```
775          BA   0.054
776          LG    0.25    0.25    4.65    0.38      50
777          UC   0.433   0.409
778          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
779          UA     100
             *

780          KK   DRD02
781          DR   DD02I
             *

782          KK   RD02S
783          KM        CREATED (5/8/07 RAK) TO REPRESENT FLOW FROM GRANITE REEF RD TO 86TH ST
784          KM        ALONG EARLL DR
785          RS       4    FLOW       0
786          RC   0.035   0.015   0.035    1329  0.0036
787          RX       0       1      26      27      62      63      88      89
788          RY       8       2       1     0.5     0.5       1       2       8
             *

789          KK    CC10
790          KM        CREATED (5/8/07 RAK) TO REPRESENT VIRGINIA AVE AND 86TH ST
791          HC       2   0.121
             *
             * Route is a Minor Arterial Road.
             *
1                                          HEC-1 INPUT                                          PAGE 33

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

792          KK    RC10
793          RS       1    FLOW       0
794          RC   0.035   0.015   0.035     688   0.009
795          RX       0       1      26      27      62      63      88      89
796          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * DDM   ***** Preserved *****

797          KK    CC11
798          KM        VIRGINIA AVENUE AND 87TH STREET
799          HC       3
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

800          KK    RC11
801          RS       1    FLOW       0
802          RC   0.035   0.015   0.035    1334  0.0015
803          RX       0       1      26      27      62      63      88      89
804          RY       8       2       1     0.5     0.5       1       2       8
             *

805          KK     C08   BASIN
806          BA   0.118
807          LG    0.25    0.25    4.40    0.45      51
808          UC   0.588   0.434
809          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
810          UA     100
             *
             * DDM   ***** Preserved *****

811          KK    CC08
812          KM        OAK STREET AND 87TH STREET
813          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

814          KK    RC08
815          RS       4    FLOW       0
816          RC   0.035   0.015   0.035    2205  0.0026
817          RX       0       1      26      27      62      63      88      89
818          RY       8       2       1     0.5     0.5       1       2       8
             *
1                                          HEC-1 INPUT                                          PAGE 34

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

819          KK     C06   BASIN
820          KM
821          KM    This basin's original area was 0.162 sq mi.  The infield area is bermed
822          KM    so it is self-detained.  The infield area (0.0095 sq mi) was subtracted
823          KM    from the subbasin calculations to account for the storage.
824          KM
825          BA   0.153
826          LG    0.23    0.25    4.30    0.49      52
827          UC   0.554   0.435
828          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
```

```
829          UA     100
             *
             * DDM   ***** Preserved *****

830          KK    CC06
831          KM        CORONADO ROAD AND 87TH STREET
832          HC       2
             *
             *
             *
             * This is a channel.
             *

833          KK    RC06
834          RS       1    FLOW       0
835          RC    0.04   0.035    0.04    1271  0.0056
836          RX       0       1      30      40      70      80     110     111
837          RY      20      10       8       0       0       8      10      20
             *
             *
             * DIVERSION RECALL D01
             *

838          KK   DRD01
839          DR   DD01I
             *
             *
             * Route is a Minor Arterial Road.
             *

840          KK   RD01S
841          RS       8    FLOW       0
842          RC   0.035   0.015   0.035    2611  0.0023
843          RX       0       1      26      27      62      63      88      89
844          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             *
```



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

845          KK     C07   BASIN
846          KO       3
847          BA   0.072
848          LG    0.25    0.25    4.80    0.35      50
849          UC   0.667   0.699
850          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
851          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DD01.
             * THE HARD-CODE VALUE IS 40% OF CD01'S CONTRIBUTING AREA.
             * SEE DIVERSION DD01.
             *
             * DDM   ***** Preserved *****

852          KK    CC07
853          KM        OAK STREET AND GRANITE REEF ROAD
854          HC       2    0.15
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

855          KK    RC07
856          RS       6    FLOW       0
857          RC   0.035   0.015   0.035    2638   0.003
858          RX       0       1      26      27      62      63      88      89
859          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

860          KK     C09   BASIN
861          BA   0.057
862          LG    0.25    0.25    4.80    0.36      50
863          UC   0.596   0.646
864          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
865          UA     100
             *
             * *** CC09 IS LOCATED AT OAK STREET AND 82ND STREET ****************************
             *
             * Route is a Minor Arterial Road.
             *

866          KK    RC09
867          RS       1    FLOW       0
868          RC   0.035   0.015   0.035    3368   0.003
869          RX       0       1      26      27      62      63      88      89
870          RY       8       2       1       0       0       1       2       8
             *
```

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

 871          KK     C05   BASIN
 872          BA   0.137
 873          LG    0.23    0.25    4.70    0.37      54
 874          UC   0.754   0.675
 875          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 876          UA     100
              *

 877          KK     C01   BASIN
 878          BA   0.032
 879          LG    0.22    0.25    4.80    0.37      57
 880          UC   0.546   0.711
 881          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 882          UA     100
              *
              * *** CC01 LOCATED AT MCDOWELL ROAD AND 82ND PLACE ****************************
              *
              * Route is a Major Arterial Road.
              *

 883          KK    RC01
 884          RS       8    FLOW       0
 885          RC   0.035   0.015   0.035    1217  0.0013
 886          RX       0       1      40      41     104     105     145     146
 887          RY       8       3     1.5     .75    0.75     1.5       3       8
              *

 888          KK     C02   BASIN
 889          BA   0.036
 890          LG    0.15    0.25    4.80    0.40      70
 891          UC   0.554   0.780
 892          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 893          UA     100
              *
              * DDM   ***** Preserved *****

 894          KK    CC02
 895          KM        MCDOWELL ROAD AND GRANITE REEF ROAD
 896          HC       5    .436
              *

 897          KK    DC02
 898          KM        CREATED (2/26/07) TO REPRESENT THE FLOW SPLIT AT MCDOWELL ROAD AND
 899          KM        GRANITE REEF ROAD
 900          DT   DC02I
 901          DI       0     160     186     221     268     323     384     446
 902          DQ       0     0.3     4.5    11.9    24.7    40.7    59.3    78.1
              *
              *
              * Route is a Major Arterial Road.
              *
              *
              * ***KK  RC02
```



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

 903          KK   RC02E
 904          KM        MODIFIED (2/26/07)
 905          RS       1    FLOW       0
 906          RC   0.035   0.015   0.035     632  0.0063
 907          RX       0       1      40      45     100     105     145     146
 908          RY       8       3       2       0       0       2       3       8
              *

 909          KK     C03   BASIN
 910          BA   0.040
 911          LG    0.18    0.25    4.10    0.61      62
 912          UC   0.333   0.388
 913          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 914          UA     100
              *
              *

 915          KK     C12   BASIN
 916          BA   0.010
 917          LG    0.19    0.25    4.10    0.58      64
 918          UC   1.500   4.505
 919          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 920          UA     100
              *
              * *** CC12 LOCATED AT OAK STREET AND PIMA ROAD (WEST SIDE OF WALL) *************
              *
              * Route is a Minor Arterial Road with a wall on the west side.
              *

 921          KK    RC12
 922          RS      22    FLOW       0
 923          RC   0.035   0.015   0.035    2693  0.0007
 924          RX       0       1      19      25      30      49      79      80
 925          RY      10     1.5       0       0       0       0     1.5       8
```

```
                *
                *
926             KK     C13   BASIN
927             KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
928             BA   0.176
929             LG    0.10    0.35    2.65    1.70      80
930             UC   0.546   0.508
931             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
932             UA     100
                *
                * *** STORAGE ROUTING LC13 ***********************************************
                *
                * See the detention calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 38

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

933             KK    LC13
934             DT   LC13D    11.2
935             DI       0     100    1000   10000
936             DQ       0     100    1000   10000
                *
                *
                * DDM   ***** Preserved *****

937             KK    CC13
938             KM        MCDOWELL ROAD AND PIMA ROAD
939             HC       2
                *
                *
                * *** DIVERSION DC13 *****************************************************
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 51 CFS.
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                * 20% clogging factor means 41cfs, (51cfs * 0.8 = 41cfs).
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

940             KK    DC13
941             DT   DC13I
942             DI       0      10      50     100     200     300     400     500
943             DQ       0       4      30      59     159     259     359     459
                *
                * ROUTE IS A 42" RCP WITH A SLOPE OF 0.0044 FT/FT.
                *

944             KK   RC13W
945             RS       5    FLOW      -1
946             RD    2052   0.005   0.012            CIRC     3.5
                *

947             KK     C04   BASIN
948             BA   0.044
949             LG    0.18    0.28    4.20    0.51      44
950             UC   0.650   0.830
951             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
952             UA     100
                *
                *
                *
                * Route is a Major Arterial Road.
                *

953             KK    RC04
954             RS       5    FLOW       0
955             RC   0.035   0.015   0.035    1563  0.0106
956             RX       0       1      40      41     104     105     145     146
957             RY       8       3     1.5       0       0     1.5       3       8
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION D13.
                * THE HARD-CODE VALUE IS 20% OF CC13'S CONTRIBUTING AREA.
                * SEE DIVERSION D13.
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 39

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

958             KK    CC03
959             KM        MCDOWELL ROAD AND GRANITE REEF WASH
960             HC       5    3.37
                *
                *
                *
                * This route is a channel.
                *
```

```
961          KK    RC03
962          RS       2    FLOW       0
963          RC    0.04    0.03    0.04    1097  0.0009
964          RX       0       1      30      40      70      80     110     111
965          RY      20      10       8       0       0       8      10      20
             *

966          KK     B07   BASIN
967          BA   0.016
968          LG    0.13    0.28    4.35    0.51      49
969          UC   0.192   0.234
970          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
971          UA     100
             *
             * DDM   ***** Preserved *****

972          KK    CB07
973          KM        84TH PLACE AND GRANITE REEF WASH
974          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

975          KK    RB07
976          RS       2    FLOW       0
977          RC   0.035   0.015   0.035    1525  0.0026
978          RX       0       1      40      41     104     105     145     146
979          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

980          KK     B05   BASIN
981          BA   0.088
982          LG    0.22    0.26    4.15    0.58      44
983          UC   0.583   0.685
984          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
985          UA     100
             *
             * *** STORAGE ROUTING LB05 ***********************************************
             *
             * DDM   ***** Preserved *****
```



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

986          KK    LB05
987          DT   LB05D    0.16
988          DI       0     100    1000   10000
989          DQ       0     100    1000   10000
             *

990          KK   DRC02
991          KM        CREATED (2/26/07)
992          DR   DC02I
             *

993          KK   RC02S
994          KM        CREATED (2/26/07) TO REPRESENT FLOW SOUTH ALONG GRANITE REEF ROAD
995          RS       2    FLOW       0
996          RC   0.035   0.015   0.035    2385  0.0063
997          RX       0       1      26      27      62      63      88      89
998          RY       8       2       1     0.5     0.5       1       2       8
             *

999          KK     B06   BASIN
1000         BA   0.015
1001         LG    0.13    0.26    4.00    0.64      60
1002         UC   0.304   0.589
1003         UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1004         UA     100
             *
             *
             * DDM   ***** Preserved *****

1005         KK    CB05
1006         KM        84TH PLACE AND GRANITE REEF ROAD
1007         HC       4
             *
             *
             *
             * Route is a Minor Arterial Road.
             * Normal Depth Routing did not work for this Route.

1008         KK    RB05
1009         RD
1010         RC   0.035    0.02   0.035     500  0.0052
1011         RX       0       1      40      51      94     105     145     146
1012         RY       8       3       2       0       0       2       3       8
             *

1013         KK     B04   BASIN
1014         BA   0.077
1015         LG    0.15    0.25    4.45    0.50      71
```

```
1016          UC   0.271   0.232
1017          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1018          UA     100
              *
              *
              * *** STORAGE ROUTING LB04 ***********************************************
              *
              * MOTOROLA DETENTION BASINS (SEE CALCULATIONS)
              *
              * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 41

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

1019          KK    LB04
1020          DT   LB04D   12.95
1021          DI       0     100    1000   10000
1022          DQ       0     100    1000   10000
              *

1023          KK     B02   BASIN
1024          BA   0.101
1025          LG    0.15    0.25    4.70    0.41      68
1026          UC   0.363   0.335
1027          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1028          UA     100
              *
              * *** CB02 IS LOCATED AT ROOSEVELT STREET WEST OF GRANITE REEF ROAD ************
              *
              * *** STORAGE ROUTING LB02 ***********************************************
              *
              * DDM   ***** Preserved *****

1029          KK    LB02
1030          DT   LB02D    2.64
1031          DI       0     100    1000   10000
1032          DQ       0     100    1000   10000
              *
              *
              *
              * Route is a Minor Arterial Road.
              * Normal Depth Routing did not work for this Route.

1033          KK    RB02
1034          RD
1035          RC   0.035   0.015   0.035     548  0.0186
1036          RX       0       1      40      41     104     105     145     146
1037          RY       8       3     1.5     .75    0.75     1.5       3       8
              *

1038          KK     B03   BASIN
1039          BA   0.007
1040          LG    0.25    0.35    4.65    0.41      47
1041          UC   0.271   0.474
1042          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1043          UA     100
              *
              *
              * DDM   ***** Preserved *****

1044          KK    CB03
1045          KM        ROOSEVELT STREET AND GRANITE REEF ROAD
1046          HC       4    3.66
              *
              *
              *
              * Route is a Minor Arterial Road.
              *
1                                          HEC-1 INPUT                                          PAGE 42

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

1047          KK    RB03
1048          RS       2    FLOW       0
1049          RC   0.035   0.015   0.035    1348   0.003
1050          RX       0       1      40      41     104     105     145     146
1051          RY       8       3     1.5     .75    0.75     1.5       3       8
              *

1052          KK     B01   BASIN
1053          BA   0.071
1054          LG    0.25    0.25    4.30    0.54      44
1055          UC   0.267   0.188
1056          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1057          UA     100
              *
              *
              * *** STORAGE ROUTING LB01 ***********************************************
              *
              * DDM   ***** Preserved *****

1058          KK    LB01
1059          DT   LB01D    1.15
```

```
1060          DI       0     100    1000   10000
1061          DQ       0     100    1000   10000
              *
              *
              *
              * DDM   ***** Preserved *****

1062          KK    CB01
1063          KM        GRANITE REEF ROAD AND GRANITE REEF WASH
1064          HC       2
              *
              *
              * Route is a channel.
              *

1065          KK    RB01
1066          RS       1    FLOW       0
1067          RC   0.035   0.015   0.035    1320  0.0019
1068          RX       0       1      34      40      50      56      80      81
1069          RY      12       6       4       0       0       4       6      12
              *

1070          KK     B12   BASIN
1071          KM        SRPMIC LANDS WEST OF THE PIMA RD ALIGNMENT AND NORTH OF MCKELLIPS RD
1072          BA   0.119
1073          LG    0.25    0.25    4.80    0.38      39
1074          UC   0.442   0.233
1075          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1076          UA     100
              *
```



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

1077          KK     B11   BASIN
1078          BA   0.060
1079          LG    0.24    0.34    4.80    0.39      37
1080          UC   0.400   0.277
1081          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1082          UA     100
              *
              * *** STORAGE ROUTING LB11 ***********************************************
              * Pond was assumed to have 1 foot of freeboard.
              * DDM   ***** Preserved *****

1083          KK    LB11
1084          DT   LB11D    2.87
1085          DI       0     100    1000   10000
1086          DQ       0     100    1000   10000
              *
              *
              * DIVERSION RECALL DC13I
              *

1087          KK  DRDC13
1088          DR   DC13I
              *
              *
              * Route is overland flow. (SLOPE ESTIMATED.)
              *

1089          KK   RC13S
1090          RS      33    FLOW       0
1091          RC   0.035   0.035   0.035    5197   .0058
1092          RX       0     200     300     400     500     600     700     900
1093          RY       5       4       3       0       0       3       4       5
              *

1094          KK     B13   BASIN
1095          BA   0.222
1096          LG    0.22    0.26    4.55    0.42      44
1097          UC   0.375   0.232
1098          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1099          UA     100
              *
              * *** STORAGE ROUTING LB13 ***********************************************
              *
              * DDM   ***** Preserved *****

1100          KK    LB13
1101          DT   LB13D    18.4
1102          DI       0     100    1000   10000
1103          DQ       0     100    1000   10000
              *
              *
              * Route is shallow flow. (SLOPE WAS ESTIMATED.)
              *
```



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

1104          KK    RB13
1105          RS       7    FLOW       0
```

```
1106          RC   0.035   0.035   0.035    1269   0.004
1107          RX       0     200     300     400     500     600     700     900
1108          RY       5       4       3       0       0       3       4       5
              *

1109          KK     B14   BASIN
1110          KM        SRPMIC LANDS BETWEEN THE ALIGNMENT OF PIMA ROAD & PIMA FRWY (SR 101L)
1111          BA   0.149
1112          LG    0.10    0.25    4.60    0.48      80
1113          UC   0.608   0.628
1114          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1115          UA     100
              *
              * *** STORAGE ROUTING LB14 ***********************************************
              *
              * See the detention calculations in Appendix D of the Data Collection Notebook
              * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
              * DDM   ***** Preserved *****

1116          KK    LB14
1117          DT   LB14D    10.4
1118          DI       0     100    1000   10000
1119          DQ       0     100    1000   10000
              *
              * DDM   ***** Preserved *****

1120          KK    CB14
1121          KM        MCKELLIPS ROAD AND PIMA ROAD
1122          HC       3   0.524
              *
              *
              * Route is a MAJOR ARTERIAL. (SLOPE WAS ESTIMATED.)
              *

1123          KK    RB14
1124          RS       4    FLOW       0
1125          RC   0.035   0.015   0.035    2746   0.004
1126          RX       0       1      30      40     100     110     145     300
1127          RY       8       4       3       0       0       3       4       5
              *
              *
              * DDM   ***** Preserved *****

1128          KK    CB12
1129          KM        MCKELLIPS ROAD AND GRANITE REEF WASH
1130          HC       4
              *
              *
              * Route is a channel. (SLOPE ESTIMATED FROM UPSTREAM CHANNEL'S SLOPE.)
              *
```



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

1131          KK    RB12
1132          RS       6    FLOW       0
1133          RC   0.035    .035   0.035    4395  0.0019
1134          RX       0     200     330     340     370     380     410     600
1135          RY       9       8       6       0       0       6       8       9
              *

1136          KK     A01   BASIN
1137          KM        SRPMIC LANDS SOUTH OF MCKELLIPS ROAD
1138          BA   0.507
1139          LG    0.10    0.25    5.40    0.32      80
1140          UC   0.542   0.238
1141          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1142          UA     100
              *
              * *** STORAGE ROUTING LA01 ***********************************************
              *
              * See the detention calculations in Appendix D of the Data Collection Notebook
              * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
              * DDM   ***** Preserved *****

1143          KK    LA01
1144          DT   LA01D    35.2
1145          DI       0     100    1000   10000
1146          DQ       0     100    1000   10000
              *
              * DDM   ***** Preserved *****

1147          KK    CA01
1148          KM        OUTFALL TO SALT RIVER
1149          HC       2
              *

1150          KK     B10   BASIN
1151          BA   0.110
1152          LG    0.21    0.25    4.60    0.49      28
1153          UC   0.742   0.765
1154          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1155          UA     100
              *
```

```
                    * *** STORAGE ROUTING LB10 ***********************************************
                    *
                    * DDM   ***** Preserved *****

1156                KK    LB10
1157                DT   LB10D    10.5
1158                DI       0     100    1000   10000
1159                DQ       0     100    1000   10000
                    *
1160                ZZ
1
            SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
 LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   48       G03
              .
              .
   55         .------->   DG03I
   54      DG03
              V
              V
   58     RG03S
              .
              .
   63         .        G01
              .          .
              .          .
   69      CG01............
              .
              .
   73         .------->   DG01I
   72      DG01
              V
              V
   76     RG01S
              .
              .
   81         .        F04
              .          .
              .          .
   92         .          .        G04
              .          .          V
              .          .          V
   99         .          .       RG04
              .          .          .
              .          .          .
  104         .          .          .        G05
              .          .          .          V
              .          .          .          V
  110         .          .          .       RG05
              .          .          .          .
              .          .          .          .
  115         .          .          .          .         G06
              .          .          .          .           .
              .          .          .          .           .
  123         .          .          .          .           .------->   LG06D
  122         .          .          .          .        LG06
              .          .          .          .           .
              .          .          .          .           .
  127         .          .          .          .           .------->   DG06I
  126         .          .          .          .        DG06
              .          .          .          .           .
              .          .          .          .           .
  131         .          .          .          .           .------->  LG06AD
  130         .          .          .          .       LG06A
              .          .          .          .           .
              .          .          .          .           .
  134         .          .          .          .           .         G02
              .          .          .          .           .           .
              .          .          .          .           .           .
  140         .          .       CG02.................................
              .          .          V
              .          .          V
  143         .          .       RG02
              .          .          .
              .          .          .
  148         .          .          .        F06
              .          .          .          .
              .          .          .          .
  154         .          .       CF06............
              .          .          V
              .          .          V
  157         .          .       RF06
              .          .          .
              .          .          .
  162         .          .          .        F05
              .          .          .          .
              .          .          .          .
  168         .          .       CF05............
              .          .          .
              .          .          .
  172         .          .          .------->   DF05I
```

```
171          .          .        DF05
             .          .          V
             .          .          V
175          .          .       RF05W
             .          .          .
             .          .          .
177       CF04.......................
             .
             .
181          .------->   DF04I
180       DF04
             .
             .
185          .          .<-------   DF05I
184          .       F05R
             .          V
             .          V
186          .      RF05S
             .          .
             .          .
191          .          .        F03
             .          .          .
             .          .          .
197          .       CF03............
             .          V
             .          V
200          .       RF03
             .          .
             .          .
206          .          .          .<-------   DG06I
205          .          .       G06R
             .          .          V
             .          .          V
207          .          .      RG06S
             .          .          .
             .          .          .
212          .          .          .        F07
             .          .          .          .
             .          .          .          .
220          .          .          .          .------->   LF07D
219          .          .          .       LF07
             .          .          .          .
             .          .          .          .
223          .          .       CF07............
             .          .          .
             .          .          .
227          .          .          .------->   DF07I
226          .          .       DF07
             .          .          V
             .          .          V
230          .          .      RF07W
             .          .          .
             .          .          .
232          .          .          .        F02
             .          .          .          .
             .          .          .          .
238          .       CF02.......................
             .          .
             .          .
242          .          .------->   DF02I
241          .       DF02
             .          V
             .          V
245          .      RF02W
             .          .
             .          .
248          .          .          .<-------   DF04I
247          .          .       F04R
             .          .          V
             .          .          V
249          .          .      RF04S
             .          .          .
             .          .          .
255          .          .          .-------> DRF04I
254          .          .      DRF04
             .          .          .
             .          .          .
258          .          .          .        F01
             .          .          .          .
             .          .          .          .
264          .       CF01.......................
             .          .
             .          .
268          .          .------->   DF01I
267          .       DF01
             .          .
             .          .
272          .          .          .<-------   DF02I
271          .          .      DRF02
             .          .          V
             .          .          V
273          .          .      RF02S
             .          .          .
             .          .          .
278          .          .          .        E07
```

```
                .         .         .         .
                .         .         .         .
284             .         .      CE07...........
                .         .         V
                .         .         V
287             .         .      RE07
                .         .         .
                .         .         .
292             .         .         .        E05
                .         .         .         .
                .         .         .         .
303             .         .      CE05...........
                .         .         .
                .         .         .
307             .         .         .-------> DE05I
306             .         .      DE05
                .         .         V
                .         .         V
310             .         .     RE05W
                .         .         .
                .         .         .
312             .         .         .        E04
                .         .         .         .
                .         .         .         .
319             .         .         .         .-------> LE04D
318             .         .         .       LE04
                .         .         .         .
                .         .         .         .
323             .         .         .         .         .<-------  DF01I
322             .         .         .         .     DRF01I
                .         .         .         .         V
                .         .         .         .         V
324             .         .         .         .      RF01S
                .         .         .         .         .
                .         .         .         .         .
329             .         .      CE04......................
                .         .         .
                .         .         .
333             .         .         .-------> DE04I
332             .         .      DE04
                .         .         .
                .         .         .
336       DUMMY......................
                .
                .
338             .       E08
                .         V
                .         V
344             .      RE08
                .         .
                .         .
349             .         .      E06
                .         .         .
                .         .         .
355             .      CE06...........
                .         V
                .         V
358             .      RE06
                .         .
                .         .
363             .         .      E03
                .         .         .
                .         .         .
370             .         .         .         .<-------  DF07I
369             .         .         .      DRF07
                .         .         .         V
                .         .         .         V
371             .         .         .      RF07S
                .         .         .         .
                .         .         .         .
376             .         .         .         .        E09
                .         .         .         .         .
                .         .         .         .         .
384             .         .         .         .         .-------> LE09D
383             .         .         .         .       LE09
                .         .         .         .         .
                .         .         .         .         .
387             .         .         .       CE09...........
                .         .         .         .
                .         .         .         .
392             .         .         .         .-------> DE09I
390             .         .         .       DE09
                .         .         .         V
                .         .         .         V
395             .         .         .      RE09W
                .         .         .         .
                .         .         .         .
399             .         .         .         .         .<-------  DE05I
398             .         .         .         .     DRE05I
                .         .         .         .         V
                .         .         .         .         V
400             .         .         .         .      RE05S
                .         .         .         .         .
                .         .         .         .         .
405             .      CE03.....................................
```

```
                .          .
                .          .
410             .          .-------> DE03I
408             .      DE03
                .         V
                .         V
413             .      RE03W
                .          .
                .          .
416             .          .        E02
                .          .          .
                .          .          .
422             .      CE02............
                .          .
                .          .
427             .          .-------> DE02I
425             .      DE02
                .         V
                .         V
430             .      RE02W
                .          .
                .          .
433             .          .        E01
                .          .          .
                .          .          .
440             .          .          .          .<-------  DE04I
439             .          .          .     DRE04I
                .          .          .          V
                .          .          .          V
441             .          .          .      RE04S
                .          .          .          .
                .          .          .          .
446             .      CE01........................
                .          .
                .          .
451             .          .-------> DE01I
449             .      DE01
                .          .
                .          .
455             .          .          .<-------  DE01I
454             .          .      DRE01
                .          .         V
                .          .         V
456             .          .      RE01S
                .          .          .
                .          .          .
461             .          .          .        D05
                .          .          .          .
                .          .          .          .
472             .          .      CD05............
                .          .          .
                .          .          .
477             .          .          .-------> DD05I
475             .          .      DD05
                .          .         V
                .          .         V
480             .          .      RD05S
                .          .          .
                .          .          .
487             .          .          .        D13
                .          .          .          .
                .          .          .          .
494             .          .      CD13............
                .          .          .
                .          .          .
500             .          .          .-------> DD13I
498             .          .      DD13
                .          .         V
                .          .         V
503             .          .      RD13S
                .          .          .
                .          .          .
510             .          .          .        D04
                .          .          .          V
                .          .          .          V
517             .          .          .       RD04
                .          .          .          .
                .          .          .          .
522             .          .          .          .         D01
                .          .          .          .           .
                .          .          .          .           .
530             .          .      CD01........................
                .          .          .
                .          .          .
535             .          .          .-------> DD01I
533             .          .      DD01
                .          .         V
                .          .         V
538             .          .      RD01E
                .          .          .
                .          .          .
544             .          .          .          .<-------  DD05I
543             .          .          .      DRD05
                .          .          .          V
                .          .          .          V
```

```
545          .          .          .      RD05E
             .          .          .          .
             .          .          .          .
552          .          .          .          .-------> DD052I
550          .          .          .      DD052
             .          .          .          V
             .          .          .          V
555          .          .          .     RD05S2
             .          .          .          .
             .          .          .          .
562          .          .          .          .          .<-------   DE02I
561          .          .          .          .      DRE02
             .          .          .          .          V
             .          .          .          .          V
563          .          .          .          .      RE02S
             .          .          .          .          .
             .          .          .          .          .
569          .          .          .          .          .          .<-------  DD052I
568          .          .          .          .          .     DRD052
             .          .          .          .          .          V
             .          .          .          .          .          V
570          .          .          .          .          .     RD05E2
             .          .          .          .          .          .
             .          .          .          .          .          .
575          .          .          .          .          .          .        D06
             .          .          .          .          .          .          .
             .          .          .          .          .          .          .
581          .          .          .          .       CD06.......................
             .          .          .          .          .
             .          .          .          .          .
587          .          .          .          .          .------->   DD06I
584          .          .          .          .       DD06
             .          .          .          .          V
             .          .          .          .          V
590          .          .          .          .      RD06S
             .          .          .          .          .
             .          .          .          .          .
599          .          .          .          .          .          .<-------   DD13I
598          .          .          .          .          .      DRD13
             .          .          .          .          .          V
             .          .          .          .          .          V
600          .          .          .          .          .      RD13E
             .          .          .          .          .          .
             .          .          .          .          .          .
607          .          .          .          .          .          .       D02A
             .          .          .          .          .          .          .
             .          .          .          .          .          .          .
615          .          .          .       CD10..................................
             .          .          .          .
             .          .          .          .
622          .          .          .          .------->   DD10I
618          .          .          .       DD10
             .          .          .          V
             .          .          .          V
625          .          .          .      RD10S
             .          .          .          .
             .          .          .          .
631          .          .          .          .       DO2B
             .          .          .          .          .
             .          .          .          .          .
639          .          .      CD02.......................
             .          .          .
             .          .          .
644          .          .          .------->   DD02I
642          .          .      DD02
             .          .          V
             .          .          V
647          .          .     RD02E
             .          .          .
             .          .          .
652          .          .          .        D07
             .          .          .          .
             .          .          .          .
661          .          .          .          .          .<-------   DD06I
659          .          .          .          .      DRD06
             .          .          .          .          V
             .          .          .          .          V
662          .          .          .          .      RD06E
             .          .          .          .          .
             .          .          .          .          .
668          .          .          .       CD07............
             .          .          .          V
             .          .          .          V
671          .          .          .       RD07
             .          .          .          .
             .          .          .          .
678          .          .          .          .          .<-------   DD10I
676          .          .          .          .      DRD10
             .          .          .          .          V
             .          .          .          .          V
679          .          .          .          .      RD10E
             .          .          .          .          .
             .          .          .          .          .
686          .          .          .       CD11............
             .          .          .          V
```

```
                                  V
689                            RD11
                                  .
                                  .
696                                  .<-------   DE03I
695                               DRE03
                                     V
                                     V
697                               RE03S
                                     .
                                     .
702                                  .         D08
                                     .           .
                                     .           .
708                               CD08............
                                     V
                                     V
711                               RD08
                                     .
                                     .
716                                  .       D03A
                                     .         .
                                     .         .
723                            CD12........................
                                  V
                                  V
726                            RD12
                                  .
                                  .
733                                  .<-------   DE09I
732                            DRE09I
                                     V
                                     V
734                            RE09S
                                     .
                                     .
739                                  .         D09
                                     .           .
                                     .           .
747                                  .           .-------->   LD09D
746                                  .       LD09
                                     .         .
                                     .         .
750                               CD09............
                                     .
                                     .
753                                  .       D03B
                                     .         .
                                     .         .
760                         CD03.................................
                               V
                               V
763                         RD03
                                  .
                                  .
768                                  .   C11
                                     .     .
                                     .     .
774                                  .     C10
                                     .       .
                                     .       .
781                                  .       .           .<-------   DD02I
780                                  .       .       DRD02
                                     .       .           V
                                     .       .           V
782                                  .       .       RD02S
                                     .       .           .
                                     .       .           .
789                                  .     CC10............
                                     .       V
                                     .       V
792                                  .     RC10
                                     .       .
                                     .       .
797                         CC11........................
                               V
                               V
800                         RC11
                                  .
                                  .
805                                  .   C08
                                     .     .
                                     .     .
811                         CC08............
                               V
                               V
814                         RC08
                                  .
                                  .
819                                  .   C06
                                     .     .
                                     .     .
830                         CC06............
                               V
                               V
```

```
833          .          .       RC06
             .          .         .
             .          .         .
839          .          .         .<-------   DD01I
838          .          .         .     DRDO1
             .          .         .        V
             .          .         .        V
840          .          .         .     RD01S
             .          .         .         .
             .          .         .         .
845          .          .         .         .        C07
             .          .         .         .         .
             .          .         .         .         .
852          .          .         .      CC07............
             .          .         .        V
             .          .         .        V
855          .          .         .      RC07
             .          .         .         .
             .          .         .         .
860          .          .         .         .        C09
             .          .         .         .         V
             .          .         .         .         V
866          .          .         .         .       RC09
             .          .         .         .         .
             .          .         .         .         .
871          .          .         .         .         .        C05
             .          .         .         .         .         .
             .          .         .         .         .         .
877          .          .         .         .         .         .        C01
             .          .         .         .         .         .         V
             .          .         .         .         .         .         V
883          .          .         .         .         .         .       RC01
             .          .         .         .         .         .         .
             .          .         .         .         .         .         .
888          .          .         .         .         .         .         .        C02
             .          .         .         .         .         .         .         .
             .          .         .         .         .         .         .         .
894          .          .         .      CC02.............................................
             .          .         .         .
             .          .         .         .
900          .          .         .         .------->   DC02I
897          .          .         .      DC02
             .          .         .        V
             .          .         .        V
903          .          .         .     RC02E
             .          .         .         .
             .          .         .         .
909          .          .         .         .        C03
             .          .         .         .         .
             .          .         .         .         .
915          .          .         .         .         .        C12
             .          .         .         .         .         V
             .          .         .         .         .         V
921          .          .         .         .         .       RC12
             .          .         .         .         .         .
             .          .         .         .         .         .
926          .          .         .         .         .         .        C13
             .          .         .         .         .         .         .
             .          .         .         .         .         .         .
934          .          .         .         .         .         .         .------->   LC13D
933          .          .         .         .         .         .       LC13
             .          .         .         .         .         .         .
             .          .         .         .         .         .         .
937          .          .         .         .         .         .      CC13............
             .          .         .         .         .         .         .
             .          .         .         .         .         .         .
941          .          .         .         .         .         .         .------->   DC13I
940          .          .         .         .         .         .      DC13
             .          .         .         .         .         .         V
             .          .         .         .         .         .         V
944          .          .         .         .         .         .     RC13W
             .          .         .         .         .         .         .
             .          .         .         .         .         .         .
947          .          .         .         .         .         .         .        C04
             .          .         .         .         .         .         .         V
             .          .         .         .         .         .         .         V
953          .          .         .         .         .         .         .       RC04
             .          .         .         .         .         .         .         .
             .          .         .         .         .         .         .         .
958          .          .       CC03.............................................
             .          .         V
             .          .         V
961          .          .       RC03
             .          .         .
             .          .         .
966          .          .         .        B07
             .          .         .         .
             .          .         .         .
972          .          .       CB07............
             .          .         V
             .          .         V
975          .          .       RB07
             .          .         .
             .          .         .
980          .          .         .        B05
```

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                .         .         .         .
                .         .         .         .
 987            .         .         .         .-------> LB05D
 986            .         .         .      LB05
                .         .         .         .
                .         .         .         .
 992            .         .         .         .         .<-------   DC02I
 990            .         .         .         .      DRC02
                .         .         .         .         V
                .         .         .         .         V
 993            .         .         .         .      RC02S
                .         .         .         .         .
                .         .         .         .         .
 999            .         .         .         .         .         B06
                .         .         .         .         .           .
                .         .         .         .         .           .
1005            .         .      CB05.................................
                .         .         V
                .         .         V
1008            .         .      RB05
                .         .         .
                .         .         .
1013            .         .         .      B04
                .         .         .         .
                .         .         .         .
1020            .         .         .         .-------> LB04D
1019            .         .         .      LB04
                .         .         .         .
                .         .         .         .
1023            .         .         .         .         B02
                .         .         .         .           .
                .         .         .         .           .
1030            .         .         .         .         .-------> LB02D
1029            .         .         .         .      LB02
                .         .         .         .         V
                .         .         .         .         V
1033            .         .         .         .      RB02
                .         .         .         .         .
                .         .         .         .         .
1038            .         .         .         .         .         B03
                .         .         .         .         .           .
                .         .         .         .         .           .
1044            .         .      CB03.................................
                .         .         V
                .         .         V
1047            .         .      RB03
                .         .         .
                .         .         .
1052            .         .         .      B01
                .         .         .         .
                .         .         .         .
1059            .         .         .         .-------> LB01D
1058            .         .         .      LB01
                .         .         .         .
                .         .         .         .
1062            .         .      CB01............
                .         .         V
                .         .         V
1065            .         .      RB01
                .         .         .
                .         .         .
1070            .         .         .      B12
                .         .         .         .
                .         .         .         .
1077            .         .         .         .         B11
                .         .         .         .           .
                .         .         .         .           .
1084            .         .         .         .         .-------> LB11D
1083            .         .         .         .      LB11
                .         .         .         .         .
                .         .         .         .         .
1088            .         .         .         .         .         .<-------   DC13I
1087            .         .         .         .         .      DRDC13
                .         .         .         .         .         V
                .         .         .         .         .         V
1089            .         .         .         .         .      RC13S
                .         .         .         .         .         .
                .         .         .         .         .         .
1094            .         .         .         .         .         .         B13
                .         .         .         .         .         .           .
                .         .         .         .         .         .           .
1101            .         .         .         .         .         .         .-------> LB13D
1100            .         .         .         .         .         .      LB13
                .         .         .         .         .         .         V
                .         .         .         .         .         .         V
1104            .         .         .         .         .         .      RB13
                .         .         .         .         .         .         .
                .         .         .         .         .         .         .
1109            .         .         .         .         .         .         .         B14
                .         .         .         .         .         .         .           .
                .         .         .         .         .         .         .           .
1117            .         .         .         .         .         .         .         .-------> LB14D
1116            .         .         .         .         .         .         .      LB14
                .         .         .         .         .         .         .         .
                .         .         .         .         .         .         .         .
```

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1120          .          .          .          .          .       CB14.......................
              .          .          .          .          .          V
              .          .          .          .          .          V
1123          .          .          .          .          .       RB14
              .          .          .          .          .          .
              .          .          .          .          .          .
1128          .          .       CB12.................................
              .          .          V
              .          .          V
1131          .          .       RB12
              .          .          .
              .          .          .
1136          .          .          .        A01
              .          .          .          .
              .          .          .          .
1144          .          .          .          .-------->   LA01D
1143          .          .          .       LA01
              .          .          .          .
              .          .          .          .
1147          .          .       CA01............
              .          .          .
              .          .          .
1150          .          .          .        B10
              .          .          .          .
              .          .          .          .
1157          .          .          .          .-------->   LB10D
1156          .          .          .       LB10
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************                                    *****************************************
*                                         *                                    *                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)     *                                    *   U.S. ARMY CORPS OF ENGINEERS        *
*              JUN   1998                 *                                    *   HYDROLOGIC ENGINEERING CENTER       *
*            VERSION 4.1                  *                                    *         609 SECOND STREET             *
*                                         *                                    *      DAVIS, CALIFORNIA 95616          *
*  RUN DATE   22JAN08  TIME  17:59:11     *                                    *          (916) 756-1104               *
*                                         *                                    *                                       *
*****************************************                                    *****************************************
```

```
Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
*****************************************************************************
**                                                                         **
**                    Updated Granite Reef ADMP                            **
**                                                                         **
*****************************************************************************
*****************************************************************************
PROJECT:                Granite Reef Wash DMP Update
CLIENT:                 City of Scottsdale
PREPARED BY:            Psomas
PROJECT No:             COS                 Psomas 06077-01
FILE NAME: BASE6.DAT                       CREATED DATE: Feb 26, 2007
MODIFIED: Jul 24, 2007 (RAK/JKK PSOMAS)
     * ORIGINAL CARDS STARRED-OUT
     * COMMENT CARDS ADDED
STORM:                  100-year 6-hour Storm
DEVELOPMENT CONDITIONS: Future Conditions



DDM MCUHP1


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

    IT          HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1000  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4    0  ENDING DATE
                     NDTIME       1115  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   83.25 HOURS

        ENGLISH UNITS
             DRAINAGE AREA          SQUARE MILES
             PRECIPITATION DEPTH    INCHES
             LENGTH, ELEVATION      FEET
             FLOW                   CUBIC FEET PER SECOND
             STORAGE VOLUME         ACRE-FEET
             SURFACE AREA           ACRES
             TEMPERATURE            DEGREES FAHRENHEIT

 27 JD          INDEX STORM NO. 1
                       STRM       3.20  PRECIPITATION DEPTH
```

```
                    TRDA          .01  TRANSPOSITION DRAINAGE AREA

28 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

31 JD           INDEX STORM NO. 2
                    STRM         3.18  PRECIPITATION DEPTH
                    TRDA          .50  TRANSPOSITION DRAINAGE AREA

 0 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                     .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

32 JD           INDEX STORM NO. 3
                    STRM         3.12  PRECIPITATION DEPTH
                    TRDA         2.80  TRANSPOSITION DRAINAGE AREA

33 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                     .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                     .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

36 JD           INDEX STORM NO. 4
                    STRM         2.95  PRECIPITATION DEPTH
                    TRDA        16.00  TRANSPOSITION DRAINAGE AREA

37 PI            PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .01
                     .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                     .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                     .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00

40 JD           INDEX STORM NO. 5
                    STRM         2.60  PRECIPITATION DEPTH
                    TRDA        90.00  TRANSPOSITION DRAINAGE AREA

41 PI            PRECIPITATION PATTERN
                     .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                     .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01

44 JD           INDEX STORM NO. 6
                    STRM         1.82  PRECIPITATION DEPTH
                    TRDA       500.00  TRANSPOSITION DRAINAGE AREA

45 PI            PRECIPITATION PATTERN
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                     .03       .03       .04       .04       .04       .04       .04       .04       .04       .04
                     .04       .03       .03       .03       .02       .02       .02       .01       .01       .01
                     .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                     .01       .01

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

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          *            *
92 KK     *     G04    *        BASIN
          *            *
          **************

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

              SUBBASIN RUNOFF DATA

 94 BA          SUBBASIN CHARACTERISTICS
                    TAREA        .05  SUBBASIN AREA

 95 LG          GREEN AND AMPT LOSS RATE
                    STRTL        .25  STARTING LOSS
                      DTH        .25  MOISTURE DEFICIT
                     PSIF       4.80  WETTING FRONT SUCTION
                    XKSAT        .35  HYDRAULIC CONDUCTIVITY
                    RTIMP      51.00  PERCENT IMPERVIOUS AREA

 96 UC          CLARK UNITGRAPH
                       TC        .30  TIME OF CONCENTRATION
                        R        .26  STORAGE COEFFICIENT

 97 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                      .0      5.0     16.0     30.0     65.0     77.0     84.0     90.0     94.0     97.0
                   100.0
                                                          ***

                                                UNIT HYDROGRAPH PARAMETERS
                                          CLARK   TC=   .30 HR,       R=   .26 HR
                                         SNYDER   TP=   .22 HR,      CP=   .53

                                                   UNIT HYDROGRAPH
                                              19 END-OF-PERIOD ORDINATES
                 13.      49.      68.      58.      44.      32.      23.      17.      12.       9.
                  6.       5.       3.       2.       2.       1.       1.       1.       0.

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

                      HYDROGRAPH AT STATION      G04
                    TRANSPOSITION AREA       .0 SQ MI

    TOTAL RAINFALL =    3.20, TOTAL LOSS =     .81, TOTAL EXCESS =    2.39

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     94.       4.08                11.          3.          1.          1.
                       (INCHES)    2.371       2.381       2.381       2.381
                       (AC-FT)       6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      G04
                    TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .81, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     93.       4.08                11.          3.          1.          1.
                       (INCHES)    2.352       2.363       2.363       2.363
                       (AC-FT)       6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      G04
                    TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .93, TOTAL EXCESS =    2.19

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     59.       4.08                10.          3.          1.          1.
                       (INCHES)    2.164       2.177       2.177       2.177
                       (AC-FT)       5.          5.          5.          5.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      G04
                    TRANSPOSITION AREA     16.0 SQ MI

    TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.94
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  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     44.       4.08                 9.          2.          1.           1.
                        (INCHES)   1.924       1.937       1.937        1.937
                         (AC-FT)     5.          5.          5.           5.

                        CUMULATIVE AREA =     .05 SQ MI


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

                         HYDROGRAPH AT STATION      G04
                       TRANSPOSITION AREA     90.0 SQ MI

    TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.56

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     30.       4.17                 7.          2.          1.           1.
                        (INCHES)   1.540       1.559       1.559        1.559
                         (AC-FT)     4.          4.          4.           4.

                        CUMULATIVE AREA =     .05 SQ MI

        WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                         HYDROGRAPH AT STATION      G04
                       TRANSPOSITION AREA    500.0 SQ MI

    TOTAL RAINFALL =    1.82, TOTAL LOSS =     .89, TOTAL EXCESS =     .93

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     11.       4.33                 4.          1.          0.           0.
                        (INCHES)    .913        .929        .929         .929
                         (AC-FT)     2.          2.          2.           2.

                        CUMULATIVE AREA =     .05 SQ MI

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


                        INTERPOLATED HYDROGRAPH AT      G04

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     94.       4.08                11.          3.          1.           1.
                        (INCHES)   2.364       2.374       2.374        2.374
                         (AC-FT)     6.          6.          6.           6.

                        CUMULATIVE AREA =     .05 SQ MI


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


            **************
            *            *
  652 KK    *      D07   *        BASIN
            *            *
            **************

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

                SUBBASIN RUNOFF DATA

  654 BA          SUBBASIN CHARACTERISTICS
                        TAREA        .05  SUBBASIN AREA

  655 LG          GREEN AND AMPT LOSS RATE
                        STRTL        .25  STARTING LOSS
                          DTH        .25  MOISTURE DEFICIT
                         PSIF       4.80  WETTING FRONT SUCTION
                        XKSAT        .35  HYDRAULIC CONDUCTIVITY
                        RTIMP      51.00  PERCENT IMPERVIOUS AREA

  656 UC          CLARK UNITGRAPH
                           TC        .51  TIME OF CONCENTRATION
                            R        .58  STORAGE COEFFICIENT
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657 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                     .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                  100.0

                                                  ***

                                                UNIT HYDROGRAPH PARAMETERS
                                         CLARK   TC=   .51 HR,       R=   .58 HR
                                        SNYDER   TP=   .33 HR,      CP=   .38

                                                UNIT HYDROGRAPH
                                           40 END-OF-PERIOD ORDINATES
                 3.       13.       28.       36.       36.       34.       31.       27.       23.       20.
                17.       15.       13.       11.       10.        8.        7.        6.        5.        5.
                 4.        4.        3.        3.        2.        2.        2.        1.        1.        1.
                 1.        1.        1.        1.        1.        0.        0.        0.        0.        0.

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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA       .0 SQ MI

    TOTAL RAINFALL =    3.20, TOTAL LOSS =     .81, TOTAL EXCESS =    2.39

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     64.       4.25                   12.         3.          1.          1.
                       (INCHES)     2.348       2.380       2.380       2.380
                       (AC-FT)        6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .81, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     63.       4.25                   12.         3.          1.          1.
                       (INCHES)     2.329       2.361       2.361       2.361
                       (AC-FT)        6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .93, TOTAL EXCESS =    2.19

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     46.       4.33                   11.         3.          1.          1.
                       (INCHES)     2.141       2.176       2.176       2.176
                       (AC-FT)        6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA     16.0 SQ MI

    TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.94

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     36.       4.33                   10.         3.          1.          1.
                       (INCHES)     1.897       1.936       1.936       1.936
                       (AC-FT)        5.          5.          5.          5.

                      CUMULATIVE AREA =     .05 SQ MI

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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA     90.0 SQ MI
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    TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.56

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR        72-HR     83.25-HR
+   (CFS)       (HR)
                            (CFS)
+     25.       4.33                8.           2.           1.           1.
                         (INCHES)   1.510        1.558        1.558        1.558
                          (AC-FT)     4.           4.           4.           4.

                         CUMULATIVE AREA =     .05 SQ MI

        WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                          HYDROGRAPH AT STATION      D07
                        TRANSPOSITION AREA    500.0 SQ MI

    TOTAL RAINFALL =    1.82, TOTAL LOSS =     .89, TOTAL EXCESS =     .93

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR        72-HR     83.25-HR
+   (CFS)       (HR)
                            (CFS)
+     11.       4.50                5.           1.           0.           0.
                         (INCHES)    .889        .928         .928         .928
                          (AC-FT)     2.           2.           2.           2.

                         CUMULATIVE AREA =     .05 SQ MI

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


                         INTERPOLATED HYDROGRAPH AT      D07

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR        24-HR        72-HR     83.25-HR
+   (CFS)       (HR)
                            (CFS)
+     63.       4.25               12.           3.           1.           1.
                         (INCHES)   2.340        2.372        2.372        2.372
                          (AC-FT)     6.           6.           6.           6.

                         CUMULATIVE AREA =     .05 SQ MI


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


            **************
            *            *
  845 KK    *      C07   *        BASIN
            *            *
            **************

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

              SUBBASIN RUNOFF DATA

  847 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .07  SUBBASIN AREA

  848 LG          GREEN AND AMPT LOSS RATE
                        STRTL         .25  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.80  WETTING FRONT SUCTION
                        XKSAT         .35  HYDRAULIC CONDUCTIVITY
                        RTIMP       50.00  PERCENT IMPERVIOUS AREA

  849 UC          CLARK UNITGRAPH
                           TC         .67  TIME OF CONCENTRATION
                            R         .70  STORAGE COEFFICIENT

  850 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                        .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                     100.0

                                                  ***

                                              UNIT HYDROGRAPH PARAMETERS
                                        CLARK   TC=   .67 HR,       R=   .70 HR
                                       SNYDER   TP=   .41 HR,      CP=   .38

                                                UNIT HYDROGRAPH
                                           48 END-OF-PERIOD ORDINATES
                 2.        9.       24.       38.       43.       43.       41.       39.       36.       32.
                28.       25.       22.       20.       18.       16.       14.       12.       11.       10.
                 9.        8.        7.        6.        5.        5.        4.        4.        3.        3.
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                3.        2.        2.        2.        2.        1.        1.        1.        1.        1.
                1.        1.        1.        1.        0.        0.        0.        0.

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

                      HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA       .0 SQ MI

    TOTAL RAINFALL =    3.20, TOTAL LOSS =     .83, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     79.       4.33                18.          5.          2.          1.
                        (INCHES)   2.315       2.362       2.362       2.362
                         (AC-FT)      9.          9.          9.          9.

                       CUMULATIVE AREA =     .07 SQ MI

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

                      HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .82, TOTAL EXCESS =    2.35

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     78.       4.33                18.          5.          2.          1.
                        (INCHES)   2.297       2.343       2.343       2.343
                         (AC-FT)      9.          9.          9.          9.

                       CUMULATIVE AREA =     .07 SQ MI

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

                      HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .95, TOTAL EXCESS =    2.17

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     60.       4.42                16.          4.          1.          1.
                        (INCHES)   2.107       2.156       2.156       2.156
                         (AC-FT)      8.          8.          8.          8.

                       CUMULATIVE AREA =     .07 SQ MI

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

                      HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA     16.0 SQ MI

    TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     47.       4.42                14.          4.          1.          1.
                        (INCHES)   1.860       1.914       1.914       1.914
                         (AC-FT)      7.          7.          7.          7.

                       CUMULATIVE AREA =     .07 SQ MI

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

                      HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA     90.0 SQ MI

    TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.05, TOTAL EXCESS =    1.54

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     33.       4.42                11.          3.          1.          1.
                        (INCHES)   1.473       1.536       1.536       1.536
                         (AC-FT)      6.          6.          6.          6.

                       CUMULATIVE AREA =     .07 SQ MI

        WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

     ***            ***            ***            ***            ***
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HYDROGRAPH AT STATION C07
TRANSPOSITION AREA 500.0 SQ MI

TOTAL RAINFALL = 1.82, TOTAL LOSS = .91, TOTAL EXCESS = .91

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+		(CFS)				
+ 15.	4.58		7.	2.	1.	1.
		(INCHES)	.861	.910	.910	.910
		(AC-FT)	3.	3.	3.	3.

CUMULATIVE AREA = .07 SQ MI

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INTERPOLATED HYDROGRAPH AT C07

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+		(CFS)				
+ 78.	4.33		18.	5.	2.	1.
		(INCHES)	2.306	2.353	2.353	2.353
		(AC-FT)	9.	9.	9.	9.

CUMULATIVE AREA = .07 SQ MI

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

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	G03	188.	4.17	25.	6.	2.	.09		
+	DIVERSION TO	DG03I	96.	4.17	13.	3.	1.	.09		
+	HYDROGRAPH AT	DG03	92.	4.17	12.	3.	1.	.09		
+	ROUTED TO	RG03S	84.	4.25	12.	3.	1.	.09		
+	HYDROGRAPH AT	G01	62.	4.25	13.	3.	1.	.05		
+	2 COMBINED AT	CG01	146.	4.25	25.	6.	2.	.10		
+	DIVERSION TO	DG01I	104.	4.25	18.	5.	2.	.10		
+	HYDROGRAPH AT	DG01	42.	4.25	7.	2.	1.	.10		
+	ROUTED TO	RG01S	39.	4.67	7.	2.	1.	.10		
+	HYDROGRAPH AT	F04	74.	4.25	17.	4.	1.	.06		
+	HYDROGRAPH AT	G04	94.	4.08	11.	3.	1.	.05		
+	ROUTED TO	RG04	92.	4.17	11.	3.	1.	.05		
+	HYDROGRAPH AT	G05	96.	4.08	13.	3.	1.	.05		
+	ROUTED TO	RG05	95.	4.25	13.	3.	1.	.05		
+	HYDROGRAPH AT	G06	333.	4.08	37.	9.	3.	.13		
+	DIVERSION TO	LG06D	226.	3.92	16.	4.	1.	.13		
+	HYDROGRAPH AT	LG06	333.	4.08	21.	5.	2.	.13		
+	DIVERSION TO	DG06I	142.	4.08	9.	2.	1.	.13		

+	HYDROGRAPH AT	DG06	191.	4.08	12.	3.	1.	.13
+	DIVERSION TO	LG06AD	191.	4.08	9.	2.	1.	.13
+	HYDROGRAPH AT	LG06A	43.	4.42	3.	1.	0.	.13
+	HYDROGRAPH AT	G02	100.	4.25	19.	5.	2.	.08
+	4 COMBINED AT	CG02	283.	4.25	46.	12.	4.	.23
+	ROUTED TO	RG02	283.	4.33	46.	12.	4.	.23
+	HYDROGRAPH AT	F06	151.	4.25	26.	6.	2.	.10
+	2 COMBINED AT	CF06	427.	4.33	71.	18.	6.	.33
+	ROUTED TO	RF06	425.	4.33	71.	18.	6.	.33
+	HYDROGRAPH AT	F05	137.	4.25	22.	6.	2.	.09
+	2 COMBINED AT	CF05	552.	4.33	94.	24.	8.	.42
+	DIVERSION TO	DF05I	503.	4.33	68.	17.	6.	.42
+	HYDROGRAPH AT	DF05	49.	3.92	25.	6.	2.	.42
+	ROUTED TO	RF05W	49.	4.00	25.	6.	2.	.42
+	3 COMBINED AT	CF04	147.	4.50	49.	12.	4.	.17
+	DIVERSION TO	DF04I	80.	4.50	26.	7.	2.	.17
+	HYDROGRAPH AT	DF04	67.	4.50	23.	6.	2.	.17
+	HYDROGRAPH AT	F05R	503.	4.33	68.	17.	6.	.42
+	ROUTED TO	RF05S	492.	4.42	68.	17.	6.	.42
+	HYDROGRAPH AT	F03	243.	4.25	45.	11.	4.	.17
+	2 COMBINED AT	CF03	705.	4.42	112.	28.	9.	.56
+	ROUTED TO	RF03	700.	4.42	112.	28.	9.	.56
+	HYDROGRAPH AT	G06R	142.	4.08	9.	2.	1.	.13
+	ROUTED TO	RG06S	127.	4.42	9.	2.	1.	.13
+	HYDROGRAPH AT	F07	392.	4.25	72.	18.	6.	.25
+	DIVERSION TO	LF07D	381.	4.17	31.	8.	3.	.25
+	HYDROGRAPH AT	LF07	370.	4.33	42.	10.	3.	.25
+	2 COMBINED AT	CF07	462.	4.42	51.	13.	4.	.31
+	DIVERSION TO	DF07I	449.	4.42	45.	11.	4.	.31
+	HYDROGRAPH AT	DF07	16.	6.33	6.	2.	1.	.31
+	ROUTED TO	RF07W	16.	6.33	6.	2.	1.	.31
+	HYDROGRAPH AT	F02	62.	4.25	12.	3.	1.	.05

+	3 COMBINED AT	CF02	751.	4.42	129.	33.	11.	.63
+	DIVERSION TO	DF02I	701.	4.42	102.	26.	9.	.63
+	HYDROGRAPH AT	DF02	50.	3.92	27.	7.	2.	.63
+	ROUTED TO	RF02W	50.	4.00	27.	7.	2.	.63
+	HYDROGRAPH AT	F04R	80.	4.50	26.	7.	2.	.17
+	ROUTED TO	RF04S	80.	4.67	26.	7.	2.	.17
+	DIVERSION TO	DRF04I	40.	4.67	13.	3.	1.	.17
+	HYDROGRAPH AT	DRF04	40.	4.67	13.	3.	1.	.17
+	HYDROGRAPH AT	F01	42.	4.25	8.	2.	1.	.03
+	3 COMBINED AT	CF01	127.	4.25	48.	12.	4.	.10
+	DIVERSION TO	DF01I	3.	4.25	0.	0.	0.	.10
+	HYDROGRAPH AT	DF01	123.	4.25	48.	12.	4.	.10
+	HYDROGRAPH AT	DRF02	701.	4.42	102.	26.	9.	.63
+	ROUTED TO	RF02S	699.	4.50	102.	26.	9.	.63
+	HYDROGRAPH AT	E07	153.	4.17	21.	5.	2.	.08
+	2 COMBINED AT	CE07	773.	4.42	122.	31.	10.	.66
+	ROUTED TO	RE07	771.	4.50	122.	31.	10.	.66
+	HYDROGRAPH AT	E05	91.	4.17	12.	3.	1.	.05
+	2 COMBINED AT	CE05	804.	4.50	133.	33.	11.	.71
+	DIVERSION TO	DE05I	779.	4.50	120.	30.	10.	.71
+	HYDROGRAPH AT	DE05	25.	3.83	13.	3.	1.	.71
+	ROUTED TO	RE05W	25.	3.92	13.	3.	1.	.71
+	HYDROGRAPH AT	E04	42.	4.25	9.	2.	1.	.04
+	DIVERSION TO	LE04D	40.	4.25	3.	1.	0.	.04
+	HYDROGRAPH AT	LE04	42.	4.33	6.	2.	1.	.04
+	HYDROGRAPH AT	DRF01I	3.	4.25	0.	0.	0.	.10
+	ROUTED TO	RF01S	3.	4.58	0.	0.	0.	.10
+	3 COMBINED AT	CE04	68.	4.33	19.	5.	2.	.07
+	DIVERSION TO	DE04I	0.	.00	0.	0.	0.	.07
+	HYDROGRAPH AT	DE04	68.	4.33	19.	5.	2.	.07
+	3 COMBINED AT	DUMMY	255.	4.33	89.	23.	8.	.34
	HYDROGRAPH AT							

+	E08	42.	4.25	8.	2.	1.	.03
ROUTED TO							
+	RE08	41.	4.33	8.	2.	1.	.03
HYDROGRAPH AT							
+	E06	48.	4.25	9.	2.	1.	.04
2 COMBINED AT							
+	CE06	87.	4.33	17.	4.	1.	.07
ROUTED TO							
+	RE06	85.	4.58	17.	4.	1.	.07
HYDROGRAPH AT							
+	E03	47.	4.58	17.	5.	2.	.07
HYDROGRAPH AT							
+	DRF07	449.	4.42	45.	11.	4.	.31
ROUTED TO							
+	RF07S	404.	4.67	45.	11.	4.	.31
HYDROGRAPH AT							
+	E09	338.	4.25	64.	16.	5.	.22
DIVERSION TO							
+	LE09D	325.	4.17	27.	7.	2.	.22
HYDROGRAPH AT							
+	LE09	321.	4.33	37.	9.	3.	.22
2 COMBINED AT							
+	CE09	596.	4.67	82.	20.	7.	.51
DIVERSION TO							
+	DE09I	551.	4.67	64.	16.	5.	.51
HYDROGRAPH AT							
+	DE09	45.	4.33	18.	4.	1.	.51
ROUTED TO							
+	RE09W	45.	4.42	18.	4.	1.	.51
HYDROGRAPH AT							
+	DRE05I	779.	4.50	120.	30.	10.	.71
ROUTED TO							
+	RE05S	766.	4.58	120.	30.	10.	.71
4 COMBINED AT							
+	CE03	907.	4.58	169.	43.	14.	.86
DIVERSION TO							
+	DE03I	817.	4.58	122.	31.	10.	.86
HYDROGRAPH AT							
+	DE03	90.	4.08	46.	12.	4.	.86
ROUTED TO							
+	RE03W	90.	4.17	46.	12.	4.	.86
HYDROGRAPH AT							
+	E02	186.	4.33	37.	9.	3.	.15
2 COMBINED AT							
+	CE02	276.	4.33	82.	21.	7.	.18
DIVERSION TO							
+	DE02I	142.	4.33	21.	5.	2.	.18
HYDROGRAPH AT							
+	DE02	134.	4.17	62.	16.	5.	.18
ROUTED TO							
+	RE02W	134.	4.67	61.	16.	5.	.18
HYDROGRAPH AT							
+	E01	84.	4.25	15.	4.	1.	.06
HYDROGRAPH AT							
+	DRE04I	0.	.00	0.	0.	0.	.07
ROUTED TO							
+	RE04S	0.	.00	0.	0.	0.	.07
3 COMBINED AT							
+	CE01	217.	4.25	77.	20.	7.	.17
DIVERSION TO							
+	DE01I	38.	4.25	6.	2.	1.	.17
HYDROGRAPH AT							
+	DE01	179.	4.17	71.	18.	6.	.17

+	HYDROGRAPH AT	DRE01	38.	4.25	6.	2.	1.	.17
+	ROUTED TO	RE01S	36.	4.50	6.	2.	1.	.17
+	HYDROGRAPH AT	D05	197.	4.33	39.	10.	3.	.16
+	2 COMBINED AT	CD05	221.	4.42	45.	12.	4.	.28
+	DIVERSION TO	DD05I	54.	4.42	8.	2.	1.	.28
+	HYDROGRAPH AT	DD05	167.	4.42	37.	9.	3.	.28
+	ROUTED TO	RD05S	167.	4.42	37.	9.	3.	.28
+	HYDROGRAPH AT	D13	54.	4.25	11.	3.	1.	.04
+	2 COMBINED AT	CD13	216.	4.42	48.	12.	4.	.26
+	DIVERSION TO	DD13I	121.	4.42	27.	7.	2.	.26
+	HYDROGRAPH AT	DD13	95.	4.42	21.	5.	2.	.26
+	ROUTED TO	RD13S	95.	4.50	21.	5.	2.	.26
+	HYDROGRAPH AT	D04	16.	4.25	3.	1.	0.	.01
+	ROUTED TO	RD04	15.	4.42	3.	1.	0.	.01
+	HYDROGRAPH AT	D01	73.	4.42	19.	5.	2.	.08
+	3 COMBINED AT	CD01	181.	4.42	43.	11.	4.	.21
+	DIVERSION TO	DD01I	68.	4.42	15.	4.	1.	.21
+	HYDROGRAPH AT	DD01	113.	4.42	29.	8.	3.	.21
+	ROUTED TO	RD01E	112.	4.50	29.	8.	3.	.21
+	HYDROGRAPH AT	DRD05	54.	4.42	8.	2.	1.	.28
+	ROUTED TO	RD05E	54.	4.42	8.	2.	1.	.28
+	DIVERSION TO	DD052I	40.	4.42	7.	2.	1.	.28
+	HYDROGRAPH AT	DD052	14.	4.42	2.	0.	0.	.28
+	ROUTED TO	RD05S2	13.	4.58	2.	0.	0.	.28
+	HYDROGRAPH AT	DRE02	142.	4.33	21.	5.	2.	.18
+	ROUTED TO	RE02S	141.	4.42	21.	5.	2.	.18
+	HYDROGRAPH AT	DRD052	40.	4.42	7.	2.	1.	.28
+	ROUTED TO	RD05E2	40.	4.50	7.	2.	1.	.28
+	HYDROGRAPH AT	D06	130.	4.33	28.	7.	2.	.11
+	3 COMBINED AT	CD06	306.	4.42	55.	14.	5.	.25
+	DIVERSION TO	DD06I	101.	4.42	16.	4.	1.	.25
+	HYDROGRAPH AT	DD06	205.	4.42	39.	10.	3.	.25

	ROUTED TO						
+		RD06S	202.	4.50	39.	10.	3.	.25
	HYDROGRAPH AT						
+		DRD13	121.	4.42	27.	7.	2.	.26
	ROUTED TO						
+		RD13E	120.	4.50	27.	7.	2.	.26
	HYDROGRAPH AT						
+		D02A	114.	4.17	18.	4.	1.	.07
	4 COMBINED AT						
+		CD10	418.	4.42	85.	21.	7.	.26
	DIVERSION TO						
+		DD10I	173.	4.42	36.	9.	3.	.26
	HYDROGRAPH AT						
+		DD10	245.	4.42	49.	12.	4.	.26
	ROUTED TO						
+		RD10S	242.	4.50	49.	12.	4.	.26
	HYDROGRAPH AT						
+		DO2B	103.	4.25	18.	4.	1.	.07
	3 COMBINED AT						
+		CD02	429.	4.50	95.	24.	8.	.35
	DIVERSION TO						
+		DD02I	82.	4.50	14.	3.	1.	.35
	HYDROGRAPH AT						
+		DD02	347.	4.50	81.	21.	7.	.35
	ROUTED TO						
+		RD02E	347.	4.50	81.	21.	7.	.35
	HYDROGRAPH AT						
+		D07	63.	4.25	12.	3.	1.	.05
	HYDROGRAPH AT						
+		DRD06	101.	4.42	16.	4.	1.	.25
	ROUTED TO						
+		RD06E	100.	4.42	16.	4.	1.	.25
	2 COMBINED AT						
+		CD07	157.	4.42	28.	7.	2.	.13
	ROUTED TO						
+		RD07	154.	4.50	28.	7.	2.	.13
	HYDROGRAPH AT						
+		DRD10	173.	4.42	36.	9.	3.	.26
	ROUTED TO						
+		RD10E	172.	4.42	36.	9.	3.	.26
	2 COMBINED AT						
+		CD11	325.	4.50	64.	16.	5.	.24
	ROUTED TO						
+		RD11	324.	4.50	64.	16.	5.	.24
	HYDROGRAPH AT						
+		DRE03	817.	4.58	122.	31.	10.	.86
	ROUTED TO						
+		RE03S	813.	4.75	122.	31.	10.	.86
	HYDROGRAPH AT						
+		D08	49.	4.33	13.	3.	1.	.05
	2 COMBINED AT						
+		CD08	847.	4.75	135.	34.	11.	.88
	ROUTED TO						
+		RD08	844.	4.75	135.	34.	11.	.88
	HYDROGRAPH AT						
+		D03A	72.	4.25	13.	3.	1.	.05
	3 COMBINED AT						
+		CD12	1070.	4.75	204.	52.	17.	1.17
	ROUTED TO						
+		RD12	1057.	4.83	204.	52.	17.	1.17
	HYDROGRAPH AT						
+		DRE09I	551.	4.67	64.	16.	5.	.51
	ROUTED TO						

+	RE09S	487.	4.92	64.	16.	5.	.51
HYDROGRAPH AT +	D09	360.	4.17	62.	16.	5.	.22
DIVERSION TO +	LD09D	346.	4.17	27.	7.	2.	.22
HYDROGRAPH AT +	LD09	352.	4.25	35.	9.	3.	.22
2 COMBINED AT +	CD09	560.	4.92	96.	24.	8.	.69
HYDROGRAPH AT +	D03B	71.	4.25	13.	3.	1.	.05
4 COMBINED AT +	CD03	1637.	4.83	366.	93.	31.	2.19
ROUTED TO +	RD03	1632.	4.92	366.	93.	31.	2.19
HYDROGRAPH AT +	C11	90.	4.17	12.	3.	1.	.05
HYDROGRAPH AT +	C10	85.	4.17	13.	3.	1.	.05
HYDROGRAPH AT +	DRD02	82.	4.50	14.	3.	1.	.35
ROUTED TO +	RD02S	81.	4.58	14.	3.	1.	.35
2 COMBINED AT +	CC10	142.	4.33	27.	7.	2.	.12
ROUTED TO +	RC10	141.	4.42	27.	7.	2.	.12
3 COMBINED AT +	CC11	1708.	4.83	399.	101.	34.	2.36
ROUTED TO +	RC11	1707.	4.92	399.	101.	34.	2.36
HYDROGRAPH AT +	C08	170.	4.25	29.	7.	2.	.12
2 COMBINED AT +	CC08	1752.	4.92	423.	107.	36.	2.48
ROUTED TO +	RC08	1745.	5.00	423.	107.	36.	2.48
HYDROGRAPH AT +	C06	222.	4.25	38.	9.	3.	.15
2 COMBINED AT +	CC06	1800.	4.92	455.	116.	39.	2.63
ROUTED TO +	RC06	1802.	5.00	455.	116.	39.	2.63
HYDROGRAPH AT +	DRD01	68.	4.42	15.	4.	1.	.21
ROUTED TO +	RD01S	67.	4.67	15.	4.	1.	.21
HYDROGRAPH AT +	C07	78.	4.33	18.	5.	2.	.07
2 COMBINED AT +	CC07	139.	4.50	32.	8.	3.	.15
ROUTED TO +	RC07	138.	4.67	32.	8.	3.	.15
HYDROGRAPH AT +	C09	66.	4.25	14.	4.	1.	.06
ROUTED TO +	RC09	56.	4.50	14.	4.	1.	.06
HYDROGRAPH AT +	C05	151.	4.33	35.	9.	3.	.14
HYDROGRAPH AT +	C01	37.	4.25	8.	2.	1.	.03
ROUTED TO +	RC01	36.	4.50	8.	2.	1.	.03

	HYDROGRAPH AT							
+		C02	41.	4.25	10.	3.	1.	.04
	5 COMBINED AT							
+		CC02	397.	4.58	99.	25.	8.	.44
	DIVERSION TO							
+		DC02I	63.	4.58	8.	2.	1.	.44
	HYDROGRAPH AT							
+		DC02	334.	4.58	92.	23.	8.	.44
	ROUTED TO							
+		RC02E	334.	4.58	92.	23.	8.	.44
	HYDROGRAPH AT							
+		C03	68.	4.17	11.	3.	1.	.04
	HYDROGRAPH AT							
+		C12	3.	5.25	2.	1.	0.	.01
	ROUTED TO							
+		RC12	3.	5.75	2.	1.	0.	.01
	HYDROGRAPH AT							
+		C13	248.	4.25	50.	13.	4.	.18
	DIVERSION TO							
+		LC13D	248.	4.25	23.	6.	2.	.18
	HYDROGRAPH AT							
+		LC13	224.	4.42	28.	7.	2.	.18
	2 COMBINED AT							
+		CC13	224.	4.42	30.	8.	3.	.19
	DIVERSION TO							
+		DC13I	183.	4.42	20.	5.	2.	.19
	HYDROGRAPH AT							
+		DC13	41.	4.33	10.	3.	1.	.19
	ROUTED TO							
+		RC13W	41.	4.58	10.	3.	1.	.19
	HYDROGRAPH AT							
+		C04	40.	4.33	10.	3.	1.	.04
	ROUTED TO							
+		RC04	40.	4.42	10.	3.	1.	.04
	5 COMBINED AT							
+		CC03	2044.	5.00	557.	142.	47.	3.37
	ROUTED TO							
+		RC03	2037.	5.00	557.	142.	47.	3.37
	HYDROGRAPH AT							
+		B07	35.	4.08	4.	1.	0.	.02
	2 COMBINED AT							
+		CB07	2038.	5.00	560.	143.	48.	3.39
	ROUTED TO							
+		RB07	2037.	5.08	560.	143.	48.	3.39
	HYDROGRAPH AT							
+		B05	91.	4.25	20.	5.	2.	.09
	DIVERSION TO							
+		LB05D	2.	1.50	0.	0.	0.	.09
	HYDROGRAPH AT							
+		LB05	91.	4.25	20.	5.	2.	.09
	HYDROGRAPH AT							
+		DRC02	63.	4.58	8.	2.	1.	.44
	ROUTED TO							
+		RC02S	60.	4.67	8.	2.	1.	.44
	HYDROGRAPH AT							
+		B06	20.	4.17	4.	1.	0.	.01
	4 COMBINED AT							
+		CB05	2092.	5.08	584.	149.	50.	3.49
	ROUTED TO							
+		RB05	2089.	5.08	584.	149.	50.	3.49
	HYDROGRAPH AT							
+		B04	178.	4.08	22.	6.	2.	.08
	DIVERSION TO							
+		LB04D	178.	4.08	22.	6.	2.	.08

+	HYDROGRAPH AT LB04	0.	.00	0.	0.	0.	.08
+	HYDROGRAPH AT B02	191.	4.17	28.	7.	2.	.10
+	DIVERSION TO LB02D	50.	3.75	5.	1.	0.	.10
+	HYDROGRAPH AT LB02	191.	4.17	23.	6.	2.	.10
+	ROUTED TO RB02	189.	4.17	23.	6.	2.	.10
+	HYDROGRAPH AT B03	10.	4.17	2.	0.	0.	.01
+	4 COMBINED AT CB03	2109.	5.08	604.	154.	51.	3.66
+	ROUTED TO RB03	2104.	5.08	604.	154.	51.	3.66
+	HYDROGRAPH AT B01	162.	4.08	16.	4.	1.	.07
+	DIVERSION TO LB01D	25.	3.67	2.	1.	0.	.07
+	HYDROGRAPH AT LB01	162.	4.08	14.	3.	1.	.07
+	2 COMBINED AT CB01	2105.	5.08	615.	157.	52.	3.73
+	ROUTED TO RB01	2098.	5.17	615.	157.	52.	3.73
+	HYDROGRAPH AT B12	233.	4.17	27.	7.	2.	.12
+	HYDROGRAPH AT B11	107.	4.17	13.	3.	1.	.06
+	DIVERSION TO LB11D	103.	4.08	6.	1.	0.	.06
+	HYDROGRAPH AT LB11	95.	4.25	7.	2.	1.	.06
+	HYDROGRAPH AT DRDC13	183.	4.42	20.	5.	2.	.19
+	ROUTED TO RC13S	166.	5.08	20.	5.	2.	.19
+	HYDROGRAPH AT B13	445.	4.08	52.	13.	4.	.22
+	DIVERSION TO LB13D	445.	4.08	37.	9.	3.	.22
+	HYDROGRAPH AT LB13	224.	4.42	15.	4.	1.	.22
+	ROUTED TO RB13	216.	4.58	15.	4.	1.	.22
+	HYDROGRAPH AT B14	195.	4.25	44.	11.	4.	.15
+	DIVERSION TO LB14D	195.	4.25	21.	5.	2.	.15
+	HYDROGRAPH AT LB14	174.	4.50	24.	6.	2.	.15
+	3 COMBINED AT CB14	367.	4.58	59.	15.	5.	.52
+	ROUTED TO RB14	336.	4.67	59.	15.	5.	.52
+	4 COMBINED AT CB12	2207.	5.17	679.	173.	58.	4.43
+	ROUTED TO RB12	2178.	5.42	678.	173.	58.	4.43
+	HYDROGRAPH AT A01	1075.	4.17	154.	39.	13.	.51
	DIVERSION TO						

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+                        LA01D      953.    4.08          71.         18.          6.        .51

        HYDROGRAPH AT
+                         LA01     1041.    4.25          84.         21.          7.        .51

        2 COMBINED AT
+                         CA01     2213.    5.42         746.        190.         63.       4.94

        HYDROGRAPH AT
+                          B10       95.    4.33          22.          6.          2.        .11

        DIVERSION TO
+                        LB10D       95.    4.33          21.          5.          2.        .11

        HYDROGRAPH AT
+                         LB10        7.    6.75           1.          0.          0.        .11
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                          INTERPOLATED TO
                                                                       COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                    PEAK                                     PEAK

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

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RF05W  MANE          .86     49.00    236.76       .57      5.00     49.00    240.00        .57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1279E+02 EXCESS= .0000E+00 OUTFLOW= .1279E+02 BASIN STORAGE= .1300E-12 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RF05W  MANE          .82     49.00    237.07       .57      5.00     49.00    240.00        .57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1275E+02 EXCESS= .0000E+00 OUTFLOW= .1275E+02 BASIN STORAGE= .1314E-12 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RF05W  MANE          .87     49.00    232.10       .60      5.00     49.00    235.00        .60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1342E+02 EXCESS= .0000E+00 OUTFLOW= .1342E+02 BASIN STORAGE= .1328E-12 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RF05W  MANE          .76     49.00    236.65       .64      5.00     49.00    240.00        .64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1428E+02 EXCESS= .0000E+00 OUTFLOW= .1428E+02 BASIN STORAGE= .1323E-12 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RF05W  MANE          .73     49.00    236.91       .66      5.00     49.00    240.00        .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1473E+02 EXCESS= .0000E+00 OUTFLOW= .1473E+02 BASIN STORAGE= .1352E-12 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RF05W  MANE          .85     46.98    275.88       .55      5.00     46.98    275.00        .55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1242E+02 EXCESS= .0000E+00 OUTFLOW= .1242E+02 BASIN STORAGE= .1305E-12 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
            RF03  MANE          .78    723.47    265.93      1.92      5.00    720.34    265.00       1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5696E+02 EXCESS= .0000E+00 OUTFLOW= .5697E+02 BASIN STORAGE= .3554E-04 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
            RF03  MANE          .78    715.27    265.63      1.90      5.00    712.47    265.00       1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5639E+02 EXCESS= .0000E+00 OUTFLOW= .5639E+02 BASIN STORAGE= .3461E-04 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
            RF03  MANE          .91    510.61    266.71      1.69      5.00    508.28    270.00       1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4999E+02 EXCESS= .0000E+00 OUTFLOW= .4999E+02 BASIN STORAGE= .3662E-04 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
            RF03  MANE         1.05    384.44    269.83      1.41      5.00    384.36    270.00       1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4184E+02 EXCESS= .0000E+00 OUTFLOW= .4184E+02 BASIN STORAGE= .3605E-04 PERCENT ERROR=    .0
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FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RF03  MANE        1.35    248.91    271.16      1.04      5.00    248.31    270.00        1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3081E+02 EXCESS= .0000E+00 OUTFLOW= .3081E+02 BASIN STORAGE= .3478E-04 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RF03  MANE        2.68     83.31    281.86       .51      5.00     83.27    280.00         .51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1526E+02 EXCESS= .0000E+00 OUTFLOW= .1526E+02 BASIN STORAGE= .3969E-04 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RF07W  MANE        5.00     15.82    380.00       .18      5.00     15.82    380.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3032E+01 EXCESS= .0000E+00 OUTFLOW= .3012E+01 BASIN STORAGE= .6039E-03 PERCENT ERROR=    .6

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RF07W  MANE        5.00     15.82    380.00       .18      5.00     15.82    380.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3029E+01 EXCESS= .0000E+00 OUTFLOW= .3010E+01 BASIN STORAGE= .6008E-03 PERCENT ERROR=    .6

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RF07W  MANE        5.00     15.86    390.00       .19      5.00     15.86    390.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3146E+01 EXCESS= .0000E+00 OUTFLOW= .3124E+01 BASIN STORAGE= .7440E-03 PERCENT ERROR=    .7

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RF07W  MANE        5.00     15.82    390.00       .18      5.00     15.82    390.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3073E+01 EXCESS= .0000E+00 OUTFLOW= .3054E+01 BASIN STORAGE= .7580E-03 PERCENT ERROR=    .6

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RF07W  MANE        5.00     15.85    395.00       .18      5.00     15.85    395.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3052E+01 EXCESS= .0000E+00 OUTFLOW= .3032E+01 BASIN STORAGE= .4244E-03 PERCENT ERROR=    .6

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RF07W  MANE        5.00     15.83    390.00       .14      5.00     15.83    390.00         .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2318E+01 EXCESS= .0000E+00 OUTFLOW= .2296E+01 BASIN STORAGE= .3909E-03 PERCENT ERROR=    .9

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RF02W  MANE        1.90     50.00    239.64       .41      5.00     50.00    240.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1382E+02 EXCESS= .0000E+00 OUTFLOW= .1382E+02 BASIN STORAGE= .7249E-11 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RF02W  MANE        1.90     50.00    239.86       .41      5.00     50.00    240.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1378E+02 EXCESS= .0000E+00 OUTFLOW= .1378E+02 BASIN STORAGE= .7126E-11 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RF02W  MANE        1.90     50.00    235.22       .43      5.00     50.00    240.00         .43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1445E+02 EXCESS= .0000E+00 OUTFLOW= .1445E+02 BASIN STORAGE= .6911E-11 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RF02W  MANE        1.84     50.00    238.78       .46      5.00     50.00    240.00         .46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1533E+02 EXCESS= .0000E+00 OUTFLOW= .1533E+02 BASIN STORAGE= .7064E-11 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RF02W  MANE        1.84     50.00    243.75       .47      5.00     50.00    245.00         .47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1574E+02 EXCESS= .0000E+00 OUTFLOW= .1575E+02 BASIN STORAGE= .7000E-11 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RF02W  MANE        1.92     48.76    283.04       .41      5.00     48.73    285.00         .41
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1356E+02 EXCESS= .0000E+00 OUTFLOW= .1356E+02 BASIN STORAGE= .7742E-11 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RE05W  MANE         1.75     25.00    235.00       .17      5.00     25.00    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6361E+01 EXCESS= .0000E+00 OUTFLOW= .6363E+01 BASIN STORAGE= .3600E-11 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RE05W  MANE         1.75     25.00    235.20       .17      5.00     25.00    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6344E+01 EXCESS= .0000E+00 OUTFLOW= .6346E+01 BASIN STORAGE= .3609E-11 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RE05W  MANE         1.87     25.00    228.79       .18      5.00     25.00    230.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6667E+01 EXCESS= .0000E+00 OUTFLOW= .6668E+01 BASIN STORAGE= .3706E-11 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RE05W  MANE         1.82     25.00    230.13       .19      5.00     25.00    235.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7006E+01 EXCESS= .0000E+00 OUTFLOW= .7007E+01 BASIN STORAGE= .3672E-11 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RE05W  MANE         1.83     25.00    234.15       .19      5.00     25.00    235.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7073E+01 EXCESS= .0000E+00 OUTFLOW= .7074E+01 BASIN STORAGE= .3758E-11 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RE05W  MANE         1.78     25.00    269.91       .15      5.00     25.00    270.00         .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5814E+01 EXCESS= .0000E+00 OUTFLOW= .5815E+01 BASIN STORAGE= .3736E-11 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RE09W  MANE          .70     45.00    256.49       .32      5.00     45.00    260.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8814E+01 EXCESS= .0000E+00 OUTFLOW= .8815E+01 BASIN STORAGE= .9349E-13 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RE09W  MANE          .70     45.00    256.49       .32      5.00     45.00    260.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8798E+01 EXCESS= .0000E+00 OUTFLOW= .8799E+01 BASIN STORAGE= .9238E-13 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RE09W  MANE          .70     45.00    261.49       .33      5.00     45.00    265.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9004E+01 EXCESS= .0000E+00 OUTFLOW= .9005E+01 BASIN STORAGE= .9231E-13 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RE09W  MANE          .70     45.00    261.49       .34      5.00     45.00    265.00         .34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9184E+01 EXCESS= .0000E+00 OUTFLOW= .9185E+01 BASIN STORAGE= .9150E-13 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RE09W  MANE          .81     45.00    272.04       .33      5.00     45.00    275.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8927E+01 EXCESS= .0000E+00 OUTFLOW= .8926E+01 BASIN STORAGE= .9130E-13 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RE09W  MANE          .81     45.00    341.94       .20      5.00     45.00    345.00         .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5502E+01 EXCESS= .0000E+00 OUTFLOW= .5501E+01 BASIN STORAGE= .9215E-13 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RE03W  MANE         1.00     90.00    249.48       .52      5.00     90.00    250.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2384E+02 EXCESS= .0000E+00 OUTFLOW= .2385E+02 BASIN STORAGE= .7045E-11 PERCENT ERROR=    .0
```

```
FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RE03W  MANE        1.00     90.00    249.64       .52      5.00     90.00    250.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2378E+02 EXCESS= .0000E+00 OUTFLOW= .2378E+02 BASIN STORAGE= .6965E-11 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RE03W  MANE        1.02     90.00    249.09       .54      5.00     90.00    250.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2473E+02 EXCESS= .0000E+00 OUTFLOW= .2474E+02 BASIN STORAGE= .6923E-11 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RE03W  MANE        1.01     90.00    254.41       .55      5.00     90.00    255.00         .55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2525E+02 EXCESS= .0000E+00 OUTFLOW= .2526E+02 BASIN STORAGE= .7197E-11 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RE03W  MANE        1.00     90.00    259.10       .54      5.00     90.00    260.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2489E+02 EXCESS= .0000E+00 OUTFLOW= .2490E+02 BASIN STORAGE= .6928E-11 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RE03W  MANE        1.10     88.34    322.43       .40      5.00     88.20    320.00         .40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1840E+02 EXCESS= .0000E+00 OUTFLOW= .1840E+02 BASIN STORAGE= .6994E-11 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RE02W  MANE        1.22    134.00    284.09      3.29      5.00    134.00    280.00        3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3211E+02 EXCESS= .0000E+00 OUTFLOW= .3209E+02 BASIN STORAGE= .1246E-03 PERCENT ERROR=    .1

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RE02W  MANE        1.22    134.00    284.09      3.28      5.00    134.00    280.00        3.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3202E+02 EXCESS= .0000E+00 OUTFLOW= .3200E+02 BASIN STORAGE= .1240E-03 PERCENT ERROR=    .1

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RE02W  MANE        1.22    134.00    279.21      3.39      5.00    133.99    275.00        3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3314E+02 EXCESS= .0000E+00 OUTFLOW= .3312E+02 BASIN STORAGE= .1236E-03 PERCENT ERROR=    .1

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RE02W  MANE        1.22    132.85    264.92      3.44      5.00    132.85    265.00        3.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3357E+02 EXCESS= .0000E+00 OUTFLOW= .3356E+02 BASIN STORAGE= .1230E-03 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RE02W  MANE        1.25    119.92    267.83      3.31      5.00    119.86    270.00        3.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3235E+02 EXCESS= .0000E+00 OUTFLOW= .3234E+02 BASIN STORAGE= .1242E-03 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RE02W  MANE        1.29     98.31    322.37      2.51      5.00     98.23    325.00        2.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2450E+02 EXCESS= .0000E+00 OUTFLOW= .2449E+02 BASIN STORAGE= .1240E-03 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RC13W  MANE        3.65     46.50    266.13       .53      5.00     41.26    275.00         .53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5226E+01 EXCESS= .0000E+00 OUTFLOW= .5228E+01 BASIN STORAGE= .2942E-03 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RC13W  MANE        3.65     46.50    266.13       .53      5.00     41.26    275.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5207E+01 EXCESS= .0000E+00 OUTFLOW= .5208E+01 BASIN STORAGE= .2924E-03 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RC13W  MANE        3.65     42.53    269.78       .51      5.00     42.52    270.00         .52
```

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CONTINUITY SUMMARY (AC-FT) - INFLOW= .5095E+01 EXCESS= .0000E+00 OUTFLOW= .5096E+01 BASIN STORAGE= .2926E-03 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RC13W  MANE         3.65     42.54    277.07       .50      5.00     41.27    285.00         .50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4910E+01 EXCESS= .0000E+00 OUTFLOW= .4911E+01 BASIN STORAGE= .2910E-03 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RC13W  MANE         3.69     42.42    280.61       .40      5.00     38.41    280.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4009E+01 EXCESS= .0000E+00 OUTFLOW= .4011E+01 BASIN STORAGE= .2894E-03 PERCENT ERROR=   -.1

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RC13W  MANE         4.55     14.08    332.19       .16      5.00     13.43    335.00         .16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1538E+01 EXCESS= .0000E+00 OUTFLOW= .1539E+01 BASIN STORAGE= .2917E-03 PERCENT ERROR=   -.1

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
            RB05  MANE          .81   2779.89    300.20      1.84      5.00   2778.35    300.00        1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3420E+03 EXCESS= .0000E+00 OUTFLOW= .3420E+03 BASIN STORAGE= .3938E-04 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
            RB05  MANE          .81   2747.95    300.76      1.82      5.00   2745.11    300.00        1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3387E+03 EXCESS= .0000E+00 OUTFLOW= .3387E+03 BASIN STORAGE= .3963E-04 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
            RB05  MANE          .77   2158.07    305.28      1.62      5.00   2157.62    305.00        1.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3012E+03 EXCESS= .0000E+00 OUTFLOW= .3012E+03 BASIN STORAGE= .3948E-04 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
            RB05  MANE          .79   1631.42    310.82      1.38      5.00   1630.75    310.00        1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2574E+03 EXCESS= .0000E+00 OUTFLOW= .2574E+03 BASIN STORAGE= .3949E-04 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
            RB05  MANE          .94   1023.28    320.05      1.03      5.00   1023.25    320.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1923E+03 EXCESS= .0000E+00 OUTFLOW= .1923E+03 BASIN STORAGE= .3953E-04 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
            RB05  MANE         1.47    338.18    295.98       .49      5.00    337.82    295.00         .49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9178E+02 EXCESS= .0000E+00 OUTFLOW= .9179E+02 BASIN STORAGE= .3963E-04 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
            RB02  MANE         1.75    190.13    250.69      2.16      5.00    189.98    250.00        2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1162E+02 EXCESS= .0000E+00 OUTFLOW= .1162E+02 BASIN STORAGE= .1872E-04 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
            RB02  MANE         1.76    189.50    251.52      2.14      5.00    188.67    250.00        2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1151E+02 EXCESS= .0000E+00 OUTFLOW= .1151E+02 BASIN STORAGE= .1908E-04 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
            RB02  MANE         1.50    128.65    252.00      1.99      5.00    127.78    250.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1071E+02 EXCESS= .0000E+00 OUTFLOW= .1071E+02 BASIN STORAGE= .1908E-04 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
            RB02  MANE         2.00     99.49    252.00      1.77      5.00     98.75    250.00        1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9544E+01 EXCESS= .0000E+00 OUTFLOW= .9544E+01 BASIN STORAGE= .2246E-04 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
```

```
        RB02  MANE        2.25     69.04    254.25      1.41      5.00     68.84    255.00        1.41

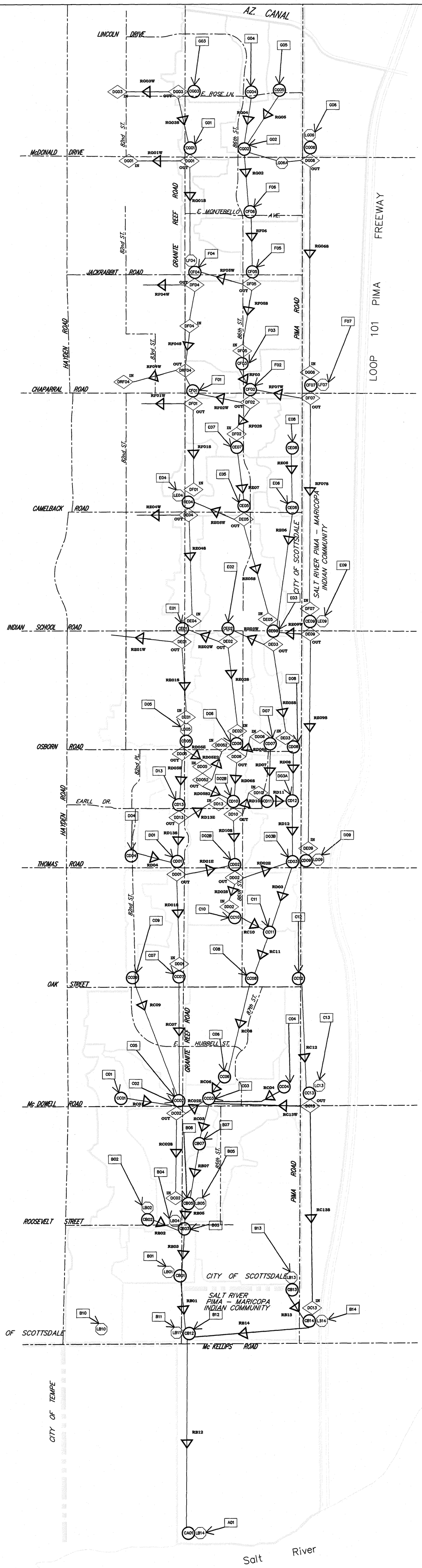
CONTINUITY SUMMARY (AC-FT) - INFLOW= .7572E+01 EXCESS= .0000E+00 OUTFLOW= .7572E+01 BASIN STORAGE= .2417E-04 PERCENT ERROR=    .0

      FOR STORM = 6  STORM AREA (SQ MI) =     500.00
        RB02  MANE        2.00     33.16    262.00       .74      5.00     33.11    260.00         .74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4012E+01 EXCESS= .0000E+00 OUTFLOW= .4011E+01 BASIN STORAGE= .2000E-04 PERCENT ERROR=    .0


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

2. Exhibit 1 – HEC-1 Schematic Drawing



LEGEND

- Basin Boundary
- G03 — Basin Label
- CG03 — Concentration Point
- DG03 OUT — Diversion Point
- DG03 IN — Diversion Recovery Point
- RG03W — Routing Reach
- LE04 — Storage Routing
- Roadway Center Line
- Community Boundary
- Watershed Boundary

1,000 0 1,000 2,000

PSOMAS

3800 N. Central Ave., Suite 1200
Phoenix, AZ 85012
Tel (602) 222-8260 Fax (602) 266-0218

Updated: RAK
Date: 12/07
Project No. 06077-01

GRANITE REEF WASH DRAINAGE STUDY
AND PRELIMINARY DESIGN PROJECT

CITY OF SCOTTSDALE STORMWATER MANAGEMENT
PROJECT NO. F207

EXHIBIT 1

HEC-1 SCHEMATIC DRAWING

ORIGINAL DRAWING CREATED BY:

Entellus™

FOR:

GRANITE REEF DRAINAGE MASTER PLAN
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

3. Indian School Road 72" Storm Drain Update

Job No. 06077-01 Sheet 1 of 1 Prepared by RAK Date 2/27/07

Project Name Granite Reef Wash Reviewed by JKK Date 2/28/07

Title Indian School Rd. 2-72"RCP FWA No.

Two 72" RCP storm drains were assumed to exist in Indian School Rd. Calculations were performed using Flowmaster based on the design* previously done by Dibble + Associates.

A new flow of 280 cfs was applied to the HEC-1 model using FCDMC assumptions:

- The total flow is equally divided between diversions DE01, DE02, DE03, DE09, and the basin east of the project area.
- A 20% clogging factor is applied to the storm drain.

SLOPE DATA FROM DIBBLE PLANS FOR INDIAN SCHOOL ROAD STORMDRAIN (EXISTING & PROPOSED) WAS USED TO UPDATE CAPACITY USED IN HEC-1 MODEL JKK

Indian School Road 72" RCP

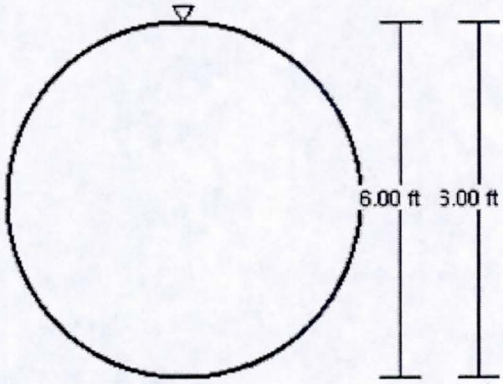
Project Description

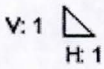
Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00110	ft/ft
Normal Depth	6.00	ft
Diameter	6.00	ft
Discharge	140.45	ft³/s

Cross Section Image





Indian School Road 72" RCP

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00110	ft/ft
Normal Depth	6.00	ft
Diameter	6.00	ft

Results

Discharge	140.45	ft^3/s
Flow Area	28.27	ft^2
Wetted Perimeter	18.85	ft
Top Width	0.00	ft
Critical Depth	3.21	ft
Percent Full	100.0	%
Critical Slope	0.00349	ft/ft
Velocity	4.97	ft/s
Velocity Head	0.38	ft
Specific Energy	6.38	ft
Froude Number	0.00	
Maximum Discharge	151.09	ft^3/s
Discharge Full	140.45	ft^3/s
Slope Full	0.00110	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

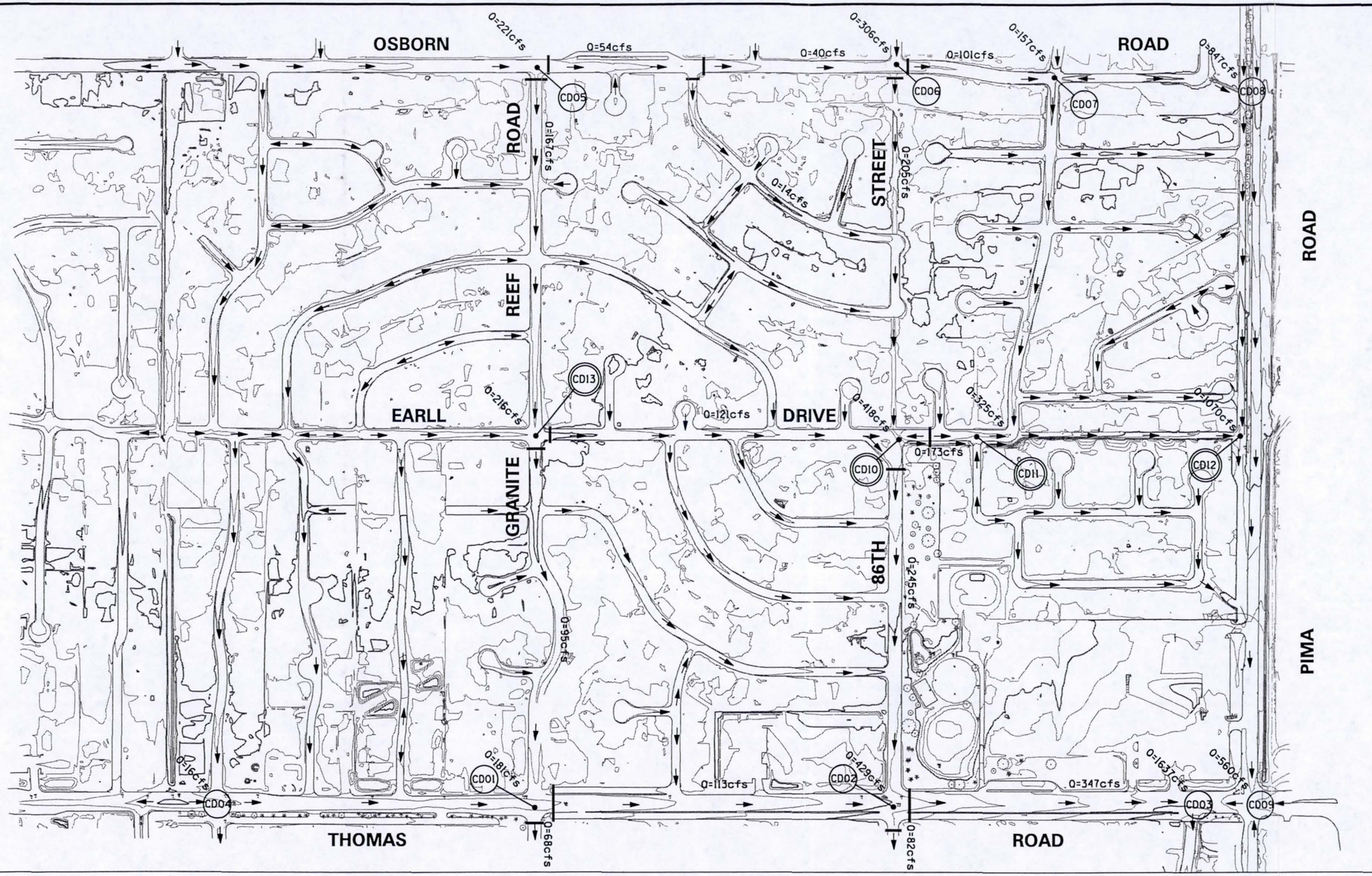
Indian School Road 72" RCP

GVF Output Data

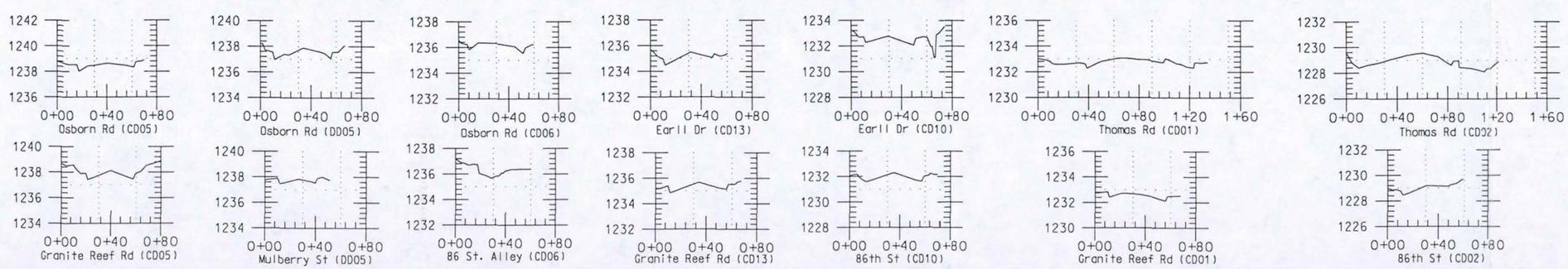
Normal Depth	6.00	ft
Critical Depth	3.21	ft
Channel Slope	0.00110	ft/ft
Critical Slope	0.00349	ft/ft

4. Interception Area – Updates to original HEC-1 Model

PLOT DATE:$$DATE$$ $$TIME$$



CROSS-SECTIONS USED FOR SPLIT FLOW CALCULATIONS



LEGEND

- CD08 — HEC-1 CONCENTRATION POINT
- CD10 — NEW HEC-1 CONCENTRATION POINT
- → FLOW DIRECTION
- Q=173cfs — 100-YR, 6-HR PEAK FLOW (HEC-1)
- CROSS SECTION LOCATION

N

400 0 400
SCALE
HORIZ: 1"=400'

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GRANITE REEF WASH
DRAINAGE STUDY

FIGURE 2

RESIDENTIAL FLOW PATTERNS
AND FLOW SPLIT LOCATIONS

Job No. 06077-01 Sheet 1 of 3 Prepared by RAK Date 5/31/07

Project Name Granite Reef Wash Reviewed by [illegible] Date 7/6/07

Title HEC-1 changes between Osborn + Thomas FWA No.

The purpose of these changes was to add more detail within the proposed interception area located between Osborn Rd. and Thomas Rd. of the watershed. Based on updated 1' contour mapping (Vertical Mapping Resources Inc., April 2007), additional concentration points and flow splits were analyzed and included in the HEC-1 model (FCDMC, 2002):

- 4 concentration points were added along the alignment of Earll Dr. at Granite Reef Rd. (CD13), 86th St. (CD10), 87th St. (CD11) and Pima Rd. (CD12)
- 4 flow splits were added and analyzed for CD02, CD06, CD10 and CD13. The flow diversions are DD02, DD06, DD10 and DD13, respectively.
- 3 existing flow diversions (DD01, DD05, DD052) were reanalyzed.
- Basins D02 + D03 were divided along Earll Dr. to accommodate the new concentration points (CD10 + CD12). D02 and D03 were divided into D02A + D02B and D03A + D03B, respectively.
- West of Granite Reef Rd., the basin boundaries were modified based on the new mapping. Basins D01 + D04 were tweaked and sub basin D13 was added due to the addition of CD13.

Based on the addition of concentration points and flow diversions, routes were created and adjusted where necessary to accommodate the changes. All slopes and lengths were obtained from the updated 1' contour mapping.

Job No. 06077-01 Sheet 2 of 3 Prepared by RAK Date 5/31/07

Project Name Granite Reef Wash Reviewed by JAR Date 7/6/07

Title HEC-1 changes between Osborn + Thomas FWA No.

All flow splits were determined using normal depth calculations and were performed as follows:

1. Rating tables were developed for each direction of the flow split using Flowmaster to determine the flow at different elevations. The cross-sections were taken from the DTM of the area. (DTM obtained from Vertical Mapping Resources Inc., April 2007)
2. An Excel table was created for the flow diversion to summerize the split. By taking the total of the flows for each direction at every elevation increment, a rating table is established that shows the diversion for a given inflow.
3. The HEC-1 model was then updated based on the Excel summary tables. Q_{TOTAL} was inputed into the DI card and the diverted street flow was used in the DQ card.

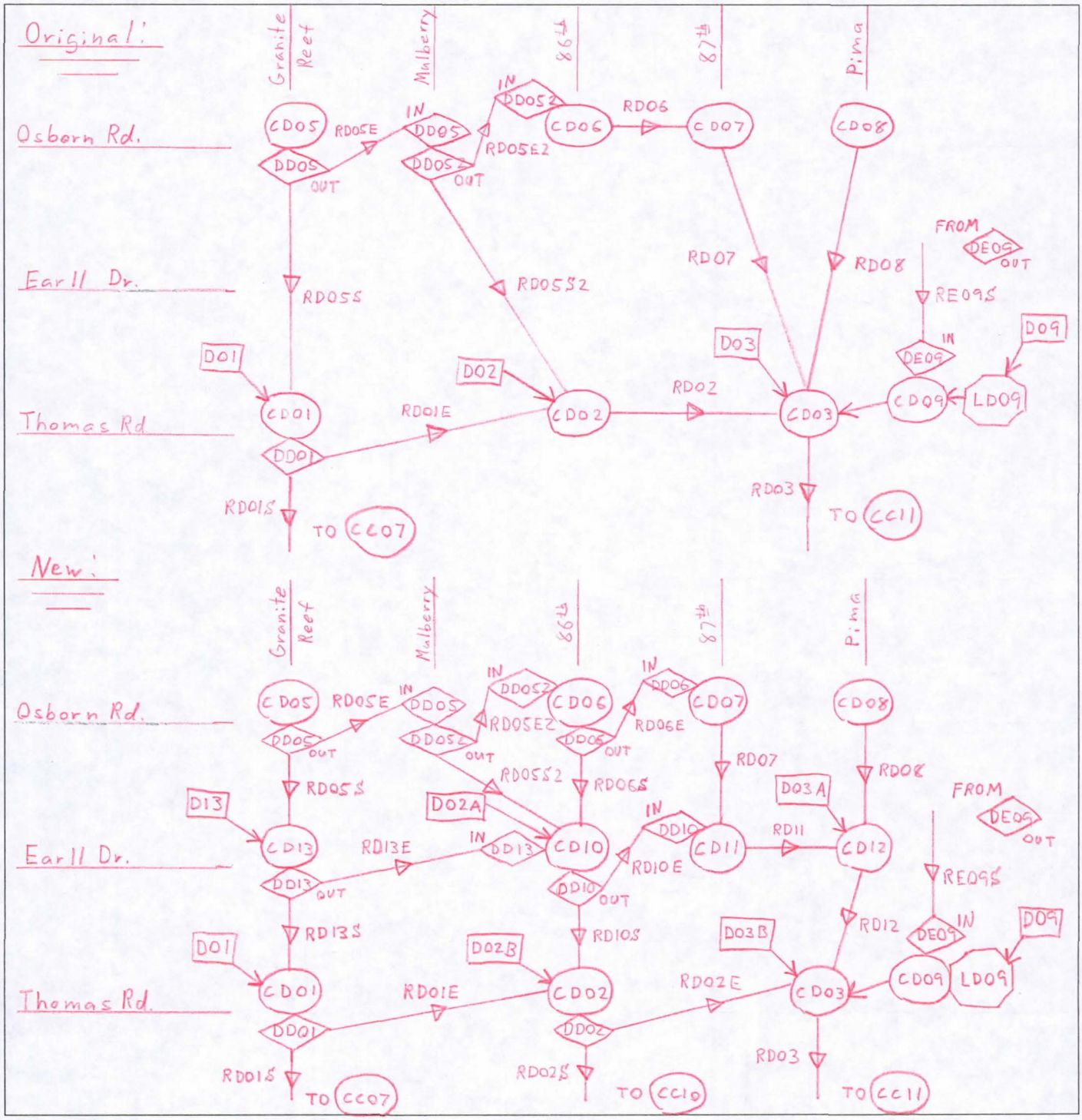
Basins D02 + D03 were split by dividing their areas in half and recalculating the time of concentration (Tc) + storage coefficient (R) using FCDMC's DDMS program. Land use + rainfall data was taken from FCDMC's 2002 study.

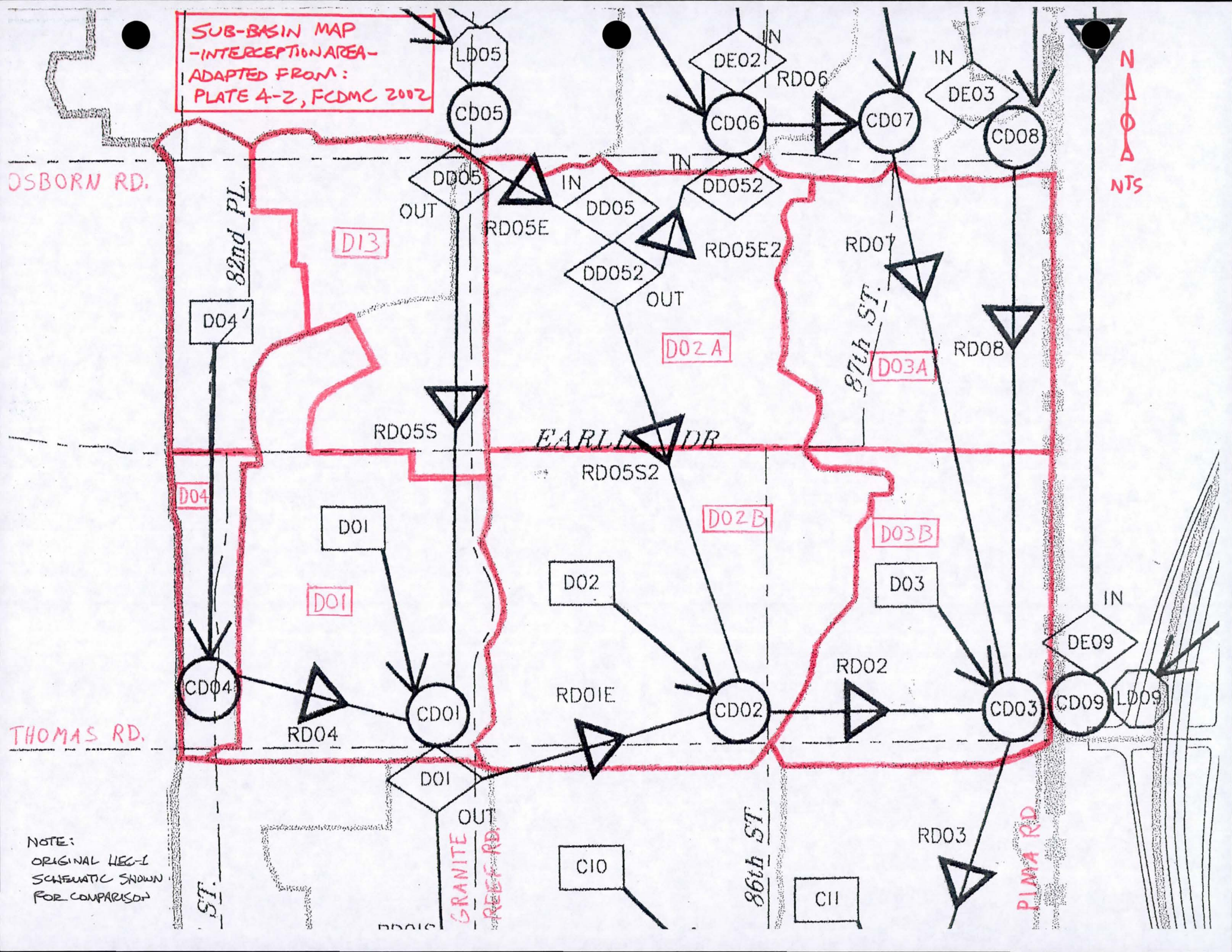
Basins D01, D04 and D13 were also calculated using FCDMC's DDMS program. All basin parameters were determind using the updated 1' contour mapping (area, length, slope). Land use, soils data and rainfall data were also taken from FCDMC's 2002 study.

Job No. 06077-01 Sheet 3 of 3 Prepared by RAK Date 5/31/07

Project Name Granite Reef Wash Reviewed by JPK Date 7/6/07

Title HEC-1 Schematic Changes FWA No.




SUB-BASIN MAP
-INTERCEPTION AREA-
ADAPTED FROM:
PLATE 4-2, FCDMC 2002
LD05
CD05
DE02
IN
RD06
CD06
CD07
DE03
IN
CD08
N
NTS
OSBORN RD.
82nd PL.
DD05
OUT
IN
DD05
RD05E
IN
DD052
RD05E2
DD052
OUT
RD07
87th ST.
D13
D04
D02A
D03A
RD08
RD05S
EARLL DR
RD05S2
D04
D01
D02B
D03B
D01
D02
D03
IN
DE09
CD04
RD04
CD01
RD01E
CD02
RD02
CD03
CD09
LD09
THOMAS RD.
D01
OUT
RD03
NOTE:
ORIGINAL HEC-1
SCHEMATIC SHOWN
FOR COMPARISON
ST.
GRANITE
REEF RD.
C10
86th ST.
C11
PIMA RD.

City of Scottsdale
Drainage Design Management System
SUB BASINS
Project Reference: GRANITE REEF WASH

Area ID	Sub Basin Parameters: Area (sq mi)	Length (mi)	Slope (ft/mi)	Adj Slope	Time-Area	Kb	Rainfall Losses: IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)		Return Period Parameters: 2 Yr	5 Yr	10 Yr	25 Yr	50 Yr	100 Yr
Major Basin 01																		
D01	0.081	0.80	9.0	9.0	URBAN	0.029	0.24	0.25	4.80	0.35	47	**Tc (Hrs)**	1.004*	0.989*	0.908	0.824	0.770	0.728
												Vel (f/s)	1.17	1.19	1.29	1.42	1.52	1.61
												R (Hrs)	1.301	1.280	1.164	1.045	0.969	0.911
D02A	0.070	0.44	13.4	13.4	URBAN	0.058	0.23	0.25	4.80	0.36	51	**Tc (Hrs)**	0.940*	0.730	0.640	0.550	0.500	0.471
												Vel (f/s)	0.69	0.88	1.01	1.17	1.29	1.37
												R (Hrs)	0.816	0.616	0.532	0.450	0.405	0.379
D02B	0.070	0.50	14.0	14.0	URBAN	0.058	0.23	0.25	4.80	0.36	51	**Tc (Hrs)**	1.010*	0.780	0.700	0.600	0.550	0.504
												Vel (f/s)	0.73	0.94	1.05	1.22	1.33	1.46
												R (Hrs)	0.977	0.733	0.650	0.548	0.497	0.452
D03A	0.052	0.50	17.8	17.8	URBAN	0.060	0.20	0.25	4.50	0.45	52	**Tc (Hrs)**	0.940*	0.730	0.640	0.560	0.510	0.471
												Vel (f/s)	0.78	1.00	1.15	1.31	1.44	1.56
												R (Hrs)	1.070	0.808	0.698	0.602	0.543	0.497
D03B	0.052	0.48	14.6	14.6	URBAN	0.060	0.20	0.25	4.50	0.45	52	**Tc (Hrs)**	1.000*	0.770	0.680	0.600	0.540	0.500
												Vel (f/s)	0.70	0.91	1.04	1.17	1.30	1.41
												R (Hrs)	1.109	0.830	0.723	0.629	0.560	0.514
D04	0.013	0.27	10.4	10.4	URBAN	0.034	0.24	0.25	4.80	0.35	46	**Tc (Hrs)**	0.612	0.603	0.553	0.501	0.468	0.443
												Vel (f/s)	0.65	0.66	0.72	0.79	0.85	0.89
												R (Hrs)	0.895	0.880	0.799	0.716	0.664	0.625
D13	0.044	0.45	9.6	9.6	URBAN	0.031	0.24	0.25	4.80	0.35	46	**Tc (Hrs)**	0.769	0.758	0.696	0.631	0.589	0.557
												Vel (f/s)	0.86	0.87	0.95	1.05	1.12	1.18
												R (Hrs)	0.866	0.852	0.775	0.695	0.644	0.605

* Non default value or value out of range

City of Scottsdale
Drainage Design Management System
LAND USE
Project Reference: GRANITE REEF WASH

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kb
Major Basin 01								
D01	170	0.075	93.3	0.25	45	50.0	NORMAL	0.03
	220	0.002	2.5	0.10	80	65.0	NORMAL	0.04
	600	0.003	4.2	0.10	80	75.0	NORMAL	0.04
		0.081	**100.0**					
D02A	140	0.004	2.9	0.25	50 *	50.0	NORMAL	0.07 *
	140	0.114	81.4	0.25	50 *	50.0	NORMAL	0.05 *
	170	0.004	2.9	0.25	40 *	55.0 *	NORMAL	0.07 *
	200	0.004	2.9	0.10	80	70.0 *	NORMAL	0.04 *
	530	0.004	2.9	0.10	75 *	85.0 *	NORMAL	0.04
	610	0.005	3.6	0.05 *	95 *	80.0 *	NORMAL	0.07 *
	710	0.004	2.9	0.20 *	5	90.0	NORMAL	0.14 *
	710	0.001	0.7	0.20 *	5	90.0	NORMAL	0.15 *
		0.140	**100.2**					
D02B	140	0.004	2.9	0.25	50 *	50.0	NORMAL	0.07 *
	140	0.114	81.4	0.25	50 *	50.0	NORMAL	0.05 *
	170	0.004	2.9	0.25	40 *	55.0 *	NORMAL	0.07 *
	200	0.004	2.9	0.10	80	70.0 *	NORMAL	0.04
	530	0.004	2.9	0.10	75 *	85.0 *	NORMAL	0.04
	610	0.005	3.6	0.05 *	95 *	80.0 *	NORMAL	0.07 *
	710	0.004	2.9	0.20 *	5	90.0	NORMAL	0.14 *
	710	0.001	0.7	0.20 *	5	90.0	NORMAL	0.15 *
		0.140	**100.2**					
D03A	140	0.052	50.0	0.25	50 *	50.0	NORMAL	0.06 *
	170	0.020	19.2	0.25	40 *	55.0 *	NORMAL	0.06 *
	200	0.013	12.5	0.10	80	70.0 *	NORMAL	0.03
	530	0.001	1.0	0.10	75 *	85.0 *	NORMAL	0.04
	610	0.009	8.7	0.05 *	95 *	80.0 *	NORMAL	0.07 *
	710	0.004	3.8	0.20 *	5	90.0	NORMAL	0.14 *
	900	0.005	4.8	0.10 *	5 *	15.0 *	DRY	0.04 *
		0.104	**100.0**					
D03B	140	0.052	50.0	0.25	50 *	50.0	NORMAL	0.06 *
	170	0.020	19.2	0.25	40 *	55.0 *	NORMAL	0.06 *
	200	0.013	12.5	0.10	80	70.0 *	NORMAL	0.03
	530	0.001	1.0	0.10	75 *	85.0 *	NORMAL	0.04
	610	0.009	8.7	0.05 *	95 *	80.0 *	NORMAL	0.07 *

* Non default value

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kb
Major Basin 01								
D03B	710	0.004	3.8	0.20 *	5	90.0	NORMAL	0.14 *
	900	0.005	4.8	0.10 *	5 *	15.0 *	DRY	0.04 *
		0.104	**100.0**					
D04	170	0.013	96.3	0.25	45	50.0	NORMAL	0.03
	600	0.001	3.7	0.10	80	75.0	NORMAL	0.04
		0.013	**100.0**					
D13	170	0.042	95.9	0.25	45	50.0	NORMAL	0.03
	600	0.002	4.1	0.10	80	75.0	NORMAL	0.04
		0.044	**100.0**					

* Non default value

City of Scottsdale
Drainage Design Management System
SOILS
Project Reference: GRANITE REEF WASH

Area ID	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
D01	651422520	0.081	100.00	0.25	-	100
D02A	651422520	0.070	100.00	0.25	-	100
D02B	651422520	0.070	100.00	0.25	-	100
D03A	651422520	0.055	53.90	0.25	-	100
	655504720	0.007	6.90	0.40	-	100
	651323320	0.006	5.90	0.25	-	100
	655543720	0.034	33.30	0.40	-	100
D03B	651422520	0.055	53.90	0.25	-	100
	655504720	0.007	6.90	0.40	-	100
	651323320	0.006	5.90	0.25	-	100
	655543720	0.034	33.30	0.40	-	100
D04	651422520	0.013	100.00	0.25	-	100
D13	651422520	0.044	100.00	0.25	-	100

* Non default value

City of Scottsdale
Drainage Design Management System
RAINFALL DATA
Project Reference: GRANITE REEF WASH

2/5/2008

Duration	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Rainfall Method: NOAA						
5 MIN	0.33	0.42	0.49	0.58	0.66	0.73
10 MIN	0.49	0.64	0.74	0.89	1.00	1.12
15 MIN	0.59	0.80	0.94	1.13	1.28	1.43
30 MIN	0.79	1.07	1.26	1.53	1.74	1.94
1 HOUR	0.96	1.32	1.57	1.90	2.17	2.43
2 HOUR	1.04	1.45	1.73	2.10	2.40	2.69
3 HOUR	1.10	1.54	1.83	2.24	2.55	2.87
6 HOUR	1.20	1.70	2.03	2.49	2.85	3.20
12 HOUR	1.30	1.88	2.26	2.79	3.20	3.60
24 HOUR	1.40	2.06	2.49	3.09	3.54	4.00

Osborn Rd. & Granite Reef Rd. Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

		Osborn Rd.	Granite Reef Rd.	DI
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1237.41	0	0	0	0
1237.51	0.1	0	0.07	0.1
1237.61	0.2	0	0.60	0.6
1237.71	0.3	0	2.0	2.0
1237.81	0.4	0	4.5	4.5
1237.91	0.5	0	5.6	5.6
1238.01	0.6	0	6.1	6.1
1238.11	0.7	0.03	8.3	8.4
1238.21	0.8	0.17	11.7	11.8
1238.31	0.9	0.50	15.6	16.1
1238.41	1	0.98	20.1	21.1
1238.51	1.1	2.0	25.2	27.2
1238.61	1.2	2.9	31.0	33.9
1238.71	1.3	5.1	37.4	42.5
1238.81	1.4	7.4	44.4	51.8
1238.91	1.5	9.7	52.2	61.9
1239.01	1.6	12.5	60.7	73.2
1239.11	1.7	15.7	70.0	85.7
1239.21	1.8	19.3	80.0	99.3
1239.31	1.9	23.3	90.9	114.1
1239.41	2	27.7	102.5	130.2
1239.51	2.1	32.6	115.0	147.6
1239.61	2.2	38.0	128.4	166.3
1239.71	2.3	43.8	142.6	186.4
1239.81	2.4	50.1	157.7	207.8
1239.91	2.5	56.9	173.8	230.7

Corresponding HEC-1 ID: DD05

Osborn Rd. (Osborn / Granite Reef) - DD05

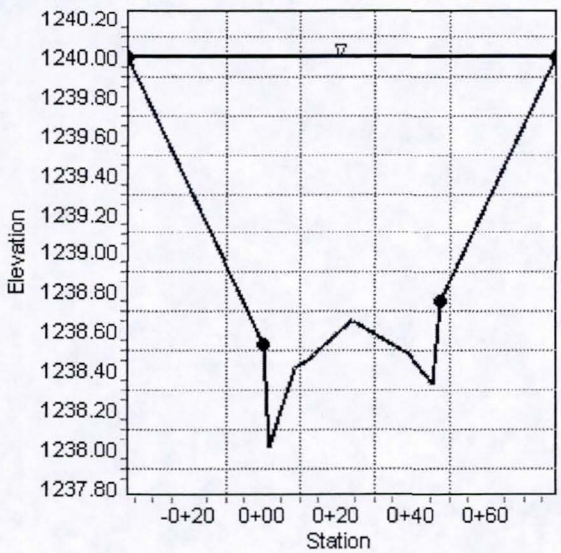
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00075	ft/ft
Normal Depth	1.99	ft
Discharge	63.42	ft^3/s

Cross Section Image



Osborn Rd. (Osborn / Granite Reef) - DD05

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00075	ft/ft
Normal Depth	1.99	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+37	1240.00
0+00	1238.53
0+01	1238.17
0+02	1238.01
0+08	1238.41
0+13	1238.46
0+14	1238.48
0+24	1238.65
0+24	1238.65
0+39	1238.48
0+39	1238.48
0+46	1238.33
0+47	1238.75
0+79	1240.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+37, 1240.00)	(0+00, 1238.53)	0.100
(0+00, 1238.53)	(0+47, 1238.75)	0.020
(0+47, 1238.75)	(0+79, 1240.00)	0.100

Results

Discharge	63.42	ft^3/s
Elevation Range	1238.01 to 1240.00 ft	

Osborn Rd. (Osborn / Granite Reef) - DD05

Results

Flow Area		118.94	ft²
Wetted Perimeter		115.48	ft
Top Width		115.28	ft
Normal Depth		1.99	ft
Critical Depth		0.84	ft
Critical Slope		0.12758	ft/ft
Velocity		0.53	ft/s
Velocity Head		0.00	ft
Specific Energy		1.99	ft
Froude Number		0.09	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.99	ft
Critical Depth	0.84	ft
Channel Slope	0.00075	ft/ft
Critical Slope	0.12758	ft/ft

Osborn Rd. (Osborn / Granite Reef) - DD05

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00075	ft/ft
Normal Depth	1.99	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+37	1240.00
0+00	1238.53
0+01	1238.17
0+02	1238.01
0+08	1238.41
0+13	1238.46
0+14	1238.48
0+24	1238.65
0+24	1238.65
0+39	1238.48
0+39	1238.48
0+46	1238.33
0+47	1238.75
0+79	1240.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+37, 1240.00)	(0+00, 1238.53)	0.100
(0+00, 1238.53)	(0+47, 1238.75)	0.020
(0+47, 1238.75)	(0+79, 1240.00)	0.100

Osborn Rd. (Osborn / Granite Reef) - DD05

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1237.41					
1237.51					
1237.61					
1237.71					
1237.81					
1237.91					
1238.01					
1238.11	0.03	0.27	0.10	1.98	1.96
1238.21	0.17	0.43	0.39	3.98	3.94
1238.31	0.50	0.57	0.89	6.02	5.97
1238.41	0.98	0.57	1.73	11.78	11.69
1238.51	1.97	0.55	3.57	25.35	25.23
1238.61	2.89	0.42	6.93	42.46	42.32
1238.71	5.11	0.43	11.81	51.77	51.62
1238.81	7.36	0.43	17.15	55.94	55.78
1238.91	9.71	0.42	22.98	60.94	60.78
1239.01	12.49	0.43	29.31	65.94	65.78
1239.11	15.67	0.43	36.14	70.95	70.78
1239.21	19.27	0.44	43.47	75.95	75.78
1239.31	23.28	0.45	51.29	80.96	80.78
1239.41	27.72	0.46	59.62	85.96	85.78
1239.51	32.61	0.48	68.45	90.96	90.78
1239.61	37.95	0.49	77.78	95.97	95.78
1239.71	43.77	0.50	87.61	100.97	100.78
1239.81	50.07	0.51	97.93	105.98	105.78
1239.91	56.86	0.52	108.76	110.98	110.78

Granite Reef Rd. (Osborn / Granite Reef) - DD05

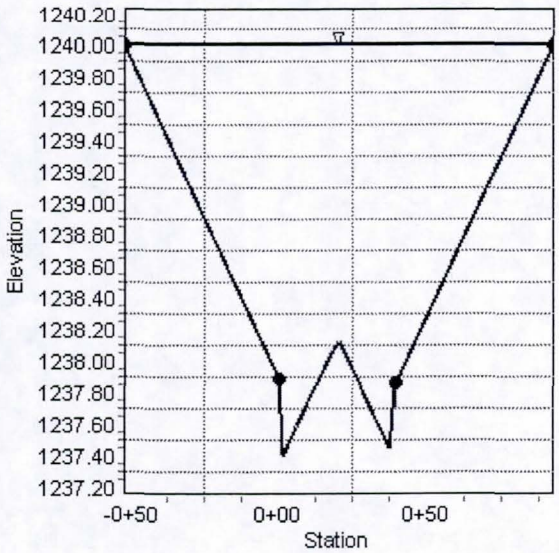
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00195	ft/ft
Normal Depth	2.59	ft
Discharge	189.08	ft³/s

Cross Section Image



Granite Reef Rd. (Osborn / Granite Reef) - DD05

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00195	ft/ft
Normal Depth	2.59	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+53	1240.00
0+00	1237.89
0+01	1237.47
0+01	1237.41
0+06	1237.59
0+18	1238.05
0+20	1238.13
0+22	1238.05
0+37	1237.46
0+38	1237.57
0+39	1237.87
0+93	1240.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+53, 1240.00)	(0+00, 1237.89)	0.100
(0+00, 1237.89)	(0+39, 1237.87)	0.020
(0+39, 1237.87)	(0+93, 1240.00)	0.100

Results

Discharge	189.08	ft^3/s
Elevation Range	1237.41 to 1240.00 ft	
Flow Area	200.34	ft^2
Wetted Perimeter	145.72	ft

Granite Reef Rd. (Osborn / Granite Reef) - DD05

Results

Top Width	145.48	ft
Normal Depth	2.59	ft
Critical Depth	1.16	ft
Critical Slope	0.12897	ft/ft
Velocity	0.94	ft/s
Velocity Head	0.01	ft
Specific Energy	2.60	ft
Froude Number	0.14	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.59	ft
Critical Depth	1.16	ft
Channel Slope	0.00195	ft/ft
Critical Slope	0.12897	ft/ft

Granite Reef Rd. (Osborn / Granite Reef) - DD05

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00195	ft/ft
Normal Depth	2.59	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+53	1240.00
0+00	1237.89
0+01	1237.47
0+01	1237.41
0+06	1237.59
0+18	1238.05
0+20	1238.13
0+22	1238.05
0+37	1237.46
0+38	1237.57
0+39	1237.87
0+93	1240.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+53, 1240.00)	(0+00, 1237.89)	0.100
(0+00, 1237.89)	(0+39, 1237.87)	0.020
(0+39, 1237.87)	(0+93, 1240.00)	0.100

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)

Granite Reef Rd. (Osborn / Granite Reef) - DD05

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1237.41					
1237.51	0.07	0.38	0.18	4.47	4.44
1237.61	0.60	0.65	0.93	10.54	10.48
1237.71	1.99	0.88	2.27	16.48	16.39
1237.81	4.52	1.08	4.21	22.42	22.30
1237.91	5.55	0.82	6.75	29.63	29.49
1238.01	6.10	0.60	10.21	39.85	39.70
1238.11	8.34	0.57	14.69	50.09	49.93
1238.21	11.65	0.58	20.03	56.15	55.98
1238.31	15.57	0.60	25.88	61.15	60.98
1238.41	20.09	0.62	32.23	66.15	65.98
1238.51	25.21	0.65	39.08	71.16	70.98
1238.61	30.96	0.67	46.42	76.16	75.98
1238.71	37.36	0.69	54.27	81.17	80.98
1238.81	44.44	0.71	62.62	86.17	85.98
1238.91	52.23	0.73	71.47	91.17	90.98
1239.01	60.74	0.75	80.82	96.18	95.98
1239.11	70.00	0.77	90.66	101.18	100.98
1239.21	80.03	0.79	101.01	106.19	105.98
1239.31	90.86	0.81	111.86	111.19	110.98
1239.41	102.51	0.83	123.21	116.19	115.98
1239.51	115.00	0.85	135.06	121.20	120.98
1239.61	128.35	0.87	147.40	126.20	125.98
1239.71	142.59	0.89	160.25	131.21	130.98
1239.81	157.73	0.91	173.60	136.21	135.98
1239.91	173.81	0.93	187.45	141.21	140.98

Osborn Rd. & Mulberry St. Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

DI

		Osborn Rd.	Mulberry St.	
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1236.97	0	0	0	0
1237.07	0.1	0.05	0	0.1
1237.17	0.2	0.33	0	0.3
1237.27	0.3	1.1	0	1.1
1237.37	0.4	2.5	0	2.5
1237.47	0.5	5.1	0	5.1
1237.57	0.6	8.2	0.12	8.3
1237.67	0.7	7.5	0.88	8.4
1237.77	0.8	10.1	2.9	13.0
1237.87	0.9	14.0	6.9	21.0
1237.97	1	19.5	6.9	26.4
1238.07	1.1	25.8	8.6	34.4
1238.17	1.2	32.9	11.1	44.1
1238.27	1.3	40.8	14.2	55.1
1238.37	1.4	49.5	18.0	67.5
1238.47	1.5	59.0	22.3	81.3
1238.57	1.6	69.3	27.2	96.5
1238.67	1.7	80.5	32.7	113.3
1238.77	1.8	92.6	38.9	131.6
1238.87	1.9	105.6	45.8	151.5
1238.97	2	119.5	53.5	173.0

Corresponding HEC-1 ID: DD052

Osborn Rd. (Osborn / Mulberry) - DD052

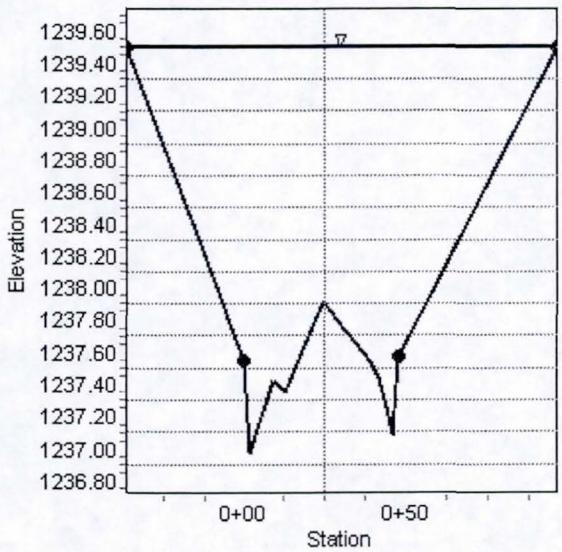
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00288	ft/ft
Normal Depth	2.53	ft
Discharge	209.72	ft³/s

Cross Section Image



Osborn Rd. (Osborn / Mulberry) - DD052

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00288	ft/ft
Normal Depth	2.53	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+36	1239.50
0+00	1237.55
0+00	1237.52
0+01	1236.97
0+07	1237.31
0+09	1237.42
0+13	1237.35
0+23	1237.88
0+24	1237.90
0+24	1237.90
0+26	1237.85
0+39	1237.54
0+42	1237.44
0+42	1237.39
0+44	1237.25
0+46	1237.08
0+47	1237.57
0+96	1239.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+36, 1239.50)	(0+00, 1237.55)	0.100
(0+00, 1237.55)	(0+47, 1237.57)	0.020
(0+47, 1237.57)	(0+96, 1239.50)	0.100

Osborn Rd. (Osborn / Mulberry) - DD052

Results

Discharge		209.72	ft^3/s
Elevation Range	1236.97 to 1239.50 ft		
Flow Area		175.85	ft^2
Wetted Perimeter		132.10	ft
Top Width		131.77	ft
Normal Depth		2.53	ft
Critical Depth		1.31	ft
Critical Slope		0.11334	ft/ft
Velocity		1.19	ft/s
Velocity Head		0.02	ft
Specific Energy		2.55	ft
Froude Number		0.18	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.53	ft
Critical Depth	1.31	ft
Channel Slope	0.00288	ft/ft
Critical Slope	0.11334	ft/ft

Osborn Rd. (Osborn / Mulberry) - DD052

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00288	ft/ft
Normal Depth	2.53	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+36	1239.50
0+00	1237.55
0+00	1237.52
0+01	1236.97
0+07	1237.31
0+09	1237.42
0+13	1237.35
0+23	1237.88
0+24	1237.90
0+24	1237.90
0+26	1237.85
0+39	1237.54
0+42	1237.44
0+42	1237.39
0+44	1237.25
0+46	1237.08
0+47	1237.57
0+96	1239.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+36, 1239.50)	(0+00, 1237.55)	0.100
(0+00, 1237.55)	(0+47, 1237.57)	0.020
(0+47, 1237.57)	(0+96, 1239.50)	0.100

Osborn Rd. (Osborn / Mulberry) - DD052

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1236.97					
1237.07	0.05	0.54	0.09	1.85	1.82
1237.17	0.33	0.76	0.43	5.11	5.05
1237.27	1.12	1.02	1.10	8.54	8.43
1237.37	2.47	1.16	2.14	13.67	13.52
1237.47	5.12	1.30	3.93	21.10	20.90
1237.57	8.22	1.31	6.28	26.90	26.67
1237.67	7.52	0.79	9.47	37.43	37.19
1237.77	10.08	0.73	13.72	47.96	47.71
1237.87	14.04	0.74	19.02	58.48	58.23
1237.97	19.46	0.77	25.26	65.34	65.08
1238.07	25.82	0.81	31.99	69.70	69.44
1238.17	32.93	0.84	39.15	74.07	73.80
1238.27	40.82	0.87	46.75	78.43	78.15
1238.37	49.50	0.90	54.78	82.79	82.51
1238.47	59.00	0.93	63.25	87.16	86.87
1238.57	69.33	0.96	72.16	91.52	91.23
1238.67	80.53	0.99	81.50	95.89	95.59
1238.77	92.62	1.01	91.27	100.25	99.95
1238.87	105.61	1.04	101.49	104.61	104.31
1238.97	119.52	1.07	112.14	108.98	108.67
1239.07	134.40	1.09	123.22	113.34	113.03
1239.17	150.24	1.12	134.74	117.70	117.39
1239.27	167.08	1.14	146.70	122.07	121.74
1239.37	184.94	1.16	159.09	126.43	126.10
1239.47	203.84	1.19	171.92	130.79	130.46

Mulberry St. (Osborn / Mulberry) - DD052

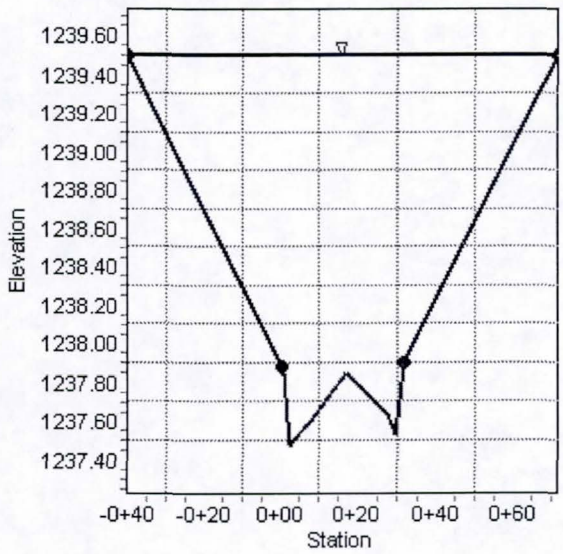
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00227	ft/ft
Normal Depth	2.03	ft
Discharge	106.86	ft^3/s

Cross Section Image



Mulberry St. (Osborn / Mulberry) - DD052

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00227	ft/ft
Normal Depth	2.03	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+41	1239.50
0+00	1237.88
0+00	1237.84
0+02	1237.47
0+03	1237.49
0+07	1237.59
0+16	1237.85
0+27	1237.63
0+30	1237.53
0+31	1237.90
0+71	1239.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+41, 1239.50)	(0+00, 1237.88)	0.100
(0+00, 1237.88)	(0+31, 1237.90)	0.020
(0+31, 1237.90)	(0+71, 1239.50)	0.100

Results

Discharge	106.86	ft^3/s
Elevation Range	1237.47 to 1239.50 ft	
Flow Area	121.93	ft^2
Wetted Perimeter	112.06	ft
Top Width	111.90	ft

Mulberry St. (Osborn / Mulberry) - DD052

Results

Normal Depth	2.03	ft
Critical Depth	0.89	ft
Critical Slope	0.13537	ft/ft
Velocity	0.88	ft/s
Velocity Head	0.01	ft
Specific Energy	2.04	ft
Froude Number	0.15	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.03	ft
Critical Depth	0.89	ft
Channel Slope	0.00227	ft/ft
Critical Slope	0.13537	ft/ft

Mulberry St. (Osborn / Mulberry) - DD052

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00227	ft/ft
Normal Depth	2.03	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+41	1239.50
0+00	1237.88
0+00	1237.84
0+02	1237.47
0+03	1237.49
0+07	1237.59
0+16	1237.85
0+27	1237.63
0+30	1237.53
0+31	1237.90
0+71	1239.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+41, 1239.50)	(0+00, 1237.88)	0.100
(0+00, 1237.88)	(0+31, 1237.90)	0.020
(0+31, 1237.90)	(0+71, 1239.50)	0.100

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1236.97					

Mulberry St. (Osborn / Mulberry) - DD052

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1237.07					
1237.17					
1237.27					
1237.37					
1237.47					
1237.57	0.12	0.44	0.27	6.08	6.06
1237.67	0.88	0.70	1.25	14.18	14.13
1237.77	2.89	0.92	3.14	23.59	23.52
1237.87	6.94	1.17	5.94	31.31	31.22
1237.97	6.93	0.75	9.24	35.50	35.40
1238.07	8.60	0.66	13.03	40.50	40.40
1238.17	11.12	0.64	17.32	45.51	45.40
1238.27	14.24	0.64	22.11	50.51	50.40
1238.37	17.95	0.66	27.40	55.52	55.40
1238.47	22.26	0.67	33.19	60.52	60.40
1238.57	27.17	0.69	39.48	65.52	65.40
1238.67	32.72	0.71	46.27	70.53	70.40
1238.77	38.94	0.73	53.56	75.53	75.40
1238.87	45.84	0.75	61.35	80.54	80.40
1238.97	53.46	0.77	69.64	85.54	85.40
1239.07	61.82	0.79	78.43	90.54	90.40
1239.17	70.96	0.81	87.72	95.55	95.40
1239.27	80.88	0.83	97.51	100.55	100.40
1239.37	91.63	0.85	107.80	105.56	105.40
1239.47	103.22	0.87	118.59	110.56	110.40

Osborn Rd. & 86th St. (Alley) Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

		Osborn Rd.	86th St.	DI
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1235.55	0	0	0	0
1235.65	0.1	0.04	0	0.0
1235.75	0.2	0.26	0.09	0.4
1235.85	0.3	0.75	0.67	1.4
1235.95	0.4	1.7	2.3	3.9
1236.05	0.5	1.6	5.3	6.8
1236.15	0.6	2.3	10.0	12.3
1236.25	0.7	3.8	16.6	20.4
1236.35	0.8	5.8	25.2	30.9
1236.45	0.9	9.8	35.1	44.8
1236.55	1	14.7	46.2	60.9
1236.65	1.1	20.3	58.5	78.8
1236.75	1.2	26.6	72.0	98.6
1236.85	1.3	33.8	86.7	120.5
1236.95	1.4	41.7	102.4	144.1
1237.05	1.5	50.4	119.0	169.5
1237.15	1.6	60.0	136.5	196.5
1237.25	1.7	70.4	154.8	225.2
1237.35	1.8	81.7	173.9	255.6
1237.45	1.9	93.9	193.8	287.7
1237.55	2	107.0	214.4	321.4
1237.65	2.1	121.1	235.6	356.7
1237.75	2.2	136.2	257.5	393.7
1237.85	2.3	152.2	280.1	432.3

Corresponding HEC-1 ID: DD06

Osborn Rd. (Osborn / 86th) - DD06

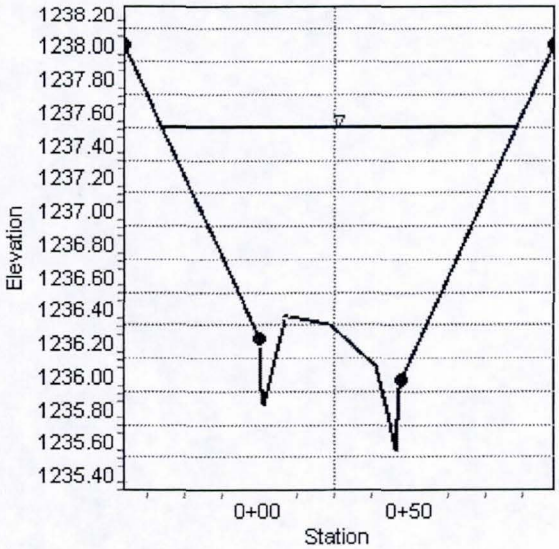
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	1.95	ft
Discharge	100.36	ft³/s

Cross Section Image



Osborn Rd. (Osborn / 86th) - DD06

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	1.95	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+45	1238.00
0+00	1236.22
0+00	1236.18
0+01	1235.92
0+01	1235.82
0+08	1236.35
0+08	1236.36
0+10	1236.36
0+23	1236.31
0+23	1236.31
0+23	1236.31
0+38	1236.06
0+42	1235.77
0+45	1235.55
0+46	1235.93
0+46	1235.98
0+97	1238.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+45, 1238.00)	(0+00, 1236.22)	0.100
(0+00, 1236.22)	(0+46, 1235.98)	0.020
(0+46, 1235.98)	(0+97, 1238.00)	0.100

Osborn Rd. (Osborn / 86th) - DD06

Results

Discharge		100.36	ft^3/s
Elevation Range	1235.55 to 1238.00 ft		
Flow Area		112.39	ft^2
Wetted Perimeter		116.69	ft
Top Width		116.48	ft
Normal Depth		1.95	ft
Critical Depth		1.06	ft
Critical Slope		0.12299	ft/ft
Velocity		0.89	ft/s
Velocity Head		0.01	ft
Specific Energy		1.96	ft
Froude Number		0.16	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.95	ft
Critical Depth	1.06	ft
Channel Slope	0.00234	ft/ft
Critical Slope	0.12299	ft/ft

Osborn Rd. (Osborn / 86th) - DD06

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	1.95	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+45	1238.00
0+00	1236.22
0+00	1236.18
0+01	1235.92
0+01	1235.82
0+08	1236.35
0+08	1236.36
0+10	1236.36
0+23	1236.31
0+23	1236.31
0+23	1236.31
0+38	1236.06
0+42	1235.77
0+45	1235.55
0+46	1235.93
0+46	1235.98
0+97	1238.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+45, 1238.00)	(0+00, 1236.22)	0.100
(0+00, 1236.22)	(0+46, 1235.98)	0.020
(0+46, 1235.98)	(0+97, 1238.00)	0.100

Osborn Rd. (Osborn / 86th) - DD06

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1235.55					
1235.65	0.04	0.48	0.09	1.74	1.72
1235.75	0.26	0.77	0.34	3.47	3.44
1235.85	0.75	0.96	0.78	5.70	5.65
1235.95	1.65	1.09	1.52	9.12	9.04
1236.05	1.56	0.59	2.64	13.93	13.82
1236.15	2.30	0.51	4.48	23.52	23.39
1236.25	3.77	0.51	7.33	34.25	34.09
1236.35	5.75	0.50	11.53	55.20	55.03
1236.45	9.76	0.55	17.65	64.15	63.98
1236.55	14.65	0.60	24.30	69.15	68.98
1236.65	20.27	0.64	31.45	74.15	73.98
1236.75	26.64	0.68	39.09	79.16	78.98
1236.85	33.77	0.71	47.24	84.16	83.98
1236.95	41.70	0.75	55.89	89.17	88.98
1237.05	50.43	0.78	65.04	94.17	93.98
1237.15	59.99	0.80	74.69	99.17	98.98
1237.25	70.41	0.83	84.83	104.18	103.98
1237.35	81.71	0.86	95.48	109.18	108.98
1237.45	93.91	0.88	106.63	114.19	113.98
1237.55	107.04	0.90	118.28	119.19	118.98
1237.65	121.12	0.93	130.43	124.19	123.98
1237.75	136.17	0.95	143.07	129.20	128.98
1237.85	152.22	0.97	156.22	134.20	133.98
1237.95	169.28	1.00	169.87	139.21	138.98
1238.05	190.12	1.03	183.96	141.81	141.48

86th St. Alley (Osborn / 86th) - DD06

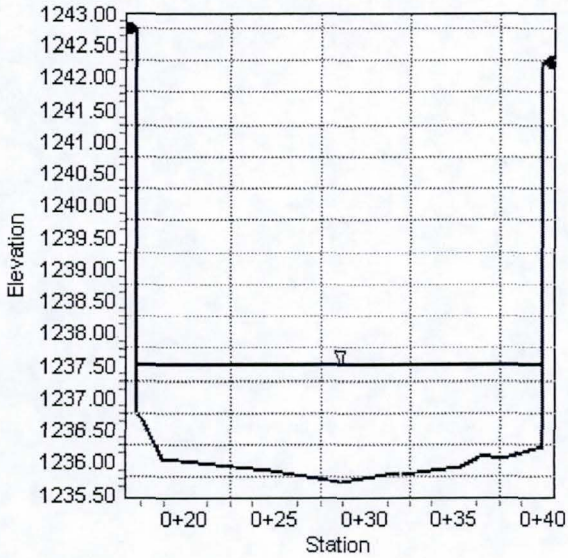
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00370	ft/ft
Normal Depth	1.84	ft
Discharge	203.97	ft^3/s

Cross Section Image



86th St. Alley (Osborn / 86th) - DD06

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00370	ft/ft
Normal Depth	1.84	ft

Section Definitions

Station (ft)	Elevation (ft)
0+17	1242.76
0+17	1242.76
0+17	1236.76
0+17	1236.63
0+19	1236.05
0+25	1235.86
0+29	1235.66
0+31	1235.78
0+32	1235.81
0+35	1235.91
0+36	1236.01
0+37	1236.10
0+38	1236.05
0+40	1236.24
0+40	1242.24
0+40	1242.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+17, 1242.76)	(0+40, 1242.24)	0.020

Results

Discharge	203.97	ft^3/s
Elevation Range	1235.66 to 1242.76 ft	

86th St. Alley (Osborn / 86th) - DD06

Results

Flow Area	35.56	ft²
Wetted Perimeter	24.87	ft
Top Width	22.66	ft
Normal Depth	1.84	ft
Critical Depth	1.63	ft
Critical Slope	0.00582	ft/ft
Velocity	5.74	ft/s
Velocity Head	0.51	ft
Specific Energy	2.35	ft
Froude Number	0.81	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.84	ft
Critical Depth	1.63	ft
Channel Slope	0.00370	ft/ft
Critical Slope	0.00582	ft/ft

86th St. Alley (Osborn / 86th) - DD06

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00370	ft/ft
Normal Depth	1.84	ft

Section Definitions

Station (ft)	Elevation (ft)
0+17	1242.76
0+17	1242.76
0+17	1236.76
0+17	1236.63
0+19	1236.05
0+25	1235.86
0+29	1235.66
0+31	1235.78
0+32	1235.81
0+35	1235.91
0+36	1236.01
0+37	1236.10
0+38	1236.05
0+40	1236.24
0+40	1242.24
0+40	1242.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+17, 1242.76)	(0+40, 1242.24)	0.020

86th St. Alley (Osborn / 86th) - DD06

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1235.55					
1235.65					
1235.75	0.09	0.57	0.16	3.62	3.61
1235.85	0.67	0.90	0.75	8.36	8.35
1235.95	2.25	1.20	1.88	13.76	13.74
1236.05	5.25	1.52	3.45	17.63	17.60
1236.15	9.99	1.86	5.38	20.43	20.37
1236.25	16.61	2.22	7.49	21.75	21.66
1236.35	25.17	2.60	9.66	22.08	21.86
1236.45	35.07	2.96	11.86	22.40	22.06
1236.55	46.21	3.28	14.07	22.73	22.26
1236.65	58.53	3.59	16.31	23.05	22.46
1236.75	71.99	3.88	18.56	23.36	22.64
1236.85	86.70	4.16	20.83	23.57	22.66
1236.95	102.41	4.43	23.10	23.77	22.66
1237.05	119.03	4.69	25.36	23.97	22.66
1237.15	136.51	4.94	27.63	24.17	22.66
1237.25	154.83	5.18	29.89	24.37	22.66
1237.35	173.93	5.41	32.16	24.57	22.66
1237.45	193.78	5.63	34.43	24.77	22.66
1237.55	214.35	5.84	36.69	24.97	22.66
1237.65	235.60	6.05	38.96	25.17	22.66
1237.75	257.52	6.25	41.22	25.37	22.66
1237.85	280.07	6.44	43.49	25.57	22.66
1237.95	303.23	6.63	45.76	25.77	22.66
1238.05	326.98	6.81	48.02	25.97	22.66

Earll Dr. & Granite Reef Rd. Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

DI

		Earll Dr.	Granite Reef Rd.	
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1234.48	0	0	0	0
1234.58	0.1	0.05	0	0.1
1234.68	0.2	0.32	0	0.3
1234.78	0.3	0.94	0	0.9
1234.88	0.4	2.0	0	2.0
1234.98	0.5	3.0	0.12	3.1
1235.08	0.6	2.5	0.55	3.1
1235.18	0.7	3.3	1.3	4.6
1235.28	0.8	4.9	2.9	7.8
1235.38	0.9	7.4	5.8	13.2
1235.48	1	10.0	6.8	16.8
1235.58	1.1	13.7	8.4	22.0
1235.68	1.2	17.9	10.7	28.6
1235.78	1.3	22.7	14.3	37.0
1235.88	1.4	28.1	18.5	46.7
1235.98	1.5	34.2	23.3	57.5
1236.08	1.6	40.9	28.7	69.5
1236.18	1.7	48.2	34.6	82.9
1236.28	1.8	56.3	41.2	97.5
1236.38	1.9	65.1	48.4	113.5
1236.48	2	74.6	56.3	130.9
1236.58	2.1	84.9	64.9	149.7
1236.68	2.2	95.9	74.1	170.1
1236.78	2.3	107.8	84.1	191.9
1236.88	2.4	120.5	94.8	215.3
1236.98	2.5	134.0	106.3	240.3

Corresponding HEC-1 ID: DD13

Earll Dr. (Earll / Granite Reef) - DD13

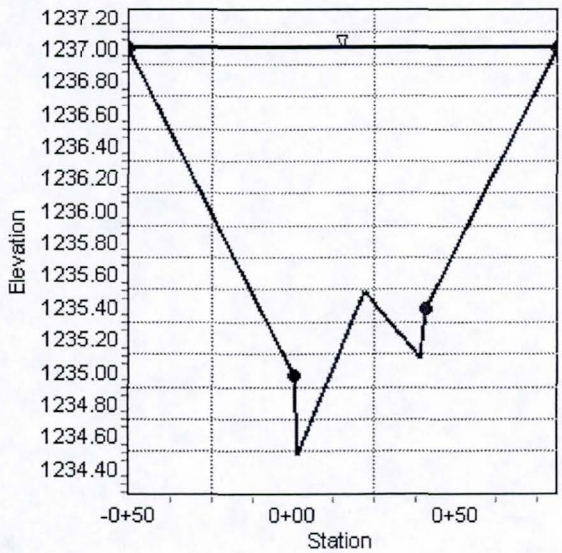
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00179	ft/ft
Normal Depth	2.52	ft
Discharge	136.85	ft³/s

Cross Section Image



Earll Dr. (Earll / Granite Reef) - DD13

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00179	ft/ft
Normal Depth	2.52	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+51	1237.00
0+00	1234.97
0+01	1234.75
0+02	1234.48
0+19	1235.35
0+22	1235.50
0+22	1235.48
0+24	1235.44
0+39	1235.08
0+40	1235.39
0+81	1237.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+51, 1237.00)	(0+00, 1234.97)	0.100
(0+00, 1234.97)	(0+40, 1235.39)	0.020
(0+40, 1235.39)	(0+81, 1237.00)	0.100

Results

Discharge	136.85	ft^3/s
Elevation Range	1234.48 to 1237.00 ft	
Flow Area	160.23	ft^2
Wetted Perimeter	131.61	ft
Top Width	131.41	ft

Earll Dr. (Earll / Granite Reef) - DD13

Results

Normal Depth	2.52	ft
Critical Depth	1.26	ft
Critical Slope	0.12969	ft/ft
Velocity	0.85	ft/s
Velocity Head	0.01	ft
Specific Energy	2.53	ft
Froude Number	0.14	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.52	ft
Critical Depth	1.26	ft
Channel Slope	0.00179	ft/ft
Critical Slope	0.12969	ft/ft

Earll Dr. (Earll / Granite Reef) - DD13

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00179	ft/ft
Normal Depth	2.52	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+51	1237.00
0+00	1234.97
0+01	1234.75
0+02	1234.48
0+19	1235.35
0+22	1235.50
0+22	1235.48
0+24	1235.44
0+39	1235.08
0+40	1235.39
0+81	1237.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+51, 1237.00)	(0+00, 1234.97)	0.100
(0+00, 1234.97)	(0+40, 1235.39)	0.020
(0+40, 1235.39)	(0+81, 1237.00)	0.100

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1234.48					

Earll Dr. (Earll / Granite Reef) - DD13

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1234.58	0.05	0.42	0.12	2.37	2.36
1234.68	0.32	0.67	0.47	4.74	4.71
1234.78	0.94	0.88	1.06	7.10	7.05
1234.88	2.02	1.07	1.88	9.42	9.36
1234.98	2.95	1.00	2.93	11.96	11.88
1235.08	2.51	0.58	4.34	16.44	16.36
1235.18	3.31	0.51	6.44	25.58	25.48
1235.28	4.94	0.52	9.44	34.72	34.60
1235.38	7.39	0.55	13.36	43.80	43.67
1235.48	10.02	0.55	18.25	54.66	54.52
1235.58	13.65	0.57	24.03	60.55	60.41
1235.68	17.89	0.59	30.33	65.56	65.41
1235.78	22.70	0.61	37.12	70.56	70.41
1235.88	28.13	0.63	44.41	75.56	75.41
1235.98	34.17	0.65	52.20	80.57	80.41
1236.08	40.87	0.68	60.49	85.57	85.41
1236.18	48.23	0.70	69.28	90.58	90.41
1236.28	56.30	0.72	78.57	95.58	95.41
1236.38	65.07	0.74	88.36	100.58	100.41
1236.48	74.59	0.76	98.65	105.59	105.41
1236.58	84.87	0.78	109.44	110.59	110.41
1236.68	95.94	0.79	120.74	115.60	115.41
1236.78	107.80	0.81	132.53	120.60	120.41
1236.88	120.50	0.83	144.82	125.60	125.41
1236.98	134.04	0.85	157.61	130.61	130.41

Granite Reef Rd. (Earll / Granite Reef) - DD13

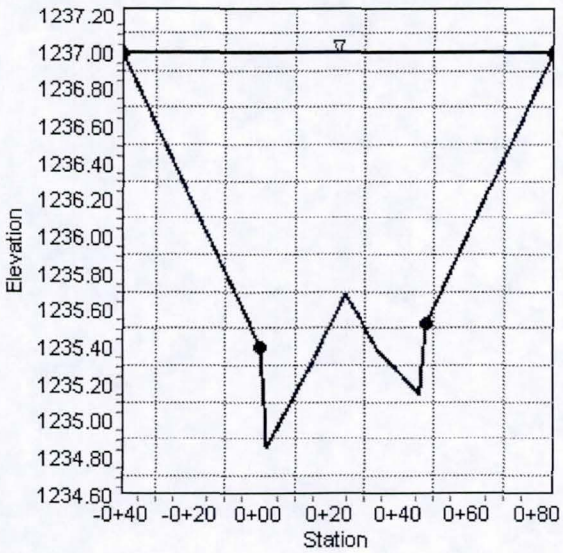
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00151	ft/ft
Normal Depth	2.15	ft
Discharge	108.63	ft³/s

Cross Section Image



Granite Reef Rd. (Earll / Granite Reef) - DD13

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00151	ft/ft
Normal Depth	2.15	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+40	1237.00
0+00	1235.40
0+01	1234.91
0+02	1234.85
0+15	1235.34
0+24	1235.69
0+34	1235.38
0+46	1235.14
0+46	1235.19
0+48	1235.53
0+84	1237.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+40, 1237.00)	(0+00, 1235.40)	0.100
(0+00, 1235.40)	(0+48, 1235.53)	0.020
(0+48, 1235.53)	(0+84, 1237.00)	0.100

Results

Discharge	108.63	ft^3/s
Elevation Range	1234.85 to 1237.00 ft	
Flow Area	139.00	ft^2
Wetted Perimeter	124.47	ft
Top Width	124.25	ft

Granite Reef Rd. (Earll / Granite Reef) - DD13

Results

Normal Depth		2.15	ft
Critical Depth		1.00	ft
Critical Slope		0.12201	ft/ft
Velocity		0.78	ft/s
Velocity Head		0.01	ft
Specific Energy		2.16	ft
Froude Number		0.13	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.15	ft
Critical Depth	1.00	ft
Channel Slope	0.00151	ft/ft
Critical Slope	0.12201	ft/ft

Granite Reef Rd. (Earll / Granite Reef) - DD13

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00151	ft/ft
Normal Depth	2.15	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+40	1237.00
0+00	1235.40
0+01	1234.91
0+02	1234.85
0+15	1235.34
0+24	1235.69
0+34	1235.38
0+46	1235.14
0+46	1235.19
0+48	1235.53
0+84	1237.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+40, 1237.00)	(0+00, 1235.40)	0.100
(0+00, 1235.40)	(0+48, 1235.53)	0.020
(0+48, 1235.53)	(0+84, 1237.00)	0.100

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1234.48					

Granite Reef Rd. (Earll / Granite Reef) - DD13

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1234.58					
1234.68					
1234.78					
1234.88	0.00	0.18	0.01	0.94	0.93
1234.98	0.12	0.47	0.26	4.01	3.99
1235.08	0.55	0.68	0.81	7.06	7.02
1235.18	1.33	0.78	1.71	12.26	12.20
1235.28	2.87	0.86	3.35	20.74	20.64
1235.38	5.76	0.99	5.84	29.17	29.05
1235.48	6.82	0.75	9.13	37.42	37.28
1235.58	8.36	0.63	13.32	47.12	46.97
1235.68	10.74	0.58	18.55	57.84	57.68
1235.78	14.34	0.58	24.63	63.42	63.25
1235.88	18.54	0.59	31.20	68.42	68.25
1235.98	23.32	0.61	38.28	73.42	73.25
1236.08	28.67	0.63	45.85	78.43	78.25
1236.18	34.63	0.64	53.93	83.43	83.25
1236.28	41.21	0.66	62.50	88.44	88.25
1236.38	48.43	0.68	71.58	93.44	93.25
1236.48	56.30	0.69	81.15	98.44	98.25
1236.58	64.86	0.71	91.23	103.45	103.25
1236.68	74.11	0.73	101.80	108.45	108.25
1236.78	84.08	0.74	112.88	113.46	113.25
1236.88	94.79	0.76	124.45	118.46	118.25
1236.98	106.25	0.78	136.53	123.46	123.25

Earll Dr. & 86th St. Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

		Earll Dr.	86th St.	D I
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1231.12	0	0	0	0
1231.22	0.1	0.1	0	0.1
1231.32	0.2	0.5	0	0.5
1231.42	0.3	0.9	0	0.9
1231.52	0.4	1.6	0	1.6
1231.62	0.5	2.4	0	2.4
1231.72	0.6	3.4	0.4	3.7
1231.82	0.7	4.5	1.4	5.9
1231.92	0.8	5.9	3.3	9.2
1232.02	0.9	6.7	6.4	13.1
1232.12	1	7.6	10.1	17.7
1232.22	1.1	9.5	15.2	24.7
1232.32	1.2	12.5	22.0	34.4
1232.42	1.3	17.5	30.6	48.1
1232.52	1.4	26.0	40.4	66.4
1232.62	1.5	37.9	51.3	89.1
1232.72	1.6	52.0	63.4	115.4
1232.82	1.7	56.2	76.7	132.9
1232.92	1.8	67.7	91.3	159.0
1233.02	1.9	75.5	107.2	182.7
1233.12	2	84.3	124.4	208.7
1233.22	2.1	95.9	142.9	238.8
1233.32	2.2	109.7	162.8	272.5
1233.42	2.3	125.3	184.2	309.5
1233.52	2.4	142.6	207.0	349.6
1233.62	2.5	161.7	231.3	392.9
1233.72	2.6	182.4	257.1	439.5
1233.82	2.7	204.9	284.5	489.3
1233.92	2.8	229.1	313.5	542.5

Corresponding HEC-1 ID: DD10

Earll Dr. (Earll / 86th) - DD10

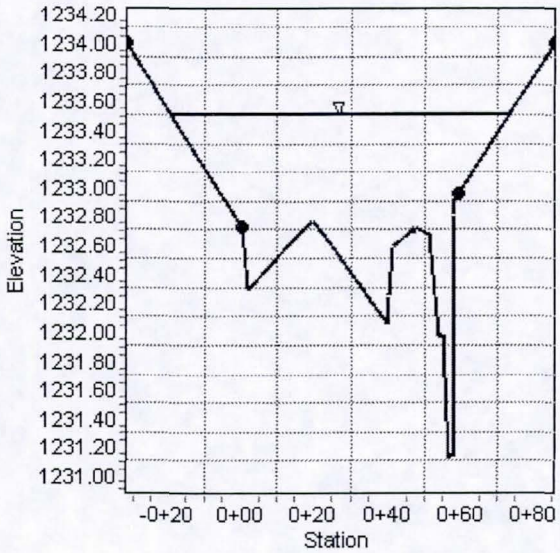
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00830	ft/ft
Normal Depth	2.38	ft
Discharge	139.02	ft^3/s

Cross Section Image



Earll Dr. (Earll / 86th) - DD10

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00830	ft/ft
Normal Depth	2.38	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+32	1234.00
0+00	1232.72
0+02	1232.28
0+13	1232.60
0+19	1232.77
0+22	1232.67
0+40	1232.06
0+40	1232.25
0+40	1232.26
0+41	1232.59
0+41	1232.59
0+46	1232.71
0+47	1232.68
0+47	1232.73
0+51	1232.67
0+54	1231.96
0+54	1231.97
0+55	1231.98
0+56	1231.38
0+56	1231.12
0+57	1231.13
0+57	1231.13
0+58	1232.81
0+58	1232.92
0+59	1232.95
0+59	1232.96
0+85	1234.00

Earll Dr. (Earll / 86th) - DD10

Input Data

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+32, 1234.00)	(0+00, 1232.72)	0.100
(0+00, 1232.72)	(0+59, 1232.96)	0.020
(0+59, 1232.96)	(0+85, 1234.00)	0.100

Results

Discharge		139.02	ft^3/s
Elevation Range	1231.12 to 1234.00 ft		
Flow Area		73.98	ft^2
Wetted Perimeter		93.89	ft
Top Width		92.23	ft
Normal Depth		2.38	ft
Critical Depth		1.88	ft
Critical Slope		0.07115	ft/ft
Velocity		1.88	ft/s
Velocity Head		0.05	ft
Specific Energy		2.43	ft
Froude Number		0.37	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.38	ft
Critical Depth	1.88	ft
Channel Slope	0.00830	ft/ft

Earll Dr. (Earll / 86th) - DD10

GVF Output Data

Critical Slope	0.07115	ft/ft

Earll Dr. (Earll / 86th) - DD10

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00830	ft/ft
Normal Depth	2.38	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+32	1234.00
0+00	1232.72
0+02	1232.28
0+13	1232.60
0+19	1232.77
0+22	1232.67
0+40	1232.06
0+40	1232.25
0+40	1232.26
0+41	1232.59
0+41	1232.59
0+46	1232.71
0+47	1232.68
0+47	1232.73
0+51	1232.67
0+54	1231.96
0+54	1231.97
0+55	1231.98
0+56	1231.38
0+56	1231.12
0+57	1231.13
0+57	1231.13
0+58	1232.81
0+58	1232.92
0+59	1232.95
0+59	1232.96
0+85	1234.00

Earll Dr. (Earll / 86th) - DD10

Input Data

Roughness Segment Definitions

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1231.12					
1231.22	0.14	1.27	0.11	1.34	1.25
1231.32	0.46	1.90	0.24	1.64	1.45
1231.42	0.94	2.36	0.40	1.94	1.67
1231.52	1.57	2.72	0.58	2.27	1.90
1231.62	2.37	3.04	0.78	2.59	2.14
1231.72	3.35	3.33	1.01	2.92	2.38
1231.82	4.51	3.59	1.25	3.24	2.61
1231.92	5.87	3.84	1.53	3.57	2.85
1232.02	6.65	3.55	1.88	4.95	4.14
1232.12	7.55	3.19	2.37	7.33	6.43
1232.22	9.47	2.97	3.19	10.94	9.95
1232.32	12.45	2.84	4.39	16.19	15.10
1232.42	17.45	2.78	6.28	23.86	22.65
1232.52	26.03	2.92	8.92	31.52	30.21
1232.62	37.86	3.07	12.34	40.44	39.03
1232.72	51.96	3.07	16.90	55.24	53.73
1232.82	56.17	2.47	22.73	61.97	60.40
1232.92	67.66	2.34	28.90	64.58	62.95
1233.02	75.50	2.13	35.47	69.87	68.23
1233.12	84.30	1.98	42.54	74.87	73.23
1233.22	95.94	1.91	50.11	79.88	78.23
1233.32	109.70	1.89	58.19	84.88	83.23
1233.42	125.29	1.88	66.76	89.89	88.23
1233.52	142.62	1.88	75.83	94.89	93.23
1233.62	161.65	1.89	85.41	99.89	98.23
1233.72	182.39	1.91	95.48	104.90	103.23
1233.82	204.85	1.93	106.05	109.90	108.23
1233.92	229.06	1.96	117.13	114.91	113.23
1234.02	257.39	2.00	128.69	118.95	117.23

Earll Dr. (Earll / 86th) - DD10

Input Data

1231.12					
1231.22	0.14	1.27	0.11	1.34	1.25
1231.32	0.46	1.90	0.24	1.64	1.45
1231.42	0.94	2.36	0.40	1.94	1.67
1231.52	1.57	2.72	0.58	2.27	1.90
1231.62	2.37	3.04	0.78	2.59	2.14
1231.72	3.35	3.33	1.01	2.92	2.38
1231.82	4.51	3.59	1.25	3.24	2.61
1231.92	5.87	3.84	1.53	3.57	2.85
1232.02	6.65	3.55	1.88	4.95	4.14
1232.12	7.55	3.19	2.37	7.33	6.43
1232.22	9.47	2.97	3.19	10.94	9.95
1232.32	12.45	2.84	4.39	16.19	15.10
1232.42	17.45	2.78	6.28	23.86	22.65
1232.52	26.03	2.92	8.92	31.52	30.21
1232.62	37.86	3.07	12.34	40.44	39.03
1232.72	51.96	3.07	16.90	55.24	53.73
1232.82	56.17	2.47	22.73	61.97	60.40
1232.92	67.66	2.34	28.90	64.58	62.95
1233.02	75.50	2.13	35.47	69.87	68.23
1233.12	84.30	1.98	42.54	74.87	73.23
1233.22	95.94	1.91	50.11	79.88	78.23
1233.32	109.70	1.89	58.19	84.88	83.23
1233.42	125.29	1.88	66.76	89.89	88.23
1233.52	142.62	1.88	75.83	94.89	93.23
1233.62	161.65	1.89	85.41	99.89	98.23
1233.72	182.39	1.91	95.48	104.90	103.23
1233.82	204.85	1.93	106.05	109.90	108.23
1233.92	229.06	1.96	117.13	114.91	113.23
1234.02	257.39	2.00	128.69	118.95	117.23

86th St. (Earll / 86th) - DD10

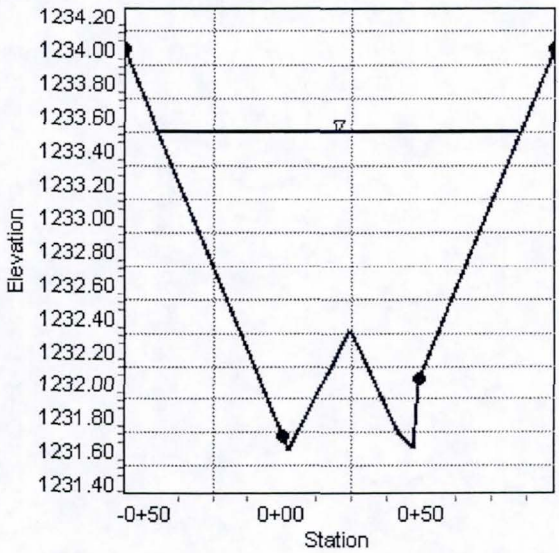
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00510	ft/ft
Normal Depth	1.91	ft
Discharge	202.30	ft^3/s

Cross Section Image



86th St. (Earll / 86th) - DD10

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00510	ft/ft
Normal Depth	1.91	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+58	1234.00
0+00	1231.69
0+02	1231.60
0+02	1231.59
0+02	1231.60
0+24	1232.32
0+41	1231.70
0+46	1231.62
0+47	1231.89
0+48	1232.03
0+97	1234.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+58, 1234.00)	(0+00, 1231.69)	0.100
(0+00, 1231.69)	(0+48, 1232.03)	0.020
(0+48, 1232.03)	(0+97, 1234.00)	0.100

Results

Discharge	202.30	ft^3/s
Elevation Range	1231.59 to 1234.00 ft	
Flow Area	143.51	ft^2
Wetted Perimeter	130.26	ft
Top Width	130.12	ft

86th St. (Earll / 86th) - DD10

Results

Normal Depth	1.91	ft
Critical Depth	1.02	ft
Critical Slope	0.11438	ft/ft
Velocity	1.41	ft/s
Velocity Head	0.03	ft
Specific Energy	1.94	ft
Froude Number	0.24	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.91	ft
Critical Depth	1.02	ft
Channel Slope	0.00510	ft/ft
Critical Slope	0.11438	ft/ft

86th St. (Earll / 86th) - DD10

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00510	ft/ft
Normal Depth	1.91	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+58	1234.00
0+00	1231.69
0+02	1231.60
0+02	1231.59
0+02	1231.60
0+24	1232.32
0+41	1231.70
0+46	1231.62
0+47	1231.89
0+48	1232.03
0+97	1234.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+58, 1234.00)	(0+00, 1231.69)	0.100
(0+00, 1231.69)	(0+48, 1232.03)	0.020
(0+48, 1232.03)	(0+97, 1234.00)	0.100

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1231.12					

86th St. (Earll / 86th) - DD10

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1231.22					
1231.32					
1231.42					
1231.52					
1231.62	0.00	0.28	0.01	1.19	1.19
1231.72	0.35	0.50	0.70	12.21	12.19
1231.82	1.35	0.57	2.36	21.05	21.02
1231.92	3.29	0.67	4.91	29.90	29.85
1232.02	6.42	0.77	8.33	38.77	38.71
1232.12	10.11	0.79	12.73	49.45	49.38
1232.22	15.22	0.84	18.21	60.33	60.25
1232.32	21.98	0.89	24.78	71.21	71.12
1232.42	30.60	0.95	32.14	76.21	76.12
1232.52	40.36	1.01	40.00	81.22	81.12
1232.62	51.28	1.06	48.37	86.22	86.12
1232.72	63.39	1.11	57.23	91.23	91.12
1232.82	76.72	1.15	66.59	96.23	96.12
1232.92	91.30	1.19	76.45	101.23	101.12
1233.02	107.17	1.23	86.81	106.24	106.12
1233.12	124.36	1.27	97.68	111.24	111.12
1233.22	142.90	1.31	109.04	116.25	116.12
1233.32	162.82	1.35	120.90	121.25	121.12
1233.42	184.18	1.38	133.26	126.25	126.12
1233.52	206.98	1.42	146.12	131.26	131.12
1233.62	231.28	1.45	159.49	136.26	136.12
1233.72	257.10	1.48	173.35	141.27	141.12
1233.82	284.48	1.52	187.71	146.27	146.12
1233.92	313.45	1.55	202.57	151.27	151.12
1234.02	345.89	1.59	217.92	155.32	155.12

Thomas Rd. & Granite Reef Rd. Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

		Thomas Rd.	Granite Reef Rd.	DI
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1232.14	0	0	0	0
1232.14	0	20.7	0	20.7
1232.24	0.1	20.7	0.10	20.8
1232.34	0.2	20.7	0.59	21.3
1232.44	0.3	20.7	1.7	22.4
1232.54	0.4	20.7	2.3	23.1
1232.64	0.5	20.7	3.6	24.3
1232.74	0.6	20.7	6.4	27.1
1232.84	0.7	20.9	11.2	32.1
1232.94	0.8	21.7	15.4	37.1
1233.04	0.9	23.6	20.3	43.9
1233.14	1	29.5	25.8	55.3
1233.24	1.1	42.7	32.1	74.8
1233.34	1.2	57.2	39.1	96.3
1233.44	1.3	72.9	46.8	119.8
1233.54	1.4	89.9	55.3	145.2
1233.64	1.5	108.0	64.7	172.7
1233.74	1.6	127.3	74.8	202.1
1233.84	1.7	147.9	85.8	233.7
1233.94	1.8	169.6	97.7	267.3

Corresponding HEC-1 ID: DD01

Thomas Rd. (Thomas / Granite Reef) - DD01

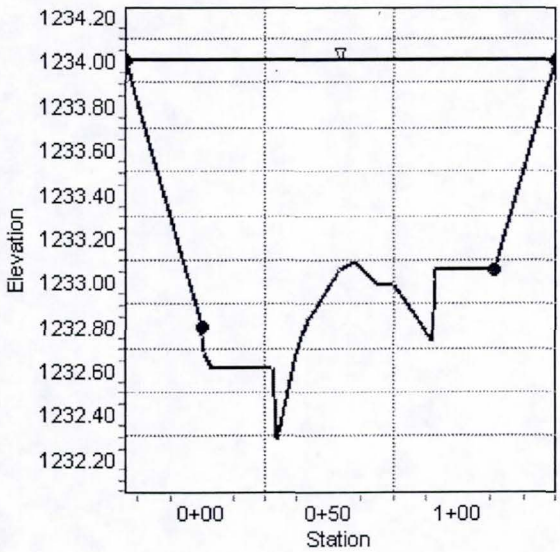
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	1.71	ft
Discharge	183.27	ft^3/s

Cross Section Image



Thomas Rd. (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	1.71	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+30	1234.00
0+00	1232.80
0+00	1232.75
0+00	1232.72
0+01	1232.68
0+04	1232.61
0+27	1232.61
0+29	1232.33
0+29	1232.29
0+30	1232.35
0+37	1232.68
0+41	1232.83
0+43	1232.87
0+53	1233.06
0+60	1233.09
0+64	1233.05
0+68	1232.98
0+75	1232.98
0+85	1232.81
0+89	1232.73
0+91	1233.01
0+91	1233.06
1+14	1233.06
1+38	1234.00

Roughness Segment Definitions

Thomas Rd. (Thomas / Granite Reef) - DD01

Input Data

(-0+30, 1234.00)	(0+00, 1232.80)	0.100
(0+00, 1232.80)	(1+14, 1233.06)	0.020
(1+14, 1233.06)	(1+38, 1234.00)	0.100

Results

Discharge		183.27	ft^3/s
Elevation Range	1232.29 to 1234.00 ft		
Flow Area		160.51	ft^2
Wetted Perimeter		167.85	ft
Top Width		167.72	ft
Normal Depth		1.71	ft
Critical Depth		0.98	ft
Critical Slope		0.06896	ft/ft
Velocity		1.14	ft/s
Velocity Head		0.02	ft
Specific Energy		1.73	ft
Froude Number		0.21	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.71	ft
Critical Depth	0.98	ft
Channel Slope	0.00217	ft/ft
Critical Slope	0.06896	ft/ft

Thomas Rd. (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	1.71	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+30	1234.00
0+00	1232.80
0+00	1232.75
0+00	1232.72
0+01	1232.68
0+04	1232.61
0+27	1232.61
0+29	1232.33
0+29	1232.29
0+30	1232.35
0+37	1232.68
0+41	1232.83
0+43	1232.87
0+53	1233.06
0+60	1233.09
0+64	1233.05
0+68	1232.98
0+75	1232.98
0+85	1232.81
0+89	1232.73
0+91	1233.01
0+91	1233.06
1+14	1233.06
1+38	1234.00

Roughness Segment Definitions

Thomas Rd. (Thomas / Granite Reef) - DD01

Input Data

1232.14		
1232.24		
1232.34	0.01	0.29
1232.44	0.19	0.62
1232.54	0.72	0.87
1232.64	1.36	0.58
1232.74	5.90	0.99
1232.84	10.31	1.00
1232.94	14.37	0.90
1233.04	20.83	0.89
1233.14	29.52	0.85
1233.24	42.73	0.90
1233.34	57.22	0.94
1233.44	72.94	0.98
1233.54	89.86	1.01
1233.64	107.99	1.04
1233.74	127.32	1.07
1233.84	147.86	1.10
1233.94	169.62	1.13

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1232.14					
1232.24					
1232.34	0.01	0.29	0.03	1.37	1.36
1232.44	0.19	0.62	0.30	3.97	3.95
1232.54	0.72	0.87	0.82	6.56	6.52
1232.64	1.36	0.58	2.33	33.69	33.65
1232.74	5.90	0.99	5.95	38.81	38.76
1232.84	10.31	1.00	10.30	49.02	48.95
1232.94	14.37	0.90	15.91	63.27	63.19
1233.04	20.83	0.89	23.36	84.83	84.74
1233.14	29.52	0.85	34.76	124.82	124.72

Thomas Rd. (Thomas / Granite Reef) - DD01

Input Data

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1233.24	42.73	0.90	47.48	129.82	129.72
1233.34	57.22	0.94	60.70	134.83	134.72
1233.44	72.94	0.98	74.43	139.83	139.72
1233.54	89.86	1.01	88.65	144.83	144.72
1233.64	107.99	1.04	103.37	149.84	149.72
1233.74	127.32	1.07	118.59	154.84	154.72
1233.84	147.86	1.10	134.31	159.85	159.72
1233.94	169.62	1.13	150.54	164.85	164.72

Granite Reef Rd. (Thomas / Granite Reef) - DD01

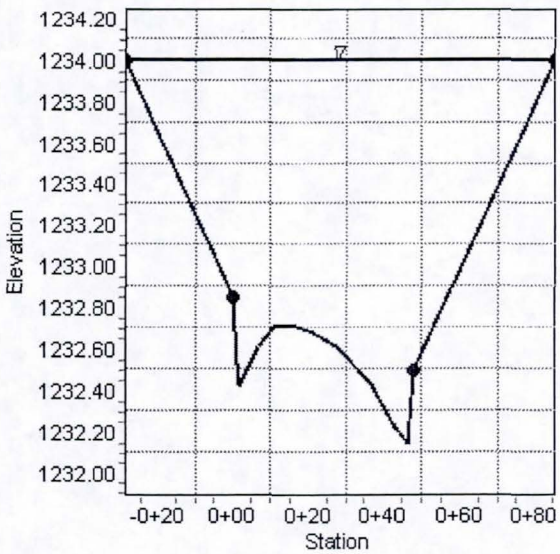
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00230	ft/ft
Normal Depth	1.86	ft
Discharge	105.23	ft^3/s

Cross Section Image



Granite Reef Rd. (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00230	ft/ft
Normal Depth	1.86	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+29	1234.00
0+00	1232.85
0+01	1232.53
0+01	1232.42
0+07	1232.61
0+11	1232.71
0+12	1232.72
0+17	1232.71
0+21	1232.68
0+27	1232.61
0+37	1232.43
0+38	1232.39
0+43	1232.22
0+46	1232.14
0+48	1232.50
0+85	1234.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+29, 1234.00)	(0+00, 1232.85)	0.100
(0+00, 1232.85)	(0+48, 1232.50)	0.020
(0+48, 1232.50)	(0+85, 1234.00)	0.100

Granite Reef Rd. (Thomas / Granite Reef) - DD01

Results

Discharge		105.23	ft³/s
Elevation Range	1232.14 to 1234.00 ft		
Flow Area		114.13	ft²
Wetted Perimeter		113.97	ft
Top Width		113.81	ft
Normal Depth		1.86	ft
Critical Depth		0.91	ft
Critical Slope		0.11597	ft/ft
Velocity		0.92	ft/s
Velocity Head		0.01	ft
Specific Energy		1.87	ft
Froude Number		0.16	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.86	ft
Critical Depth	0.91	ft
Channel Slope	0.00230	ft/ft
Critical Slope	0.11597	ft/ft

Granite Reef Rd. (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00230	ft/ft
Normal Depth	1.86	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+29	1234.00
0+00	1232.85
0+01	1232.53
0+01	1232.42
0+07	1232.61
0+11	1232.71
0+12	1232.72
0+17	1232.71
0+21	1232.68
0+27	1232.61
0+37	1232.43
0+38	1232.39
0+43	1232.22
0+46	1232.14
0+48	1232.50
0+85	1234.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+29, 1234.00)	(0+00, 1232.85)	0.100
(0+00, 1232.85)	(0+48, 1232.50)	0.020
(0+48, 1232.50)	(0+85, 1234.00)	0.100

Granite Reef Rd. (Thomas / Granite Reef) - DD01

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1232.14					
1232.24	0.10	0.49	0.20	3.87	3.85
1232.34	0.59	0.78	0.76	7.48	7.46
1232.44	1.66	0.98	1.68	11.63	11.59
1232.54	2.33	0.70	3.30	21.33	21.26
1232.64	3.62	0.60	5.99	33.54	33.46
1232.74	6.36	0.62	10.29	53.28	53.18
1232.84	11.17	0.71	15.75	56.14	56.03
1232.94	15.43	0.71	21.58	60.93	60.81
1233.04	20.27	0.73	27.91	65.94	65.81
1233.14	25.82	0.74	34.74	70.94	70.81
1233.24	32.08	0.76	42.07	75.94	75.81
1233.34	39.07	0.78	49.90	80.95	80.81
1233.44	46.82	0.80	58.23	85.95	85.81
1233.54	55.34	0.83	67.07	90.96	90.81
1233.64	64.66	0.85	76.40	95.96	95.81
1233.74	74.81	0.87	86.23	100.96	100.81
1233.84	85.80	0.89	96.56	105.97	105.81
1233.94	97.67	0.91	107.39	110.97	110.81

Thomas Rd. WB (Thomas / Granite Reef) - DD01

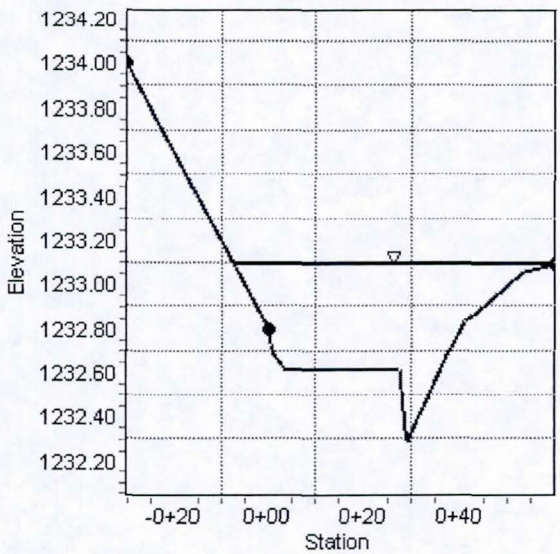
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	0.80	ft
Discharge	20.72	ft^3/s

Cross Section Image



Thomas Rd. WB (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	0.80	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+30	1234.00
0+00	1232.80
0+00	1232.75
0+00	1232.72
0+01	1232.68
0+04	1232.61
0+27	1232.61
0+29	1232.33
0+29	1232.29
0+30	1232.35
0+37	1232.68
0+41	1232.83
0+43	1232.87
0+53	1233.06
0+60	1233.09

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+30, 1234.00)	(0+00, 1232.80)	0.100
(0+00, 1232.80)	(0+60, 1233.09)	0.020

Results

Discharge	20.72	ft³/s
Elevation Range	1232.29 to 1234.00 ft	

Thomas Rd. WB (Thomas / Granite Reef) - DD01

Results

Flow Area		23.10	ft²
Wetted Perimeter		66.99	ft
Top Width		66.93	ft
Normal Depth		0.80	ft
Critical Depth		0.51	ft
Critical Slope		0.03578	ft/ft
Velocity		0.90	ft/s
Velocity Head		0.01	ft
Specific Energy		0.81	ft
Froude Number		0.27	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.80	ft
Critical Depth	0.51	ft
Channel Slope	0.00217	ft/ft
Critical Slope	0.03578	ft/ft

Thomas Rd. EB (Thomas / Granite Reef) - DD01

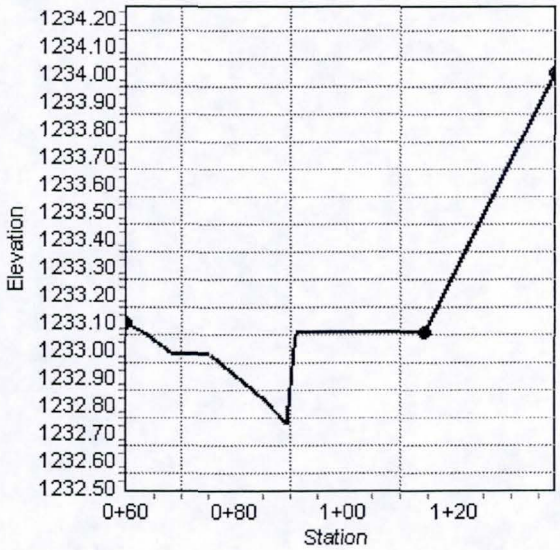
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	0.36	ft
Discharge	3.54	ft^3/s

Cross Section Image



Thomas Rd. EB (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	0.36	ft

Section Definitions

Station (ft)	Elevation (ft)
0+60	1233.09
0+64	1233.05
0+68	1232.98
0+75	1232.98
0+85	1232.81
0+89	1232.73
0+91	1233.01
0+91	1233.06
1+14	1233.06
1+38	1234.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+60, 1233.09)	(1+14, 1233.06)	0.020
(1+14, 1233.06)	(1+38, 1234.00)	0.100

Results

Discharge	3.54	ft^3/s
Elevation Range	1232.73 to 1234.00 ft	
Flow Area	5.49	ft^2
Wetted Perimeter	55.32	ft
Top Width	55.29	ft
Normal Depth	0.36	ft
Critical Depth	0.26	ft

Thomas Rd. EB (Thomas / Granite Reef) - DD01

Results

Critical Slope		0.01722	ft/ft
Velocity		0.64	ft/s
Velocity Head		0.01	ft
Specific Energy		0.37	ft
Froude Number		0.36	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.26	ft
Channel Slope	0.00217	ft/ft
Critical Slope	0.01722	ft/ft

Thomas Rd. EB (Thomas / Granite Reef) - DD01

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00217	ft/ft
Normal Depth	0.36	ft

Section Definitions

Station (ft)	Elevation (ft)
0+60	1233.09
0+64	1233.05
0+68	1232.98
0+75	1232.98
0+85	1232.81
0+89	1232.73
0+91	1233.01
0+91	1233.06
1+14	1233.06
1+38	1234.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+60, 1233.09)	(1+14, 1233.06)	0.020
(1+14, 1233.06)	(1+38, 1234.00)	0.100

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1232.14					
1232.24					
1232.34					

Thomas Rd. EB (Thomas / Granite Reef) - DD01

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1232.44					
1232.54					
1232.64					
1232.74	0.00	0.10	0.00	0.57	0.57
1232.84	0.17	0.49	0.35	6.46	6.45
1232.94	0.99	0.76	1.31	12.85	12.83
1233.04	2.89	0.87	3.34	26.66	26.63

Thomas Rd. & 86th St. Flow Diversion Analysis

Rating table for flow split and HEC-1 input summary

		Thomas Rd.	86th St.	DI
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)
1228.13	0	0	0	0
1228.13	0	44.2	0	44.2
1228.23	0.1	44.4	0	44.4
1228.33	0.2	45.3	0	45.3
1228.43	0.3	45.8	0	45.8
1228.53	0.4	47.7	0.06	47.8
1228.63	0.5	50.2	0.42	50.6
1228.73	0.6	53.2	1.3	54.5
1228.83	0.7	56.9	1.5	58.4
1228.93	0.8	61.4	2.1	63.5
1229.03	0.9	66.9	3.2	70.0
1229.13	1	73.7	4.7	78.4
1229.23	1.1	81.4	7.1	88.5
1229.33	1.2	89.9	10.8	100.6
1229.43	1.3	99.4	14.9	114.3
1229.53	1.4	110.5	19.7	130.2
1229.63	1.5	128.2	25.1	153.3
1229.73	1.6	155.0	31.3	186.3
1229.83	1.7	183.9	38.1	222.0
1229.93	1.8	214.6	45.7	260.3
1230.03	1.9	247.2	54.1	301.3
1230.13	2	281.7	63.2	344.9
1230.23	2.1	318.1	73.2	391.3
1230.33	2.2	356.5	84.0	440.5
1230.43	2.3	396.7	95.7	492.4

Corresponding HEC-1 ID: DD02

Thomas Rd. (Thomas / 86th) - DD02

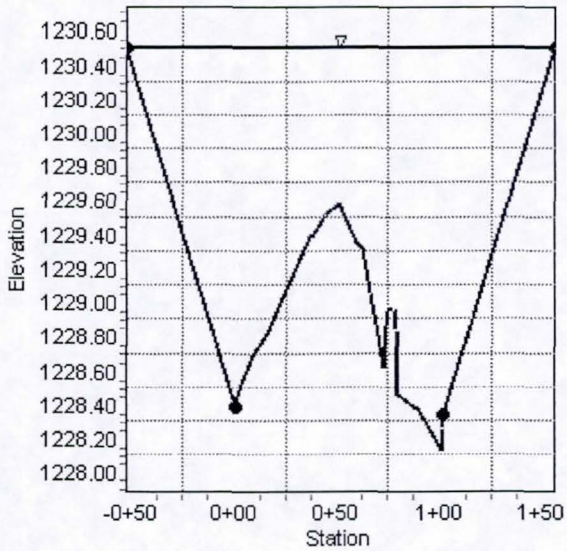
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	2.37	ft
Discharge	425.96	ft^3/s

Cross Section Image



Thomas Rd. (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	2.37	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+53	1230.50
0+00	1228.38
0+02	1228.45
0+04	1228.55
0+09	1228.69
0+16	1228.81
0+27	1229.13
0+37	1229.38
0+37	1229.38
0+44	1229.51
0+50	1229.58
0+60	1229.35
0+62	1229.31
0+66	1229.06
0+66	1229.05
0+73	1228.62
0+74	1228.87
0+74	1228.95
0+78	1228.96
0+78	1228.94
0+79	1228.84
0+79	1228.45
0+87	1228.39
0+89	1228.37
0+92	1228.31
1+00	1228.13
1+01	1228.26

Thomas Rd. (Thomas / 86th) - DD02

Input Data

Station (ft)	Elevation (ft)
1+02	1228.34
1+56	1230.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+53, 1230.50)	(0+00, 1228.38)	0.100
(0+00, 1228.38)	(1+02, 1228.34)	0.020
(1+02, 1228.34)	(1+56, 1230.50)	0.100

Results

Discharge	425.96	ft^3/s
Elevation Range	1228.13 to 1230.50 ft	
Flow Area	275.16	ft^2
Wetted Perimeter	208.93	ft
Top Width	208.56	ft
Normal Depth	2.37	ft
Critical Depth	1.39	ft
Critical Slope	0.09090	ft/ft
Velocity	1.55	ft/s
Velocity Head	0.04	ft
Specific Energy	2.41	ft
Froude Number	0.24	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft

Thomas Rd. (Thomas / 86th) - DD02

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.37	ft
Critical Depth	1.39	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.09090	ft/ft

Thomas Rd. (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	2.37	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+53	1230.50
0+00	1228.38
0+02	1228.45
0+04	1228.55
0+09	1228.69
0+16	1228.81
0+27	1229.13
0+37	1229.38
0+37	1229.38
0+44	1229.51
0+50	1229.58
0+60	1229.35
0+62	1229.31
0+66	1229.06
0+66	1229.05
0+73	1228.62
0+74	1228.87
0+74	1228.95
0+78	1228.96
0+78	1228.94
0+79	1228.84
0+79	1228.45
0+87	1228.39
0+89	1228.37
0+92	1228.31
1+00	1228.13
1+01	1228.26

Thomas Rd. (Thomas / 86th) - DD02

Input Data

Station (ft)	Elevation (ft)
1+02	1228.34
1+56	1230.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+53, 1230.50)	(0+00, 1228.38)	0.100
(0+00, 1228.38)	(1+02, 1228.34)	0.020
(1+02, 1228.34)	(1+56, 1230.50)	0.100

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1228.13					
1228.23	0.17	0.64	0.26	5.24	5.24
1228.33	1.06	1.01	1.05	10.60	10.58
1228.43	1.33	0.50	2.63	24.64	24.62
1228.53	3.07	0.54	5.73	35.18	35.12
1228.63	5.71	0.59	9.66	43.89	43.78
1228.73	9.37	0.64	14.58	55.34	55.17
1228.83	14.48	0.70	20.72	67.51	67.28
1228.93	21.22	0.76	27.98	78.19	77.91
1229.03	29.75	0.81	36.59	92.49	92.19
1229.13	40.48	0.87	46.31	102.48	102.17
1229.23	53.11	0.93	57.05	112.92	112.60
1229.33	67.73	0.98	68.84	124.40	124.07
1229.43	84.66	1.03	81.97	138.80	138.47
1229.53	104.46	1.08	96.55	153.89	153.55
1229.63	128.15	1.14	112.64	165.40	165.06
1229.73	155.03	1.20	129.40	170.40	170.06
1229.83	183.86	1.25	146.65	175.41	175.06
1229.93	214.59	1.31	164.41	180.41	180.06

Thomas Rd. (Thomas / 86th) - DD02

Input Data

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1230.03	247.21	1.35	182.66	185.42	185.06
1230.13	281.73	1.40	201.42	190.42	190.06
1230.23	318.14	1.44	220.68	195.42	195.06
1230.33	356.45	1.48	240.43	200.43	200.06
1230.43	396.67	1.52	260.69	205.43	205.06

Thomas Rd. WB (Thomas / 86th) - DD02

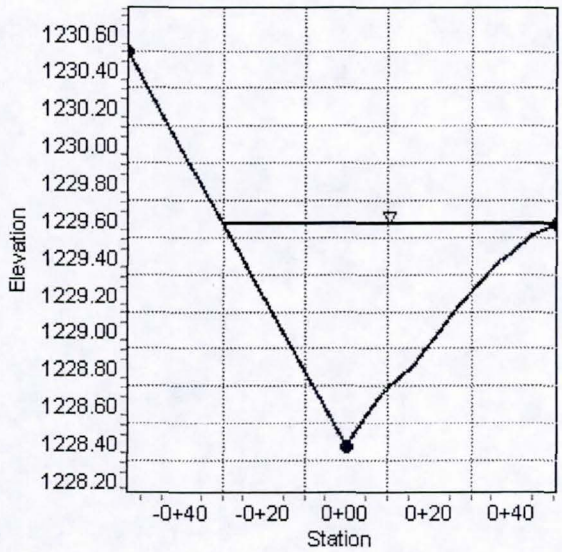
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	1.20	ft
Discharge	44.23	ft^3/s

Cross Section Image



Thomas Rd. WB (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	1.20	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+53	1230.50
0+00	1228.38
0+02	1228.45
0+04	1228.55
0+09	1228.69
0+16	1228.81
0+27	1229.13
0+37	1229.38
0+37	1229.38
0+44	1229.51
0+50	1229.58

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+53, 1230.50)	(0+00, 1228.38)	0.100
(0+00, 1228.38)	(0+50, 1229.58)	0.020

Results

Discharge	44.23	ft^3/s
Elevation Range	1228.38 to 1230.50 ft	
Flow Area	44.25	ft^2
Wetted Perimeter	80.43	ft
Top Width	80.39	ft
Normal Depth	1.20	ft

Thomas Rd. WB (Thomas / 86th) - DD02

Results

Critical Depth	0.68	ft
Critical Slope	0.08419	ft/ft
Velocity	1.00	ft/s
Velocity Head	0.02	ft
Specific Energy	1.22	ft
Froude Number	0.24	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.20	ft
Critical Depth	0.68	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.08419	ft/ft

Thomas Rd. EB (Thomas / 86th) - DD02

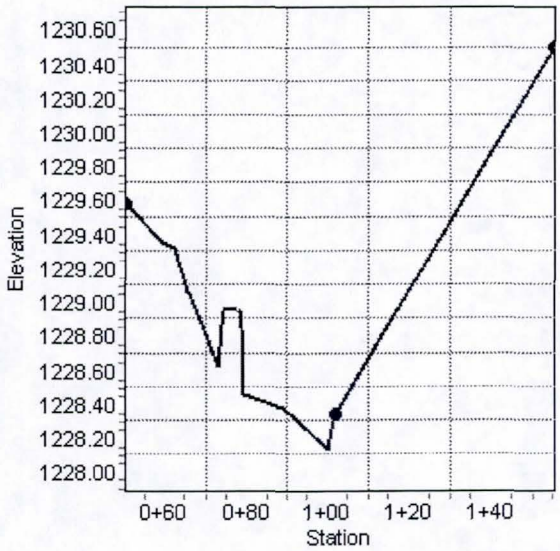
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	1.45	ft
Discharge	72.42	ft^3/s

Cross Section Image



Thomas Rd. EB (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	1.45	ft

Section Definitions

Station (ft)	Elevation (ft)
0+50	1229.58
0+60	1229.35
0+62	1229.31
0+66	1229.06
0+66	1229.05
0+73	1228.62
0+74	1228.87
0+74	1228.95
0+78	1228.96
0+78	1228.94
0+79	1228.84
0+79	1228.45
0+87	1228.39
0+89	1228.37
0+92	1228.31
1+00	1228.13
1+01	1228.26
1+02	1228.34
1+56	1230.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+50, 1229.58)	(1+02, 1228.34)	0.020
(1+02, 1228.34)	(1+56, 1230.50)	0.100

Thomas Rd. EB (Thomas / 86th) - DD02

Results

Discharge		72.42	ft^3/s
Elevation Range	1228.13 to 1230.50 ft		
Flow Area		60.20	ft^2
Wetted Perimeter		82.47	ft
Top Width		82.17	ft
Normal Depth		1.45	ft
Critical Depth		0.80	ft
Critical Slope		0.07770	ft/ft
Velocity		1.20	ft/s
Velocity Head		0.02	ft
Specific Energy		1.47	ft
Froude Number		0.25	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.45	ft
Critical Depth	0.80	ft
Channel Slope	0.00400	ft/ft
Critical Slope	0.07770	ft/ft

Thomas Rd. EB (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00400	ft/ft
Normal Depth	1.45	ft

Section Definitions

Station (ft)	Elevation (ft)
0+50	1229.58
0+60	1229.35
0+62	1229.31
0+66	1229.06
0+66	1229.05
0+73	1228.62
0+74	1228.87
0+74	1228.95
0+78	1228.96
0+78	1228.94
0+79	1228.84
0+79	1228.45
0+87	1228.39
0+89	1228.37
0+92	1228.31
1+00	1228.13
1+01	1228.26
1+02	1228.34
1+56	1230.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+50, 1229.58)	(1+02, 1228.34)	0.020
(1+02, 1228.34)	(1+56, 1230.50)	0.100

Thomas Rd. EB (Thomas / 86th) - DD02

Input Data

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1228.13					
1228.23	0.17	0.64	0.26	5.24	5.24
1228.33	1.06	1.01	1.05	10.60	10.58
1228.43	1.55	0.60	2.57	22.14	22.12
1228.53	3.50	0.68	5.16	27.48	27.43
1228.63	5.99	0.75	8.03	30.33	30.24
1228.73	8.99	0.80	11.29	35.06	34.90
1228.83	12.71	0.85	15.01	39.78	39.57
1228.93	17.21	0.90	19.20	44.47	44.20
1229.03	22.64	0.94	24.14	52.77	52.49
1229.13	29.45	1.00	29.60	56.76	56.48
1229.23	37.15	1.05	35.44	60.72	60.43
1229.33	45.64	1.09	41.69	65.72	65.42
1229.43	55.21	1.14	48.61	72.74	72.45
1229.53	66.31	1.18	56.18	79.23	78.93

86th St. (Thomas / 86th) - DD02

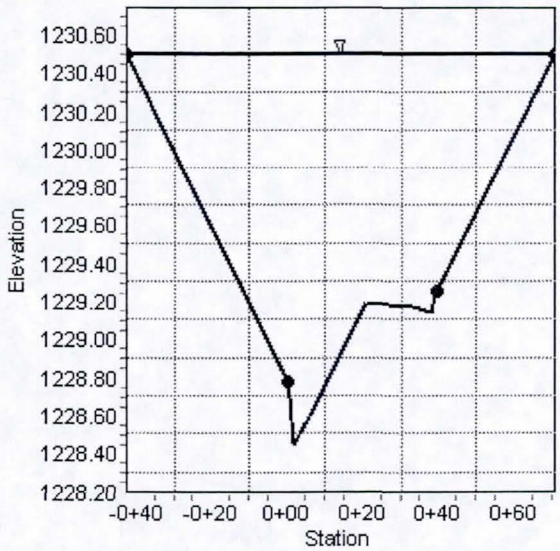
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00236	ft/ft
Normal Depth	2.06	ft
Discharge	104.41	ft^3/s

Cross Section Image



86th St. (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00236	ft/ft
Normal Depth	2.06	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+43	1230.50
0+00	1228.78
0+01	1228.68
0+02	1228.44
0+07	1228.63
0+21	1229.19
0+33	1229.17
0+38	1229.14
0+39	1229.23
0+39	1229.25
0+71	1230.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+43, 1230.50)	(0+00, 1228.78)	0.100
(0+00, 1228.78)	(0+39, 1229.25)	0.020
(0+39, 1229.25)	(0+71, 1230.50)	0.100

Results

Discharge	104.41	ft^3/s
Elevation Range	1228.44 to 1230.50 ft	
Flow Area	116.35	ft^2
Wetted Perimeter	113.61	ft
Top Width	113.50	ft

86th St. (Thomas / 86th) - DD02

Results

Normal Depth		2.06	ft
Critical Depth		1.06	ft
Critical Slope		0.12834	ft/ft
Velocity		0.90	ft/s
Velocity Head		0.01	ft
Specific Energy		2.07	ft
Froude Number		0.16	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.06	ft
Critical Depth	1.06	ft
Channel Slope	0.00236	ft/ft
Critical Slope	0.12834	ft/ft

86th St. (Thomas / 86th) - DD02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00236	ft/ft
Normal Depth	2.06	ft

Section Definitions

Station (ft)	Elevation (ft)
-0+43	1230.50
0+00	1228.78
0+01	1228.68
0+02	1228.44
0+07	1228.63
0+21	1229.19
0+33	1229.17
0+38	1229.14
0+39	1229.23
0+39	1229.25
0+71	1230.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(-0+43, 1230.50)	(0+00, 1228.78)	0.100
(0+00, 1228.78)	(0+39, 1229.25)	0.020
(0+39, 1229.25)	(0+71, 1230.50)	0.100

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1228.13					

86th St. (Thomas / 86th) - DD02

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1228.23					
1228.33					
1228.43					
1228.53	0.06	0.46	0.12	2.79	2.78
1228.63	0.42	0.75	0.56	5.89	5.86
1228.73	1.29	1.00	1.29	8.92	8.89
1228.83	1.50	0.64	2.36	12.96	12.92
1228.93	2.07	0.53	3.90	17.93	17.88
1229.03	3.17	0.53	5.94	22.89	22.84
1229.13	4.73	0.56	8.47	27.86	27.80
1229.23	7.08	0.57	12.52	50.40	50.34
1229.33	10.76	0.61	17.77	55.06	55.00
1229.43	14.90	0.63	23.52	60.07	60.00
1229.53	19.69	0.66	29.77	65.07	65.00
1229.63	25.13	0.69	36.52	70.08	70.00
1229.73	31.27	0.71	43.77	75.08	75.00
1229.83	38.11	0.74	51.52	80.08	80.00
1229.93	45.70	0.76	59.77	85.09	85.00
1230.03	54.06	0.79	68.52	90.09	90.00
1230.13	63.21	0.81	77.77	95.10	95.00
1230.23	73.19	0.84	87.52	100.10	100.00
1230.33	84.00	0.86	97.77	105.10	105.00
1230.43	95.69	0.88	108.52	110.11	110.00

5. McDowell Road/Granite Reef Road Flow Split – HEC-1 Update

Job No. 06077-01 Sheet 1 of 3 Prepared by RAK Date 2/27/07

Project Name Granite Reef Wash Reviewed by JWK Date 2/28/07

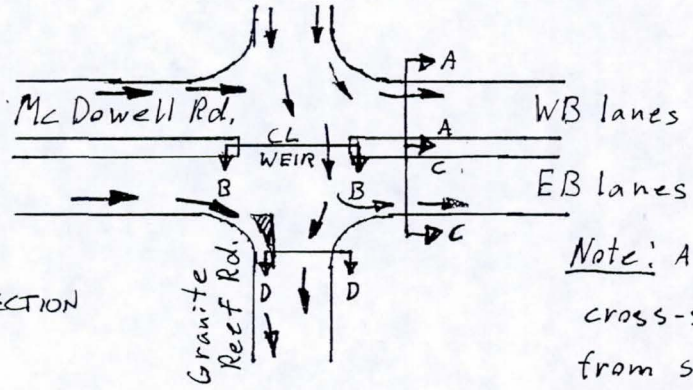
Title Flow Split @ Granite Reef + McDowell FWA No.

This is an additional flow split, located at the intersection of Granite Reef Road + McDowell Road, to be included in the HEC-1 Model.

- Flow diversion (DCQ2) was added at Granite Reef + McDowell to account for the flow split
- Route (RCQ2S) was created to represent flow along Granite Reef Rd.

The flow split was determined using (the same method as FCDMC used in its 2002 study with) normal depth calculations. In addition, a 48" storm drain is considered to be flowing full in McDowell Rd. before flows reach the split. The calculations were performed as follows:

1. Flowmaster was used to create rating tables for 4 different sections.
   - Section A – Westbound lanes of McDowell Rd.
   - Section B – McDowell Rd. centerline weir (Culvertmaster) ROADWAY OVERTOPPING FUNCTION W/ NO CULVERT
   - Section C – Eastbound lanes of McDowell Rd.
   - Section D – Granite Reef Rd.



Note: All elevations for cross-sections were obtained from survey field notes from the 2002 FCDMC study.

Job No. 06077-01 Sheet 2 of 3 Prepared by RAK Date 2/27/07

Project Name Ganite Reef Wash Reviewed by JRR Date 2/28/07

Title Flow Split @ Granite Reef + McDowell FWA No.

2. An additional Flowmaster calculation was done for the 48" Storm drain in McDowell Rd.
3. Tables were setup for two separate flow splits
   a. One for the split between westbound McDowell Rd. + the weir over the McDowell Rd. centerline
   b. The other for the split between eastbound McDowell Rd. + Granite Reef Rd.

   Note: Only flow from the weir will convey to the 2nd split. (b) above.

   See attached Excel sheets for tables.
4. A third table was setup to summarize the total flow in both McDowell Rd. + Granite Reef Rd.

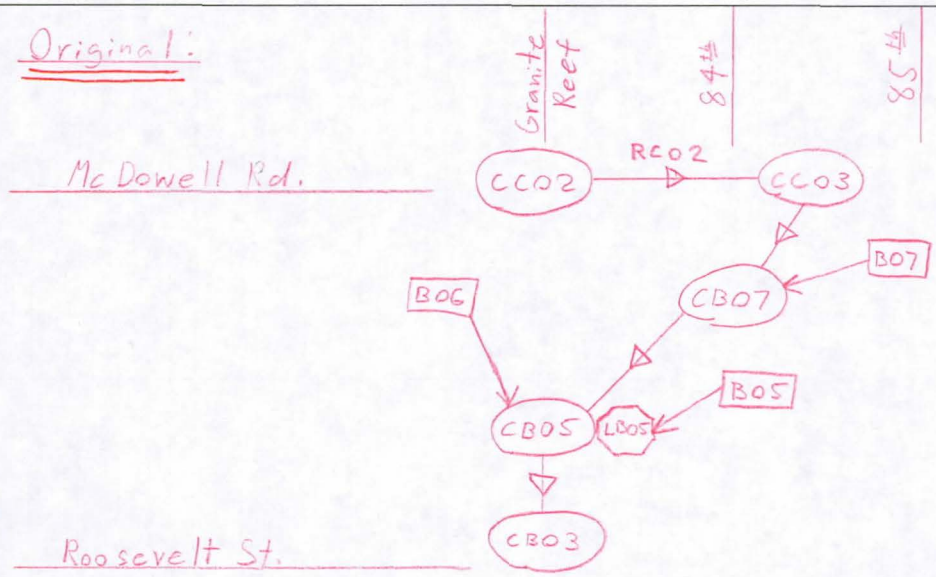
   See attached Excel sheets for table
5. The HEC-1 model was updated with the new flow split data. Flow from the 48" stormdrain was added to Q_{TOTAL} for the DI card and the corresponding flows for Granite Reef Rd. were used in the DQ card.

Job No. 06077-01 Sheet 3 of 3 Prepared by RAK Date 2/23/07

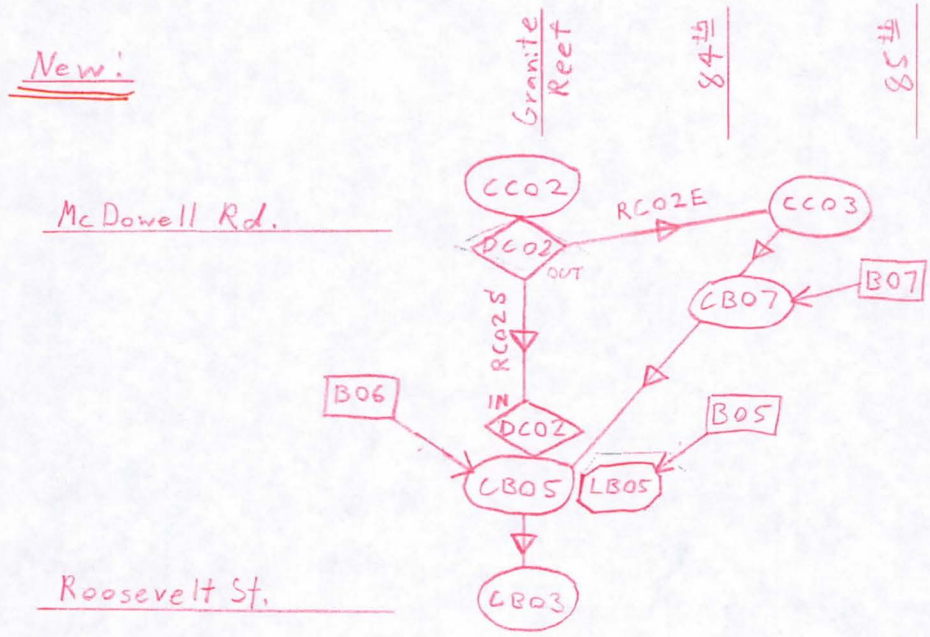
Project Name Granite Reef Wash Reviewed by JPK Date 2/28/07

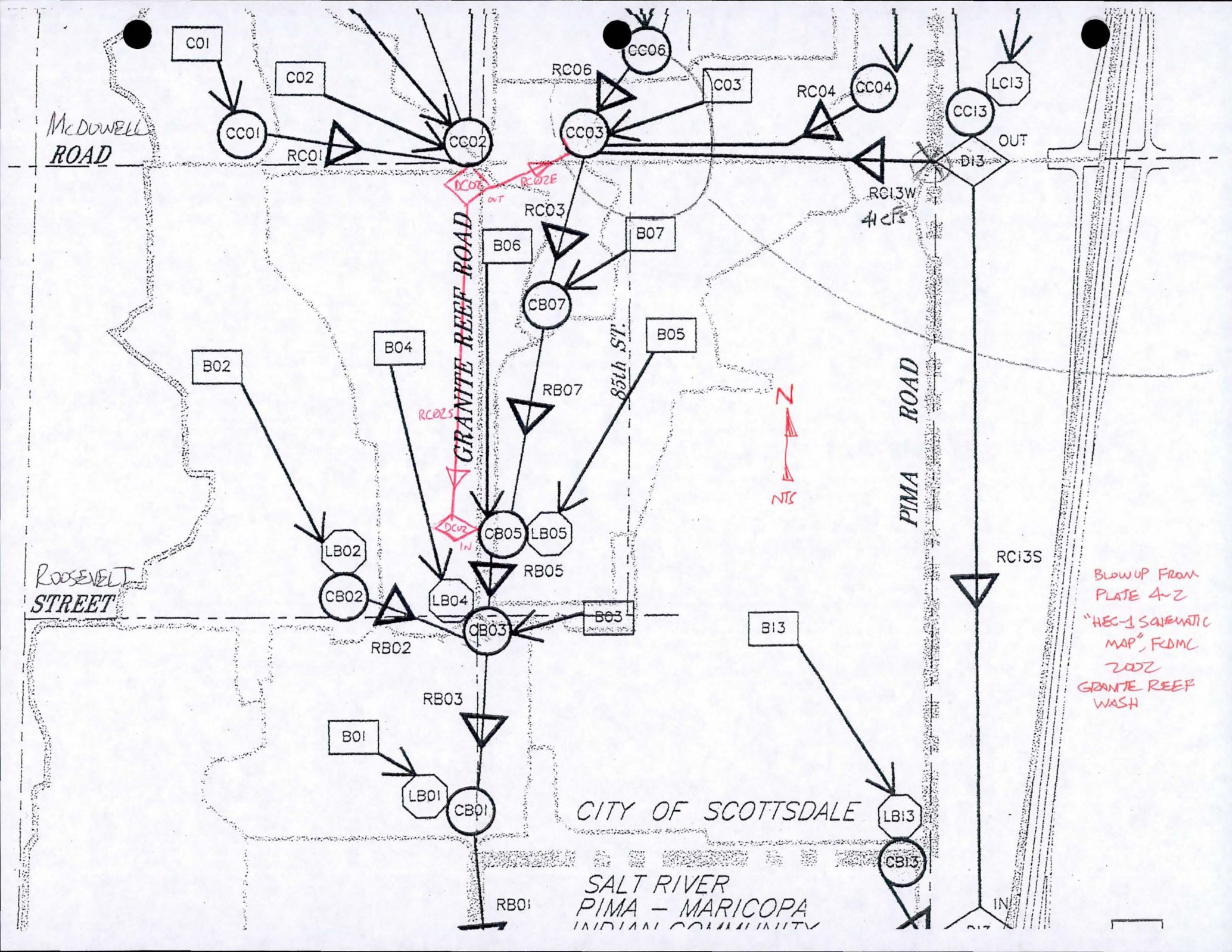
Title HEC-1 McDowell + Granite Reef Flow Split FWA No.

Original:



New:





BLOW UP FROM PLATE 4-2 "HEC-1 SCHEMATIC MAP", FCDMC 2002 GRANITE REEF WASH

McDOWELL RD &
GRANITE REEF RD.

LOOKING EAST

LOOKING SOUTH

LOOKING NORTH

LOOKING WEST

McDowell Rd. & Granite Reef Rd. Flow Diversion Analysis

Rating tables for flow splits and HEC-1 input summary

1st Flow Split - Westbound lanes of McDowell Rd. & weir along McDowell centerline

		WB McDowell Rd.	Centerline Weir		
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)	Comments
1217.75	0	0	0	0	Flow east along north side of McDowell only
1217.85	0.1	0.1	0	0.1	Flow east along north side of McDowell only
1217.95	0.2	0.5	0	0.5	Flow east along north side of McDowell only
1218.05	0.3	1.9	0	1.9	Flow east along north side of McDowell only
1218.15	0.4	4.6	0	4.6	Flow east along north side of McDowell only
1218.25	0.5	9.0	0	9.0	Flow east along north side of McDowell only
1218.35	0.6	15.0	0	15.0	Flow east along north side of McDowell only
1218.45	0.7	23.8	0	23.8	Flow east along north side of McDowell only
1218.55	0.8	35.7	0	35.7	Flow east along north side of McDowell only
1218.65	0.9	52.5	0.3	52.8	Flow overtops McDowell CL
1218.75	1	74.2	3.9	78.1	Flow overtops McDowell CL
1218.85	1.1	99.1	14.8	113.9	Flow overtops McDowell CL
1218.95	1.2	127.3	33.5	160.8	Flow overtops McDowell CL
1219.05	1.3	158.7	56.8	215.5	Flow overtops McDowell CL
1219.15	1.4	193.3	84.1	277.3	Flow overtops McDowell CL
1219.24	1.49	227.2	111.5	338.7	Flow overtops McDowell CL

* Only flows that overtop McDowell CL will divert to the 2nd flow split. All other flows are conveyed along McDowell Rd.

2nd Flow Split - Eastbound lanes of McDowell Rd. & Granite Reef Rd.

		EB McDowell Rd.	Granite Reef Rd.		
Elevation (ft)	Depth (ft)	Q (cfs)	Q (cfs)	Q_{total} (cfs)	Comments
1217.67	0	0	0	0	Flow south along Granite Reef only
1217.77	0.1	0	0	0	Flow south along Granite Reef only
1217.87	0.2	0	0.6	0.6	Flow south along Granite Reef only
1217.97	0.3	0.1	2.4	2.5	Flow south and east
1218.07	0.4	0.7	5.8	6.4	Flow south and east
1218.17	0.5	2.1	11.1	13.2	Flow south and east
1218.27	0.6	4.9	18.7	23.6	Flow south and east
1218.37	0.7	9.0	29.8	38.8	Flow south and east
1218.47	0.8	14.9	44.8	59.7	Flow south and east
1218.57	0.9	23.4	64.3	87.7	Flow south and east
1218.67	1	36.2	88.6	124.8	Flow south and east
1218.77	1.1	52.3	118.4	170.7	Flow south and east
1218.87	1.2	71.1	159.1	230.1	Flow south and east
1218.97	1.3	92.5	205.6	298.1	Flow south and east
1219.07	1.4	116.6	257.3	373.9	Flow south and east
1219.17	1.5	143	315	459	Flow south and east

Notes:

Discharge values for roadway sections are from FlowMaster using irregular sections.

Discharge values for weir (centerline of McDowell Road) are from Culvert Master roadway overtopping.

Overall Flow Split / HEC-1 Input Summary

	McDowell Rd.	Granite Reef Rd.	
Q_{total} (cfs)	Q (cfs)	Q (cfs)	Comments
0	0	0	
52.8	52.5	0.3	Granite Reef begins to convey flows from CL overtopping
79.0	74.5	4.5	
113.9	102.0	11.9	
160.8	136.1	24.7	
215.5	174.8	40.7	
277.3	218.0	59.3	
338.7	260.6	78.1	

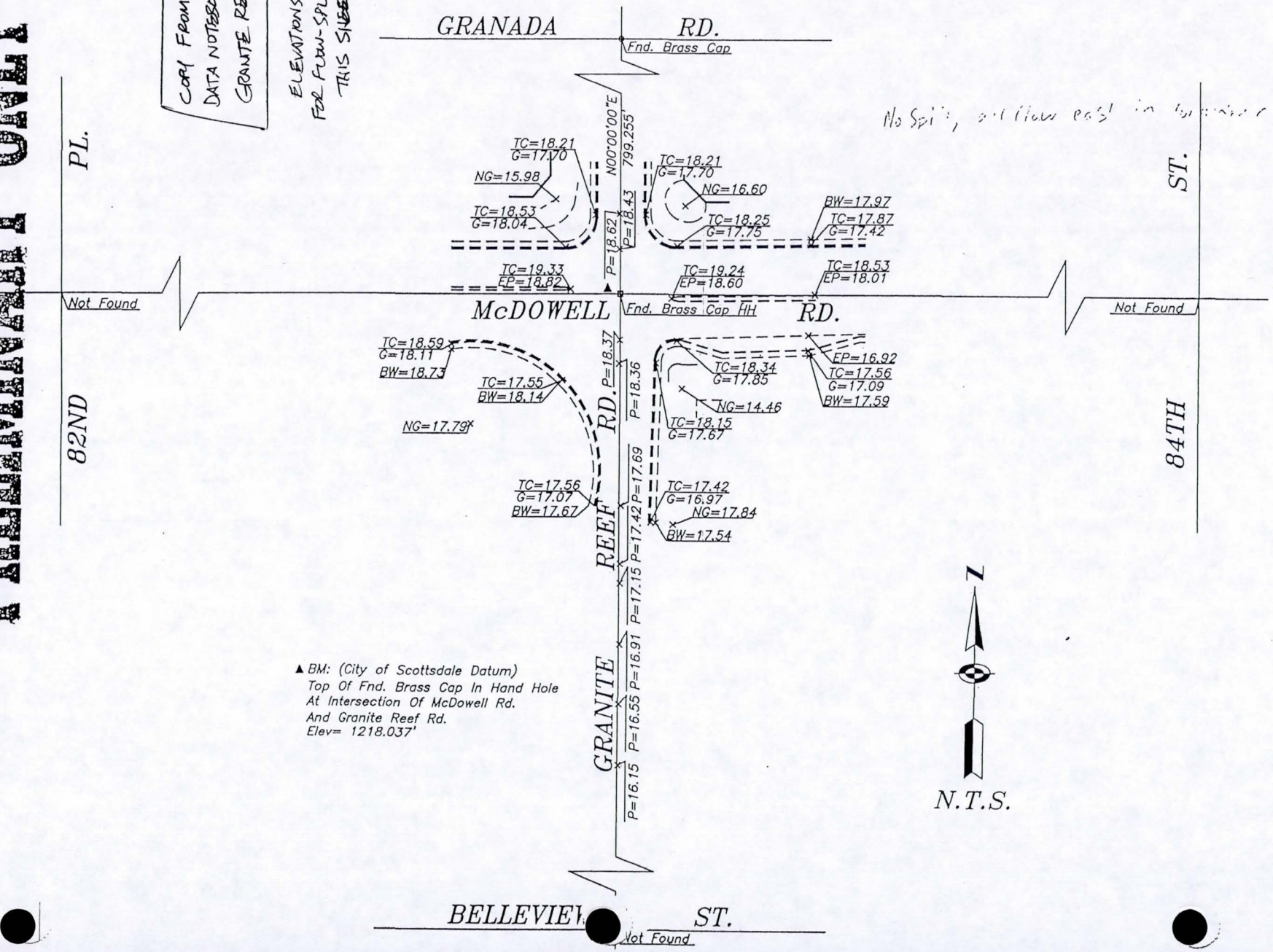
Notes:
An additional 107 cfs is conveyed in a 48" storm drain in McDowell Rd to Granite Reef Wash. Capacity of storm drain was determined using Flowmaster and assumed to be flowing full. This flow was added to Q_{total} to get values for the DI card in HEC-1.

PRELIMINARY ONLY

COPY FROM 2002 FDMC DATA NOTEBOOK FOR GRANITE REEF WASH STUDY

ELEVATIONS USED IN CALCS FOR FLOW-SPLIT TAKEN FROM THIS SHEET... JRC 2/28

No Spill, all flow east in [illegible]



▲ BM: (City of Scottsdale Datum)
Top Of Fnd. Brass Cap In Hand Hole
At Intersection Of McDowell Rd.
And Granite Reef Rd.
Elev= 1218.037'

McDowell Rd. WB (Sec. A) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00330	ft/ft
Normal Depth	1.49	ft
Discharge	227.19	ft^3/s

Cross Section Image

McDowell Rd. WB (Sec. A) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00330	ft/ft
Normal Depth	1.49	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1219.25
0+25	1218.25
0+25	1217.75
0+27	1217.83
0+71	1218.60
0+71	1219.24
0+73	1219.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1219.25)	(0+73, 1219.24)	0.020

Results

Discharge	227.19	ft^3/s
Elevation Range	1217.75 to 1219.25 ft	
Flow Area	60.04	ft^2
Wetted Perimeter	71.92	ft
Top Width	70.75	ft
Normal Depth	1.49	ft
Critical Depth	1.30	ft
Critical Slope	0.00664	ft/ft
Velocity	3.78	ft/s
Velocity Head	0.22	ft
Specific Energy	1.71	ft

McDowell Rd. WB (Sec. A) - DC02

Results

Froude Number	0.72	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.49	ft
Critical Depth	1.30	ft
Channel Slope	0.00330	ft/ft
Critical Slope	0.00664	ft/ft

McDowell Rd. WB (Sec. A) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00330	ft/ft
Normal Depth	1.49	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1219.25
0+25	1218.25
0+25	1217.75
0+27	1217.83
0+71	1218.60
0+71	1219.24
0+73	1219.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1219.25)	(0+73, 1219.24)	0.020

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1217.75					
1217.85	0.05	0.47	0.10	2.76	2.66
1217.95	0.50	0.77	0.66	8.64	8.44
1218.05	1.89	1.06	1.79	14.52	14.21
1218.15	4.61	1.32	3.50	20.40	19.99
1218.25	9.01	1.56	5.79	26.28	25.77
1218.35	15.03	1.71	8.78	34.56	34.05

McDowell Rd. WB (Sec. A) - DC02

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1218.45	23.78	1.89	12.60	42.84	42.33
1218.55	35.66	2.07	17.24	51.12	50.61
1218.65	52.51	2.32	22.65	56.57	56.00
1218.75	74.19	2.61	28.37	59.17	58.50
1218.85	99.13	2.89	34.35	61.77	61.00
1218.95	127.29	3.14	40.57	64.37	63.50
1219.05	158.68	3.37	47.05	66.97	66.00
1219.15	193.28	3.59	53.77	69.58	68.50
1219.25	227.07	3.74	60.77	74.18	73.00

Culvert Analysis Report
Weir
(Sec. B)

Hydraulic Component(s): Roadway

Discharge	0.00	cfs	Allowable HW Elevation	1,218.60	ft
Roadway Width	82.00	ft	Overtopping Coefficient	2.93	US
Low Point	1,218.60	ft	Headwater Elevation	N/A	ft
Discharge Coefficient (Cr)	2.93		Submergence Factor (Kt)	1.00	
Tailwater Elevation	-9,999.00	ft			

Sta (ft)	Elev. (ft)	
0.00	1,218.82	← EP ELEV @ WEST MEDIAN NOSE
96.00	1,218.60	← EP ELEV @ EAST MEDIAN NOSE

APPROX. LENGTH BETWEEN MEDIAN NOSES

Rating Table Report
McDowell Road & Granite Reef Road - Overtopping
(Sec. B)

Range Data:

	Minimum	Maximum	Increment
Allowable HW E	1,218.60	1,219.25	0.05 ft

HW Elev. (ft)	Discharge (cfs)
1,218.60	0.00
1,218.65	0.25
1,218.70	1.42
1,218.75	3.93
1,218.80	8.09
1,218.85	14.80
1,218.90	23.49
1,218.95	33.48
1,219.00	44.61
1,219.05	56.81
1,219.10	69.97
1,219.15	84.05
1,219.20	98.99
1,219.25	114.74

McDowell Rd. EB (Sec. C) - DC02

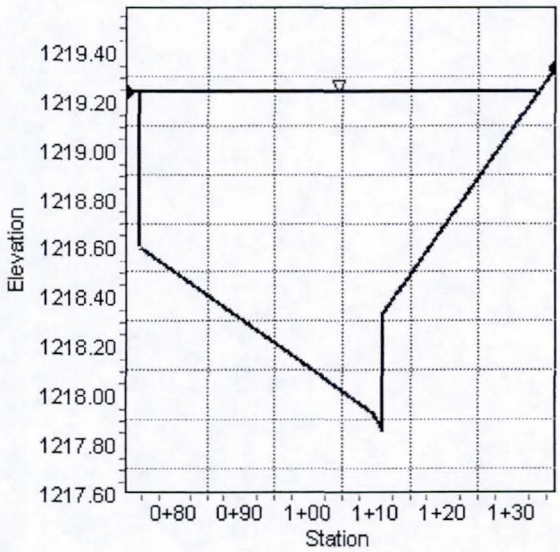
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00330	ft/ft
Normal Depth	1.39	ft
Discharge	163.82	ft³/s

Cross Section Image



McDowell Rd. EB (Sec. C) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00330	ft/ft
Normal Depth	1.39	ft

Section Definitions

Station (ft)	Elevation (ft)
0+73	1219.24
0+75	1219.24
0+75	1218.60
1+10	1217.93
1+11	1217.85
1+11	1218.34
1+36	1219.34

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+73, 1219.24)	(1+36, 1219.34)	0.020

Results

Discharge	163.82	ft^3/s
Elevation Range	1217.85 to 1219.34 ft	
Flow Area	45.79	ft^2
Wetted Perimeter	59.66	ft
Top Width	58.50	ft
Normal Depth	1.39	ft
Critical Depth	1.21	ft
Critical Slope	0.00686	ft/ft
Velocity	3.58	ft/s
Velocity Head	0.20	ft
Specific Energy	1.59	ft

McDowell Rd. EB (Sec. C) - DC02

Results

Froude Number	0.71	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.39	ft
Critical Depth	1.21	ft
Channel Slope	0.00330	ft/ft
Critical Slope	0.00686	ft/ft

McDowell Rd. EB (Sec. C) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00330	ft/ft
Normal Depth	1.39	ft

Section Definitions

Station (ft)	Elevation (ft)
0+73	1219.24
0+75	1219.24
0+75	1218.60
1+10	1217.93
1+11	1217.85
1+11	1218.34
1+36	1219.34

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+73, 1219.24)	(1+36, 1219.34)	0.020

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1217.77					
1217.87	0.00	0.19	0.00	0.40	0.37
1217.97	0.09	0.53	0.16	3.68	3.56
1218.07	0.65	0.84	0.77	8.93	8.71
1218.17	2.13	1.12	1.90	14.18	13.86
1218.27	4.87	1.37	3.55	19.43	19.01
1218.37	9.02	1.58	5.72	25.40	24.91

McDowell Rd. EB (Sec. C) - DC02

Input Data

Water Surface Elevation (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)
1218.47	14.93	1.74	8.59	33.06	32.56
1218.57	23.40	1.91	12.23	40.71	40.21
1218.67	36.18	2.19	16.50	44.83	44.25
1218.77	52.29	2.48	21.05	47.43	46.75
1218.87	71.06	2.75	25.85	50.03	49.25
1218.97	92.49	2.99	30.90	52.63	51.75
1219.07	116.59	3.22	36.20	55.23	54.25
1219.17	143.41	3.43	41.75	57.84	56.75

Granite Reef Rd. (Sec. D) - DC02

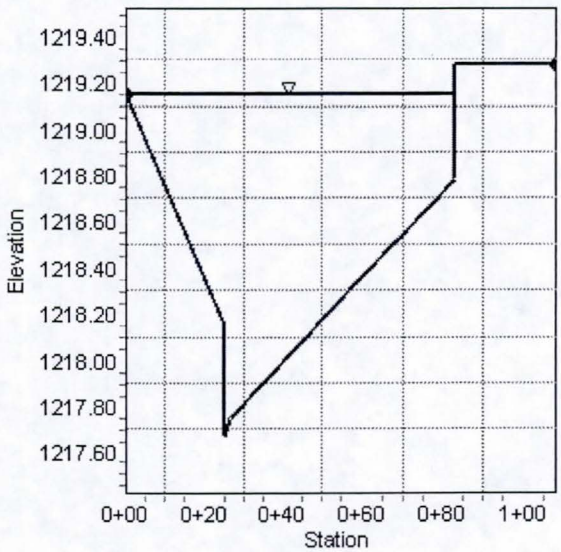
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00560	ft/ft
Normal Depth	1.48	ft
Discharge	302.41	ft^3/s

Cross Section Image



Granite Reef Rd. (Sec. D) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00560	ft/ft
Normal Depth	1.48	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1219.15
0+25	1218.15
0+25	1217.67
0+27	1217.75
0+60	1218.36
0+83	1218.78
0+83	1219.28
1+08	1219.28

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1219.15)	(1+08, 1219.28)	0.020

Results

Discharge	302.41	ft^3/s
Elevation Range	1217.67 to 1219.28 ft	
Flow Area	64.68	ft^2
Wetted Perimeter	83.88	ft
Top Width	83.00	ft
Normal Depth	1.48	ft
Critical Depth	1.44	ft
Critical Slope	0.00650	ft/ft
Velocity	4.68	ft/s
Velocity Head	0.34	ft

Granite Reef Rd. (Sec. D) - DC02

Results

Specific Energy		1.82	ft
Froude Number		0.93	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.48	ft
Critical Depth	1.44	ft
Channel Slope	0.00560	ft/ft
Critical Slope	0.00650	ft/ft

Granite Reef Rd. (Sec. D) - DC02

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00560	ft/ft
Normal Depth	1.48	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1219.15
0+25	1218.15
0+25	1217.67
0+27	1217.75
0+60	1218.36
0+83	1218.78
0+83	1219.28
1+08	1219.28

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1219.15)	(1+08, 1219.28)	0.020

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1217.67					
1217.77	0.06	0.62	0.10	2.70	2.60
1217.87	0.64	1.00	0.64	8.29	8.09
1217.97	2.37	1.38	1.72	13.89	13.58
1218.07	5.77	1.72	3.35	19.48	19.07
1218.17	11.11	2.01	5.54	25.55	25.07

Granite Reef Rd. (Sec. D) - DC02

Input Data

Water Surface Elevation (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)
1218.27	18.72	2.22	8.44	33.55	33.06
1218.37	29.77	2.45	12.15	41.54	41.05
1218.47	44.78	2.69	16.65	49.52	49.02
1218.57	64.25	2.93	21.95	57.50	57.00
1218.67	88.64	3.16	28.05	65.48	64.98
1218.77	118.43	3.39	34.95	73.46	72.95
1218.87	159.07	3.75	42.42	76.60	76.00
1218.97	205.59	4.10	50.15	79.20	78.50
1219.07	257.31	4.43	58.12	81.80	81.00
1219.17	315.35	4.75	66.34	83.92	83.00

McDowell 48" Storm Drain

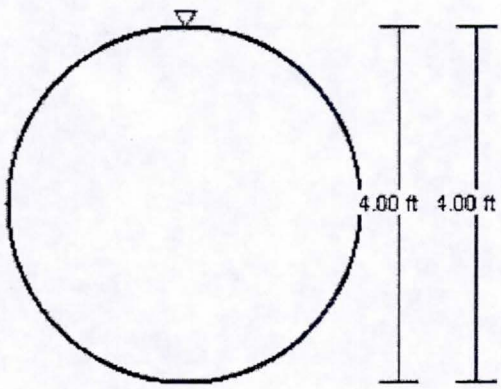
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00550	ft/ft ← OBTAINED FROM COS STORMWATER MASTER PLAN
Normal Depth	4.00	ft
Diameter	4.00	ft
Discharge	106.52	ft³/s

Cross Section Image



V: 1
H: 1

McDowell 48" Storm Drain

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00550	ft/ft
Normal Depth	4.00	ft
Diameter	4.00	ft

Results

Discharge	106.52	ft^3/s
Flow Area	12.57	ft^2
Wetted Perimeter	12.57	ft
Top Width	0.00	ft
Critical Depth	3.12	ft
Percent Full	100.0	%
Critical Slope	0.00605	ft/ft
Velocity	8.48	ft/s
Velocity Head	1.12	ft
Specific Energy	5.12	ft
Froude Number	0.00	
Maximum Discharge	114.59	ft^3/s
Discharge Full	106.52	ft^3/s
Slope Full	0.00550	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

McDowell 48" Storm Drain

GVF Output Data

Normal Depth	4.00	ft
Critical Depth	3.12	ft
Channel Slope	0.00550	ft/ft
Critical Slope	0.00605	ft/ft

6. McDowell Road/85th Street Flow Split – Update to HEC-1 Model (none)

Job No. 06077-01 Sheet 1 of 1 Prepared by RAK Date 2/27/07

Project Name Granite Reef Wash Reviewed by JKK Date 2/28/07

Title Flow Split @ 85th PLACE + McDowell FWA No.

This appeared to be another possible flow split, but after a field inspection and looking at the HEC-1 output for routes RC04 + RC13W, it was determined that ~~all flow~~ most of the flow will remain in McDowell Rd.

No flow diversion will be used at this location. The HEC-1 model will remain unchanged.

- THIS LOCATION WAS LOOKED AT CLOSELY BY THE CITY OF SCOTTSDALE'S ON-CALL CONSULTANT IN 2006 – DATA BEING OBTAINED BY PSOMAS AT TIME OF THIS PRELIMINARY HYDROLOGY SUBMITTAL.
- THERE IS A CATCHBASIN ON THE ~~NORTH~~ SOUTHWEST CORNER OF 85th PLACE & McDOWELL ADJACENT TO DIRT LOT (BEING DEVELOPED)
- SOME AMOUNT OF STORMFLOWS WILL GO SOUTH IN 85th PLACE – HOWEVER, A PORTION IS INTERCEPTED BY CATCHBASIN AND THEN OUTLET INTO WASH AT BOX CULVERT/GRANITE REEF WASH AND BYPASS FLOWS WILL NOT MAKE IT TO ROOSEVELT DUE TO HIGHPOINTS IN ROADWAY PROFILE BETWEEN MORELAND STREET & PORTLAND STREET AND BETWEEN PORTLAND STREET & ROOSEVELT STREET.
- BYPASS FLOWS IN 85th PLACE WILL MOST LIKELY FLOW ~~EAST~~ WEST IN BELLEVIEW STREET AND THEN SOUTH IN 84th PLACE

CONCLUSION:
CODING A RE-ROUTE INTO HEC-1 FOR THIS SHORT FLOWPATH AND SMALL PEAK DISCHARGE IS NOT NECESSARY.

B. Flood Mitigation Alternatives

1. **Detention Basins**
   a. **Alternative Summary Description**
   b. **100-year, 6-hour HEC-1 Output**
   c. **Exhibit 2 – HEC-1 Schematic Drawing**
   d. **Layout, Methodology, As-Builts, Attenuation Hydrographs**
      i. **Pima Park**
      ii. **Hohokam Elementary School (Oak Street)**
      iii. **Apache Park**

2. **Alternative Flow Path (FCDMC, 2002)**
   a. **Alternative Summary Description**
   b. **Alternative Cost Estimate**
   c. **Property Acquisition Data (updated to 2007 values)**
   d. **Original Alternative (layout – FCDMC, 2002)**

3. **Pima Road Conduit (PRC)**
   a. **Alternative Summary Description**
   b. **100-year, 6-hour HEC-1 Output**
   c. **Exhibit 3 – HEC-1 Schematic Drawing**
   d. **Interception Structure Bypass Analysis – Methodology**

1. Detention Basins

SUMMARY OF ALTERNATIVE #1 – DETENTION BASINS

This alternative evaluated the net attenuation of peak flows within the project corridor resulting from a combination of three detention basins located within the Granite Reef Watershed. Detention basin locations evaluated were: Pima Park near the northeast corner of Thomas and 86th Street, Hohokam Elementary School near the southeast corner of Oak Street and Granite Reef Road and Apache Park near the east side of 85th Place between McDowell Road and Roosevelt Street. Assumptions with regard to detention basin shape, footprint, and depth addressed City and County guidelines and potential local concerns (4:1 side slopes, 3-foot maximum depth, drainage within 36 hours).

- Schematic basin layouts were used to determine approximate total volume available for each basin.
- Near each basin, inflow hydrograph shapes were evaluated to determine peak flow that would fill each basin.
- Diversions were coded into the project base HEC-1 model to account for interception of peak flows.
- HEC-1 basin diversions were not retrieved – the assumption being that outflows were small and delayed such that correspondence with peak flows were negligible.
- Conceptual storm drain outflow options were identified planimetrically based on utility quarter section maps and available as-builts.
- Potential utility conflicts were addressed to insure basin locations identified were feasible.

Though interception and storm drain hydraulics were not analyzed, a general assumption for all basins was that peak flows were effectively intercepted and routed to each basin and a viable outfall was available to drain the basins. Specific issues on methods to intercept peak flows (only) in residential neighborhoods will make implementing interception complex in the case of Pima Park and Hohokam Elementary School.

Again, the primary purpose of this evaluation is to determine overall hydrologic benefit of the basins assuming interception of peak flows is possible.

BASIN 6.

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   22JAN08  TIME  18:00:04  *
*                                      *
****************************************
```

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

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

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

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

```
1                                    HEC-1 INPUT                                                    PAGE  1

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

        1           ID   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
        2           ID   ****************************************************************************
        3           ID   **                                                                        **
        4           ID   **                    Updated Granite Reef ADMP                           **
        5           ID   **                                                                        **
        6           ID   ****************************************************************************
        7           ID   ****************************************************************************
        8           ID   PROJECT:                Granite Reef Wash DMP Update
        9           ID   CLIENT:                 City of Scottsdale
       10           ID   PREPARED BY:            Psomas
       11           ID   PROJECT No:             COS                Psomas 06077-01
       12           ID   FILE NAME: BASIN6.DAT                    CREATED DATE: Feb 26, 2007
       13           ID   MODIFIED: Jan 15, 2008 (RAK/JKK PSOMAS)
       14           ID        * ELEMENTS ADDED TO REPRESENT OUTFALLS TO DETENTION BASINS
       15           ID        * ORIGINAL CARDS STARRED-OUT
       16           ID        * COMMENT CARDS ADDED
       17           ID   STORM:                  100-year 6-hour Storm
       18           ID   DEVELOPMENT CONDITIONS: Future Conditions
       19           ID
       20           ID
       21           ID
       22           ID
       23           ID   DDM MCUHP1
                    *
                    *  ADDITIONAL 6FT STORM DRAIN IN INDIAN SCHOOL ROAD WAS ASSUMED
                    *  TO BE CONSTRUCTED.
                    *
                    * ****************************************************************************
                    *  ELEMENT LETTER DESIGNATION LOCATED BETWEEN:
                    *     A. MCKELLIPS ROAD AND SALT RIVER
                    *     B. MCDOWELL ROAD AND MCKELLIPS ROAD
                    *     C. THOMAS ROAD AND MCDOWELL ROAD
                    *     D. INDIAN SCHOOL ROAD AND THOMAS ROAD
                    *     E. CHAPARRAL ROAD AND INDIAN SCHOOL ROAD
                    *     F. MCDONALD DRIVE AND CHAPARRAL ROAD
                    *     G. AZ CANAL AND MCDONALD DRIVE
                    * ****************************************************************************
                    *
       24           ID
       25           IT       5                   1000
       26           IO       5
                    *
                    *DIAGRAM
```

```
1****************************************                                    ****************************************
*                                      *                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
*            VERSION 4.1               *                                    *          609 SECOND STREET           *
*                                      *                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE   22JAN08  TIME  18:00:04  *                                    *           (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   Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
        2           ID   ****************************************************************************
        3           ID   **                                                                        **
        4           ID   **                    Updated Granite Reef ADMP                           **
        5           ID   **                                                                        **
        6           ID   ****************************************************************************
        7           ID   ****************************************************************************
        8           ID   PROJECT:                Granite Reef Wash DMP Update
        9           ID   CLIENT:                 City of Scottsdale
       10           ID   PREPARED BY:            Psomas
       11           ID   PROJECT No:             COS                Psomas 06077-01
       12           ID   FILE NAME: BASIN6.DAT                    CREATED DATE: Feb 26, 2007
       13           ID   MODIFIED: Jan 15, 2008 (RAK/JKK PSOMAS)
       14           ID        * ELEMENTS ADDED TO REPRESENT OUTFALLS TO DETENTION BASINS
       15           ID        * ORIGINAL CARDS STARRED-OUT
       16           ID        * COMMENT CARDS ADDED
       17           ID   STORM:                  100-year 6-hour Storm
       18           ID   DEVELOPMENT CONDITIONS: Future Conditions
       19           ID
       20           ID
       21           ID
       22           ID
       23           ID   DDM MCUHP1
                    *
                    *  ADDITIONAL 6FT STORM DRAIN IN INDIAN SCHOOL ROAD WAS ASSUMED
                    *  TO BE CONSTRUCTED.
                    *
                    * ****************************************************************************
                    *  ELEMENT LETTER DESIGNATION LOCATED BETWEEN:
                    *     A. MCKELLIPS ROAD AND SALT RIVER
                    *     B. MCDOWELL ROAD AND MCKELLIPS ROAD
                    *     C. THOMAS ROAD AND MCDOWELL ROAD
                    *     D. INDIAN SCHOOL ROAD AND THOMAS ROAD
                    *     E. CHAPARRAL ROAD AND INDIAN SCHOOL ROAD
                    *     F. MCDONALD DRIVE AND CHAPARRAL ROAD
                    *     G. AZ CANAL AND MCDONALD DRIVE
                    * ****************************************************************************
                    *
       24           ID
       25           IT       5                   1000
       26           IO       5
                    *
                    *DIAGRAM
```

```
                 *
  27             IN      15
  28             JD    3.20    0.01
  29             PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
  30             PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
  31             PC   0.962   0.972   0.983   0.991   1.000
  32             JD   3.179    0.50
  33             JD   3.120    2.80
  34             PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
  35             PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
  36             PC   0.950   0.963   0.975   0.988   1.000
  37             JD   2.950    16.0
1                                        HEC-1 INPUT                                                PAGE  2

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

  38             PC   0.000   0.009   0.020   0.030   0.048   0.063   0.076   0.090   0.105   0.119
  39             PC   0.135   0.152   0.175   0.222   0.304   0.472   0.670   0.796   0.868   0.912
  40             PC   0.946   0.960   0.973   0.987   1.000
  41             JD   2.598    90.0
  42             PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
  43             PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
  44             PC   0.927   0.945   0.964   0.982   1.000
  45             JD   1.824   500.0
  46             PC   0.000   0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
  47             PC   0.212   0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
  48             PC   0.907   0.930   0.954   0.977   1.000
                 *
                 *

  49             KK     G03   BASIN
  50             BA   0.093
  51             LG    0.23    0.25    5.60    0.26      55
  52             UC   0.367   0.275
  53             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  54             UA     100
                 *
                 *
                 * *** DIVERSION DG03 ***********************************************************
                 *
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****

  55             KK    DG03
  56             DT   DG03I
  57             DI       0       7      22      43      70     101     124     180     217     264
  58             DQ       0     3.5      11      22      35      51      63      92     112     137
                 *
                 *
                 * Route is a Minor Arterial Road with a median.
                 *

  59             KK   RG03S
  60             RS       1    FLOW       0
  61             RC    .035   0.015    .035    1322  0.0024
  62             RX       0       1      40      41     105     106     146     147
  63             RY       8       2       1      .5      .5       1       2       8
                 *

  64             KK     G01   BASIN
  65             BA   0.049
  66             LG    0.21    0.25    4.80    0.38      57
  67             UC   0.588   0.598
  68             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
  69             UA     100
                 *
                 *
                 *
                 * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG03.
                 * THE HARD-CODE VALUE IS 50% OF CG03'S CONTRIBUTING AREA.
                 * SEE DIVERSION DG03.
                 *
                 * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                                PAGE  3

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

  70             KK    CG01
```

```
 71          KM        MCDONALD DRIVE AND GRANITE REEF ROAD
 72          HC       2   0.096
             *
             *
             * *** DIVERSION DG01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

 73          KK    DG01
 74          DT   DG01I
 75          DI       0      10      29      57      92     134     144     194     233     278
 76          DQ       0       7      21      41      66      96     103     139     166     198
             *
             *
             * Route is a Minor Arterial Road.
             *

 77          KK   RG01S
 78          RS      16    FLOW       0
 79          RC   0.035   0.015   0.035    2625  0.0014
 80          RX       0       1      40      41     105     106     146     147
 81          RY       8       2       1      .5      .5       1       2       8
             *

 82          KK     F04   BASIN
 83          KM
 84          KM    This basin's original area was 0.073 sq mi.  The infield area is bermed
 85          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
 86          KM    from the subbasin calculations to account for the storage.
 87          KM
 88          BA   0.060
 89          LG    0.15    0.25    4.80    0.42      68
 90          UC   0.567   0.659
 91          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 92          UA     100
             *
             *

 93          KK     G04   BASIN
 94          KO       3
 95          BA   0.045
 96          LG    0.25    0.25    4.80    0.35      51
 97          UC   0.296   0.261
 98          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 99          UA     100
             *
             *
             * Route is a Subdivision Road.
             *
```



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

100          KK    RG04
101          RS       4    FLOW       0
102          RC    .035   0.015   0.035    1336  0.0033
103          RX       0       1      28      29      57      58      86      87
104          RY       8       2       1     0.5     0.5       1       2       8
             *

105          KK     G05   BASIN
106          BA   0.045
107          LG    0.24    0.15    7.00    0.14      53
108          UC   0.317   0.283
109          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
110          UA     100
             *
             *
             * Route is a Subdivision Road.
             *

111          KK    RG05
112          RS       7    FLOW       0
113          RC   0.035   0.015   0.035    1994  0.0026
114          RX       0       1      28      29      57      58      86      87
115          RY       8       2       1     0.5     0.5       1       2       8
             *
```

```
116          KK     G06   BASIN
117          KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
118          BA   0.127
119          LG    0.10    0.35    2.65    1.70      80
120          UC   0.254   0.140
121          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
122          UA     100
             *
             *
             *
             * *** STORAGE ROUTING LG06 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****

123          KK    LG06
124          DT   LG06D     8.0
125          DI       0     100    1000   10000
126          DQ       0     100    1000   10000
             *
             * *** CG06 LOCATED AT MCDONALD DRIVE AND PIMA ROAD ****************************
             *
             * *** DIVERSION DG06 *****************************************************
             *
             * THIS DIVESION IS DUE TO THE DETENTION BASIN.
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****
```



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

127          KK    DG06
128          DT   DG06I
129          DI       0      50     100     200     300     500     700     900    1000
130          DQ       0      25      49      75     132     195     230     259     287
             *
             *
             * *** STORAGE ROUTING LG06A ***********************************************
             * See the storage calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

131          KK   LG06A
132          DT  LG06AD    4.25
133          DI       0     100    1000   10000
134          DQ       0     100    1000   10000
             *
             *

135          KK     G02   BASIN
136          BA   0.075
137          LG    0.21    0.25    4.80    0.38      52
138          UC   0.592   0.517
139          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
140          UA     100
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG06.
             * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
             * SEE DIVERSION DG06.
             *
             * DDM   ***** Preserved *****

141          KK    CG02
142          KM        MCDONALD DRIVE AND 86TH STREET
143          HC       4   0.229
             *
             *
             * Route is a Minor Arterial Road.
             *

144          KK    RG02
145          RS       4    FLOW       0
146          RC   0.035   0.015   0.035    1358  0.0018
147          RX       0       1      26      27      62      63      88      89
148          RY       8       2       1     0.5     0.5       1       2       8
             *
```

```
149          KK     F06   BASIN
150          BA   0.103
151          LG    0.23    0.25    4.80    0.36      49
152          UC   0.604   0.427
153          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
154          UA     100
             *
             *
             * DDM   ***** Preserved *****
```



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

155          KK    CF06
156          KM        MONTEBELLO AVENUE AND 86TH STREET
157          HC       2
             *
             *
             * Route is a Minor Arterial Road.
             *

158          KK    RF06
159          RS       3    FLOW       0
160          RC   0.035   0.015   0.035    1299   0.002
161          RX       0       1      26      27      62      63      88      89
162          RY       8       2       1     0.5     0.5       1       2       8
             *

163          KK     F05   BASIN
164          BA   0.088
165          LG    0.24    0.25    4.80    0.36      52
166          UC   0.554   0.401
167          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
168          UA     100
             *
             * DDM   ***** Preserved *****

169          KK    CF05
170          KM        JACKRABBIT ROAD AND 86TH STREET
171          HC       2
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
             * ALL EXCESS OVERLAND AMOUNT FLOWS SOUTH.
             *
             *
             * STORM DRAIN ANALYSIS SHOWS A CAPACITY OF 185 CFS, 1/3 IS INTERCEPTED AT
             * THIS LOCATION.(61 cfs) 20% Clogging Factor means 49 cfs here.
             * (61 x .8 = 49cfs)
             *
             * *** DIVERSION DF05 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

172          KK    DF05
173          DT   DF05I
174          DI       0       1      50     100     200     300     400     500    1000    2000
175          DQ       0      .9      10      51     151     251     351     451     951    1951
             *
             *
             * THE INFORMATION FOR THE STORM DRAIN WAS MEASURED IN THE FIELD.
             * THE PIPE IS A 66" RCP, SLOPE WAS ESTIMATED TO BE 0.004 FT/FT.
             *
```



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

176          KK   RF05W
177          RK    1302   0.004   0.013            CIRC     5.5
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05 & DG01.
             * THE HARD-CODE VALUE IS 80% OF CG01 AND 10% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DG01 AND DF05.
             *
             * DDM   ***** Preserved *****
```

```
178          KK    CF04
179          KM        JACKRABBIT ROAD AND GRANITE REEF ROAD
180          HC       3    0.17
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
             *
             *
             * *** DIVERSION DF04 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

181          KK    DF04
182          DT   DF04I
183          DI       0       9      30      57      93     136     150     198     336     400
184          DQ       0       5      16      30      50      73      82     105     170     200
             *
             *
             * DIVERSION RECOVER D05
             *

185          KK    F05R
186          DR   DF05I
             *
             * Route is a Minor Arterial Road.
             *

187          KK   RF05S
188          RS       4    FLOW       0
189          RC   0.035   0.015   0.035    2167  0.0032
190          RX       0       1      26      27      62      63      88      89
191          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             *

192          KK     F03   BASIN
193          BA   0.170
194          LG    0.21    0.25    4.80    0.37      58
195          UC   0.683   0.445
196          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
197          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05.
             * THE HARD-CODE VALUE IS 90% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DF05.
             *
             * DDM   ***** Preserved *****
```



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

198          KK    CF03
199          KM        ORANGE BLOSSOM LANE AND 86TH STREET
200          HC       2   0.556
             *
             *
             * Route is a Minor Arterial Road.
             * Normal Depth Routing did not work for this Route.
             *

201          KK    RF03
202          RD
203          RC   0.035   0.015   0.035     482  0.0035
204          RX       0       1      26      27      62      63      88      89
205          RY       8       3       2       0       0       2       3       8
             *
             *
             *
             * DIVERSION RECOVER G06
             *

206          KK    G06R
207          DR   DG06I
             *
             *
```

```
            * Route is a Minor Arterial Road along Pima Road.
            *
            *

 208        KK   RG06S
 209        RS      18    FLOW       0
 210        RC   0.035   0.015   0.035    5286  0.0028
 211        RX       0       1      26      27      62      63      88      89
 212        RY       8       3       2       0       0       2       3       8
            *

 213        KK     F07   BASIN
 214        KM         SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
 215        BA   0.250
 216        LG    0.10    0.29    2.65    1.70      80
 217        UC   0.538   0.415
 218        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 219        UA     100
            *
            *
            * *** STORAGE ROUTING LF07 ************************************************
            *
            * See the detention calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                          PAGE  9

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


 220        KK    LF07
 221        DT   LF07D    15.2
 222        DI       0     100    1000   10000
 223        DQ       0     100    1000   10000
            *
            *
            *
            * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DG06.
            * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
            * SEE DIVERSION DG06.
            *
            * DDM   ***** Preserved *****

 224        KK    CF07
 225        KM        CHAPARRAL ROAD AND PIMA ROAD
 226        HC       2   0.314
            *
            * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
            * THE STORM DRAIN ANAYLSIS SHOWS THE MAXIMUM FLOW IN THE STORM DRAIN AT THIS
            * LOCATION IS 16 CFS.  20% clogging factor = 13 cfs (16cfs * .8 = 13 cfs).
            * ALL OVERLAND FLOW CONTINUES SOUTH.
            *
            *
            * *** DIVERSION DF07 *******************************************************
            *
            * See the diversion calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            *
            * DDM   ***** Preserved *****

 227        KK    DF07
 228        DT   DF07I
 229        DI       0       1      16     100     200     400     600     800    1000    2000
 230        DQ       0       0       0      87     187     387     587     787     987    1987
            *
            *
            * Route is a Storm Drain 36" RCP with a Slope of 0.001 ft/ft
            *
            *

 231        KK   RF07W
 232        RD    1315   0.001   0.013            CIRC       3
            *
            *

 233        KK     F02   BASIN
 234        BA   0.046
 235        LG    0.23    0.25    4.80    0.36      55
 236        UC   0.521   0.538
 237        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 238        UA     100
```

```
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF07.
                * THE HARD-CODE VALUE IS 10% OF CF07'S CONTRIBUTING AREA.
                * SEE DIVERSION DF07.
                *
                * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                    PAGE 10

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

 239            KK    CF02
 240            KM        CHAPARRAL ROAD AND 86TH STREET
 241            HC       3    .627
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THIS STORM DRAIN
                * AT THIS LOCATION IS 63 CFS AND 16 CFS IS IN THE STORMDRAIN FROM THE EAST.
                * 20% clogging factor means 50 cfs (63cfs * 0.8 = 50cfs).
                *
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DF02 ********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

 242            KK    DF02
 243            DT   DF02I
 244            DI       0       1      50     100     200     300     400     500    1000    2000
 245            DQ       0       1      10      50     150     250     350     450     950    1950
                *
                *
                *
                * ROUTE IS A 5FT RCP STORM DRAIN WITH A SLOPE OF 0.001 FT/FT
                *

 246            KK   RF02W
 247            RK    1310   0.001    0.02            CIRC       5
                *
                *
                * DIVERSION RECOVER F04
                *

 248            KK    F04R
 249            DR   DF04I
                *
                *
                * Route is a Minor Arterial Road.
                *
                *

 250            KK   RF04S
 251            RS      11    FLOW       0
 252            RC   0.035   0.013   0.035    2652  0.0023
 253            RX       0       1      26      27      62      63      88      89
 254            RY       8       3       2       0       0       2       3       8
                *
                *
                * THE WEST SIDE OF THE ROAD IS DIVERTED WEST AND THE EAST SIDE OF THE ROAD
                * FLOWS SOUTH INTO CF01.  THE TOTAL FLOW DOES NOT EXCEED THE CROWN OF THE ROAD
                * SO THE SPLIT IS 50-50.
                *
                * *** DIVERSION DRF04 *******************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                    PAGE 11

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

 255            KK   DRF04
 256            DT  DRF04I
 257            DI       0       1      20      50     100     200     300
 258            DQ       0      .5      10      25      50     100     150
                *
```

```
259          KK     F01   BASIN
260          BA   0.030
261          LG    0.22    0.25    4.80    0.39      53
262          UC   0.467   0.490
263          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
264          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF04 & DF02.
             * THE HARD-CODE VALUE IS 25% OF CF04 AND 10% OF CF02'S CONTRIBUTING AREA.
             * SEE DIVERSION DF04 AND DF02.
             *
             * DDM   ***** Preserved *****

265          KK    CF01
266          KM        CHAPARRAL ROAD AND GRANITE REEF ROAD
267          HC       3    .101
             *
             *
             * THE DIVERSION AT THIS LOCATION IS SOUTH (SEE SPLITFLOW ANALYSIS)
             *
             *
             * *** DIVERSION DF01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

268          KK    DF01
269          DT   DF01I
270          DI       0       7      21      42      75     111     139     188     254     335
271          DQ       0       0       0       0       0       0       6      18      35      57
             *
             *
             * DIVERSION RECOVER DF02
             *

272          KK   DRF02
273          DR   DF02I
             *
             *
             * Route is a Minor Arterial Road.
             *
```



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

274          KK   RF02S
275          RS       3    FLOW       0
276          RC   0.035   0.015   0.035    1338  0.0022
277          RX       0       1      26      27      62      63      88      89
278          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

279          KK     E07   BASIN
280          BA   0.084
281          LG    0.25    0.25    4.80    0.36      49
282          UC   0.442   0.305
283          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
284          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF02.
             * THE HARD-CODE VALUE IS 90% OF CF02'S CONTRIBUTING AREA.
             * SEE DIVERSION DF02.
             *
             * DDM   ***** Preserved *****

285          KK    CE07
286          KM        HIGHLAND AVENUE AND 86TH STREET
287          HC       2    .661
             *
             *
             * Route is a Minor Arterial Road.
             *

288          KK    RE07
```

```
289          RS       1    FLOW       0
290          RC   0.035   0.015   0.035    1335  0.0025
291          RX       0       1      26      27      62      63      88      89
292          RY       8       2       1     0.5     0.5       1       2       8
             *

293          KK     E05   BASIN
294          KM
295          KM    This basin's original area was 0.060 sq mi.  The infield area is bermed
296          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
297          KM    from the subbasin calculations to account for the storage.
298          KM
299          BA   0.047
300          LG    0.21    0.25    4.80    0.37      57
301          UC   0.375   0.292
302          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
303          UA     100
             *
             * DDM   ***** Preserved *****
```



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

304          KK    CE05
305          KM        CAMELBACK ROAD AND 86TH STREET
306          HC       2
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 92 CFS.
             * THE TOTAL FLOW WAS DIVIDED BY E05, E04, AND THE BASIN WEST OF THE PROJECT
             * AREA, SO 31 CFS AT THIS LOCATION.
             * 20% clogging factor means 25cfs at this location (31cfs * 0.8 = 25cfs).
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             *
             * *** DIVERSION DE05 ********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

307          KK    DE05
308          DT   DE05I
309          DI       0       1      50     100     200     300     400     500    1000    2000
310          DQ       0       1      25      75     175     275     375     475     975    1975
             *
             *
             *
             * ROUTE IS A 5FT RCP WITH A SLOPE OF 0.0021 FT/FT.
             *

311          KK   RE05W
312          RK    1490  0.0021    0.02            CIRC       5
             *

313          KK     E04   BASIN
314          BA   0.038
315          LG    0.22    0.25    4.80    0.39      47
316          UC   0.621   0.655
317          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
318          UA     100
             *
             *
             *
             * *** STORAGE ROUTING LE04 ***********************************************
             *
             * DDM   ***** Preserved *****

319          KK    LE04
320          DT   LE04D     1.5
321          DI       0     100    1000   10000
322          DQ       0     100    1000   10000
             *
             * DIVERSION RECOVER DF01
             *
```



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

```
 323          KK  DRF01I
 324          DR   DF01I
              *
              *
              *
              * Route is a Minor Arterial Road.
              *

 325          KK   RF01S
 326          RS      24    FLOW       0
 327          RC   0.035   0.015   0.035    2619  0.0031
 328          RX       0       1      26      27      62      63      88      89
 329          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF01 & DE05.
              * THE HARD-CODE VALUE IS 5% OF CF01 AND 5% OF CE05'S CONTRIBUTING AREA.
              * SEE DIVERSION DF01 AND DE05.
              *
              * DDM   ***** Preserved *****

 330          KK    CE04
 331          KM        CAMELBACK ROAD AND GRANITE REEF ROAD
 332          HC       3   0.071
              *
              *
              * THERE IS A DIVERSION SOUTH (SEE SPLITFLOW CALCULATIONS)
              *
              * *** DIVERSION DE04 ***********************************************************
              *
              * See the diversion calculations in Appendix D of the Data Collection Notebook
              * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
              *
              * DDM   ***** Preserved *****

 333          KK    DE04
 334          DT   DE04I
 335          DI       0       3      31      59      91     126     151     184     222     267
 336          DQ       0       0       0       0       0       0       3       9      18      30
              *
              *
              * DDM   ***** Preserved *****

 337          KK   DUMMY
 338          HC       3
              *

 339          KK     E08   BASIN
 340          BA   0.031
 341          LG    0.24    0.25    4.80    0.35      51
 342          UC   0.488   0.531
 343          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 344          UA     100
              *
              *
              *
              * Route is a Minor Arterial Road with a wall on the west side.
              *
```



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

 345          KK    RE08
 346          RS       5    FLOW       0
 347          RC   0.035   0.015   0.035    1326  0.0029
 348          RX       0       1      19      25      30      49      79      80
 349          RY      10     1.5       0       0       0       0     1.5       8
              *

 350          KK     E06   BASIN
 351          BA   0.036
 352          LG    0.24    0.25    4.80    0.36      53
 353          UC   0.500   0.548
 354          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 355          UA     100
              *
              * DDM   ***** Preserved *****

 356          KK    CE06
```

```
357          KM        CAMELBACK ROAD AND PIMA FRONTAGE ROAD
358          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *

359          KK    RE06
360          RS      13    FLOW       0
361          RC   0.035   0.015   0.035    3333  0.0014
362          RX       0       1      19      25      30      49      79      80
363          RY      10     1.5       0       0       0       0     1.5       8
             *

364          KK     E03   BASIN
365          BA   0.070
366          LG    0.23    0.25    4.80    0.36      53
367          UC   0.917   1.373
368          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
369          UA     100
             *
             *
             * DIVERSION RECALL DF07
             *

370          KK   DRF07
371          DR   DF07I
             *
             * Route is a minor arterial along Pima Rd.
             *
```



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

372          KK   RF07S
373          RS       7    FLOW       0
374          RC   0.035   0.015   0.035    5280  0.0023
375          RX       0       1      40      41     104     105     145     146
376          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
             *

377          KK     E09   BASIN
378          KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
379          BA   0.223
380          LG    0.10    0.29    2.65    1.70      80
381          UC   0.546   0.446
382          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
383          UA     100
             *
             *
             * *** STORAGE ROUTING LE09 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****

384          KK    LE09
385          DT   LE09D    13.6
386          DI       0     100    1000   10000
387          DQ       0     100    1000   10000
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF07.
             * THE HARD-CODE VALUE IS 90% OF CF07'S CONTRIBUTING AREA.
             * SEE DIVERSION DF07.
             *
             * DDM   ***** Preserved *****

388          KK    CE09
389          KM        INDIAN SCHOOL ROAD AND PIMA ROAD
390          HC       2    .511
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
```

```
                * PROJECT AREA, WHICH IS 19 CFS AT THIS LOCATION.(MODIFIED TO 28 CFS BY PSOMAS)
                *
                * 20% clogging factor means 15cfs, (19cfs * 0.8 = 15cfs).(MODIFIED TO 22 CFS
                * BY PSOMAS)
                * THE PROPOSED ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
                * THE FLOW WILL THEN BE DOUBLED TO 30cfs.(MODIFIED TO 45 CFS BY PSOMAS)
                *
                * ALL OVERLAND FLOW CONTINUES SOUTH AT THIS DIVERSION LOCATION.
                *
                * *** DIVERSION DE09 ********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****
```



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

 391            KK    DE09
 392            KM        MODIFIED (2/14/07 RAK)
 393            DT   DE09I
 394            DI       0       1      50     100     200     300     400     500    1000    2000
                * ***DQ     0       1      20      70     170     270     370     470     970
 395            DQ       0       1       5      55     155     255     355     455     955    1955
                *
                *
                *
                * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
                * PSOMAS BASED ON DIBBLE PLANS)
                * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
                *

 396            KK   RE09W
 397            KM        MODIFIED (2/14/07 RAK)
                * ***RK   779  0.0009   0.013            CIRC     8.5
 398            RK     779  0.0011   0.013           CIRC     8.5
                *
                *
                *
                * DIVERSION RECOVER DE05
                *

 399            KK  DRE05I
 400            DR   DE05I
                *
                *
                * Route is a Minor Arterial Road.
                *

 401            KK   RE05S
 402            RS       6    FLOW       0
 403            RC   0.035   0.015   0.035    3053  0.0021
 404            RX       0       1      26      27      62      63      88      89
 405            RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE05 & DE09.
                * THE HARD-CODE VALUE IS 95% OF CE05 AND 10% OF CE09'S CONTRIBUTING AREA.
                * SEE DIVERSION DE05 AND DE09.
                *
                * DDM   ***** Preserved *****

 406            KK    CE03
 407            KM        INDIAN SCHOOL ROAD AND PIMA FRONTAGE ROAD
 408            HC       4    .858
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                *
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
                * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
                * PROJECT AREA, WHICH IS 38cfs AT THIS LOCATION.(MODIFIED TO 56 CFS BY PSOMAS)
                *
                * 20% clogging factor means that 31cfs (38.4 cfs * 0.8 = 31cfs) (MODIFIED TO
                * 45 CFS BY PSOMAS)
                * THE ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
                * THE FLOW WILL THEN BE DOUBLED TO 62cfs.(MODIFIED TO 90 CFS BY PSOMAS)
                *
```

```
                 * ALL OVERLAND FLOWS CONTINUE SOUTH.
                 *
                 * *** DIVERSION DE03 ********************************************************
                 *
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 18

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


 409             KK    DE03
 410             KM        MODIFIED (2/14/07 RAK)
 411             DT   DE03I
 412             DI       0       1      50     100     200     300     400     500    1000    2000
                 * ***DQ     0       1       5      38     138     238     338     438     938
 413             DQ       0      .1       2      10     110     210     310     410     910    1910
                 *
                 *
                 * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
                 * PSOMAS BASED ON DIBBLE PLANS)
                 * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
                 *
                 *

 414             KK   RE03W
 415             KM        MODIFIED (2/14/07 RAK)
                 * ***RK  1504  0.0009    0.02            CIRC     8.5
 416             RK    1504  0.0011    0.02            CIRC     8.5                      5
                 *

 417             KK     E02   BASIN
 418             BA   0.149
 419             LG    0.24    0.25    4.80    0.37      50
 420             UC   0.683   0.539
 421             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 422             UA     100
                 *
                 * THE CONTRIBUTING AREA IS HARD-CODED DUE TO DIVERSION DE03.
                 * THE HARD-CODE VALUE IS 5% OF CE03'S CONTRIBUTING AREA.
                 * SEE DIVERSION DE03.
                 *
                 * DDM   ***** Preserved *****

 423             KK    CE02
 424             KM        INDIAN SCHOOL ROAD AND 86TH STREET
 425             HC       2    .183
                 *
                 *
                 * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                 *
                 * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                 * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
                 * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
                 * PROJECT AREA, 58cfs AT THIS LOCATION.(MODIFIED TO 84 CFS BY PSOMAS)
                 *
                 * 20% clogging factor means 46cfs (58cfs * 0.8 = 46cfs).(MODIFIED TO 67 CFS
                 * BY PSOMAS)
                 * THE 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE
                 * THIS DOUBLES THE FLOW TO 92cfs.(MODIFIED TO 134 CFS BY PSOMAS)
                 *
                 * ALL OVERLAND FLOW CONTINUES SOUTH.
                 *
                 * *** DIVERSION DE02 ********************************************************
                 *
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 19

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


 426             KK    DE02
 427             KM        MODIFIED (2/14/07 RAK)
 428             DT   DE02I
 429             DI       0       1      50     100     200     300     400     500    1000    2000
                 * ***DQ     0      .1       2       8     108     208     308     408     908
```

```
430          DQ       0      .1       2       4      66     166     266     366     866    1866
             *
             *
             * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
             * PSOMAS BASED ON DIBBLE PLANS)
             * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
             *

431          KK   RE02W
432          KM        MODIFIED (2/14/07 RAK)
             * ***RD   355  0.0009    0.02            CIRC     8.5
433          RD     355  0.0011    0.02            CIRC     8.5
             *

434          KK     E01   BASIN
435          BA   0.058
436          LG    0.20    0.25    4.80    0.38      60
437          UC   0.492   0.494
438          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
439          UA     100
             *
             *
             * DIVERSION RECOVER DE04
             *

440          KK  DRE04I
441          DR   DE04I
             *
             *
             * Route is a Minor Arterial Road.
             *

442          KK   RE04S
443          RS       1    FLOW       0
444          RC   0.035   0.015   0.035    2636  0.0026
445          RX       0       1      26      27      62      63      88      89
446          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE04 & DE02.
             * THE HARD-CODE VALUE IS 100% OF CE04 AND 25% OF CE02'S CONTRIBUTING AREA.
             * SEE DIVERSION DE04 AND DE02.
             *
             * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                          PAGE 20

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

447          KK    CE01
448          KM        INDIAN SCHOOL ROAD AND GRANITE REEF ROAD
449          HC       3   .1656
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
             * PROJECT AREA, 76.8 cfs AT THIS LOCATION.(MODIFIED TO 112 CFS BY PSOMAS)
             *
             * 20% clogging factor means 61cfs (76.8cfs * 0.8 = 61.4 cfs) (MODIFIED TO
             * 90 CFS BY PSOMAS)
             * THE ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
             * THE FLOW WILL THEN BE DOUBLED TO 123cfs.(MODIFIED TO 179 CFS BY PSOMAS)
             *
             * THIS DIVERSION IS STORMDRAIN ONLY, ALL OVERLAND FLOW IS SOUTH.
             *
             * *** DIVERSION DE01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

450          KK    DE01
451          KM        MODIFIED (2/14/07 RAK)
452          DT   DE01I
453          DI       0       1      50     100     200     300     400     500    1000    2000
             * ***DQ     0      .1       2       4      77     177     277     377     877
454          DQ       0      .1       2       4      21     121     221     321     821    1821
             *
```

```
                 * DIVERSION RECALL E01
                 *

455              KK   DRE01
456              DR   DE01I
                 *
                 *
                 * Route is a Subdivision Road.
                 *

457              KK   RE01S
458              RS       9    FLOW       0
459              RC   0.035   0.015   0.035    2567  0.0032
460              RX       0       1      28      29      57      58      86      87
461              RY       8       2       1     0.5     0.5       1       2       8
                 *
1                                          HEC-1 INPUT                                                          PAGE 21

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

462              KK     D05   BASIN
463              KM
464              KM    This basin's original area was 0.168 sq mi.  The infield area is bermed
465              KM    so it is self-detained.  The infield area (0.01 sq mi) was subtracted
466              KM    from the subbasin calculations to account for the storage.
467              KM
468              BA   0.158
469              LG    0.23    0.25    4.80    0.38      51
470              UC   0.692   0.540
471              UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
472              UA     100
                 *
                 *
                 * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE01.
                 * THE HARD-CODE VALUE IS 70% OF CE01'S CONTRIBUTING AREA.
                 * SEE DIVERSION DE01.
                 *
                 * DDM   ***** Preserved *****

473              KK    CD05
474              KM        OSBORN ROAD AND GRANITE REEF ROAD
475              HC       2   0.284
                 *
                 * *** DIVERSION DD05 ***********************************************************
                 *
                 *  THIS DIVERSION IS AT GRANITE REEF ROAD AND OSBORN ROAD.
                 *  THE MAIN PATH IS SOUTH ON GRANITE REEF ROAD.
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****

476              KK    DD05
477              KM        MODIFIED (5/1/07 RAK) BASED ON FLOW SPLIT ANALYSIS
478              DT   DD05I
                 * ***DI     0       5      16      50      93     112     174     217     270
479              DI       0       6      21      34      52      73      99     130     166     231
                 * ***DQ     0       2       8      25      47      58      95     121     154
480              DQ       0       0       1       3       7      13      19      28      38      57
                 *
                 *
                 * Route is a Minor Arterial Road.
                 *

481              KK   RD05S
482              KM        MODIFIED (5/7/07 RAK) TO REPRESENT FLOW FROM OSBORN RD TO EARLL DR
483              KM        ALONG GRANITE REEF RD
                 * ***RS     8    FLOW       0
                 * ***RC 0.035   0.015   0.035    2669  0.0026
484              RS       4    FLOW       0
485              RC   0.035   0.015   0.035    1320  0.0026
486              RX       0       1      26      27      62      63      88      89
487              RY       8       2       1     0.5     0.5       1       2       8
                 *
1                                          HEC-1 INPUT                                                          PAGE 22

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

488              KK     D13   BASIN
```

```
489          KM        CREATED (5/7/07 RAK) TO REPRESENT SUBBASIN FLOW TO CD13
490          BA   0.044
491          LG    0.24    0.25    4.80    0.35      46
492          UC   0.557   0.605
493          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
494          UA     100
             *

495          KK    CD13
496          KM        CREATED (5/7/07 RAK) TO REPRESENT THE CONCENTRATION POINT LOCATED AT
497          KM        EARLL DRIVE AND GRANITE REEF ROAD
498          HC       2   0.259
             *

499          KK    DD13
500          KM        CREATED (5/7/07 RAK) BASED ON FLOW SPLIT ANALYSIS
501          DT   DD13I
502          DI       0       2      13      37      83     150     240
503          DQ       0       0       7      23      48      85     134
             *

504          KK   RD13S
505          KM        CREATED (5/7/07 RAK) TO REPRESENT FLOW FROM EARLL DR TO THOMAS RD
506          KM        ALONG GRANITE REEF RD
507          RS       4    FLOW       0
508          RC   0.035   0.015   0.035    1349  0.0026
509          RX       0       1      26      27      62      63      88      89
510          RY       8       2       1     0.5     0.5       1       2       8
             *

511          KK     D04   BASIN
512          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED 1' CONTOUR MAPPING
             * ***BA 0.060
             * ***LG  0.23    0.25    4.80    0.36      53
             * ***UC 0.638   0.762
513          BA   0.013
514          LG    0.24    0.25    4.80    0.35      46
515          UC   0.443   0.624
516          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
517          UA     100
             *
             * *** CD04 IS LOCATED AT THOMAS ROAD AND 82ND STREET ***************************
             *
             * Route is a Major Arterial Road.
             *

518          KK    RD04
519          RS       2    FLOW       0
520          RC   0.035   0.015   0.035    1084  0.0018
521          RX       0       1      40      41     104     105     145     146
522          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
```



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

523          KK     D01   BASIN
524          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED 1' CONTOUR MAPPING AND ADDITIONAL
525          KM        CONCENTRATION POINT
             * ***BA 0.082
             * ***LG  0.24    0.25    4.80    0.36      53
             * ***UC 0.667   0.622
526          BA   0.081
527          LG    0.24    0.25    4.80    0.35      47
528          UC   0.728   0.911
529          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
530          UA     100
             *
             * DDM   ***** Preserved *****

531          KK    CD01
532          KM        THOMAS ROAD AND GRANITE REEF ROAD
533          HC       3   0.208
             *
             *
             *
             * *** DIVERSION DD01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
```

```
                *
                * DDM   ***** Preserved *****

534             KK    DD01
535             KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED ON FLOW SPLIT ANALYSIS
536             DT   DD01I
                * ***DI     0       9      28      89     168     259     392     475     568
                * ***DQ     0       4      13      41      73     104     152     182     217
537             DI       0      21      22      27      44      96     173     267
538             DQ       0       0       2       6      20      39      65      98
                *
                *
                *
                * Route is a Major Arterial Road.
                *

539             KK   RD01E
540             RS       1    FLOW       0
541             RC   0.035   0.015   0.035    1315  0.0024
542             RX       0       1      40      41     104     105     145     146
543             RY       8       3     1.5     .75    0.75     1.5       3       8
                *
                *
                * DIVERSION RECALL D05
                *
1                                          HEC-1 INPUT                                          PAGE 24

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

544             KK   DRD05
545             DR   DD05I
                *
                *
                * Route is a Minor Arterial Road.
                *
                *

546             KK   RD05E
547             RS       2    FLOW       0
548             RC   0.035   0.015   0.035     560  0.0018
549             RX       0       1      26      27      62      63      88      89
550             RY       8       3       2       0       0       2       3       8
                *
                * *** DIVERSION DD052   ******************************************************
                *
                *  THIS DIVERSION IS AT GRANITE REEF ROAD AND MULBERRY.
                *  THE MAIN PATH IS SOUTH ON MULBERRY.
                *  SEE APPENDIX D FOR DIVERSION CALCULATIONS.
                *
                * DDM   ***** Preserved *****

551             KK   DD052
552             KM        MODIFIED (5/1/07 RAK) BASED ON FLOW SPLIT ANALYSIS
553             DT  DD052I
                * ***DI     0      37      44      59      80     110     147     178     222
554             DI       0       5       8      13      26      44      68      97     132     173
                * ***DQ     0      37      40      47      58      74      95     122     155
555             DQ       0       5       8      10      20      33      50      69      93     120
                *
                *
                * Route is a Subdivision Road. (MULBERRY)
                *
                * ***KKRD05S2
                * ***RS     1    FLOW       0
                * ***RC 0.035   0.015   0.035    3035  0.0030
                * ***RX     0       1      28      29      57      58      86      87
                * ***RY     8       2       1     0.5     0.5       1       2       8
                *

556             KK  RD05S2
557             KM        MODIFIED (2/14/07 RAK) TO ROUTE TO EARLL DR & 86TH ST
558             RS       2    FLOW       0
559             RC   0.035   0.015   0.035    1705  0.0032
560             RX       0       1      28      29      57      58      86      87
561             RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * ***KK   D02   BASIN
                * ***BA 0.139
                * ***LG  0.23    0.25    4.80    0.36      51
```

```
* ***UC 0.592   0.457
* ***UA     0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0
* ***UA   100
*
*
* ***THE CONTRIBUTING AREA WAS HARD-CODED BECAUSE OF DIVERSION DD01 & DD052.
* ***THE HARD-CODE VALUE IS 60% OF CD01 AND 40% OF DD052'S CONTRIBUTING AREA.
* ***SEE DIVERSION DD01 AND DD052.
*
* ***DDM   ***** Preserved *****
* ***KK  CD02
* ***HC     3   0.361
*
*
* ***Route is a Major Arterial Road.
*
* ***KK  RD02
* ***RS     2    FLOW       0
* ***RC 0.035   0.015   0.035    1063  0.0045
* ***RX     0       1      40      41     104     105     145     146
* ***RY     8       3     1.5     .75    0.75     1.5       3       8
*
*
* DIVERSION RECALL E02
*
```



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

 562          KK   DRE02
 563          DR   DE02I
              *
              *
              * Route is a Subdivision Road.
              *

 564          KK   RE02S
 565          RS       6    FLOW       0
 566          RC   0.035   0.015   0.035    2617  0.0028
 567          RX       0       1      28      29      57      58      86      87
 568          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * DIVERSION RECALL D052
              *

 569          KK  DRD052
 570          DR  DD052I
              *
              *
              * Route is a Minor Arterial Road.
              *
              *

 571          KK  RD05E2
 572          RS       1    FLOW       0
 573          RC   0.035   0.015   0.035     767  0.0013
 574          RX       0       1      26      27      62      63      88      89
 575          RY       8       3       2       0       0       2       3       8
              *
              *

 576          KK     D06   BASIN
 577          BA   0.109
 578          LG    0.24    0.25    4.80    0.35      52
 579          UC   0.671   0.602
 580          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 581          UA     100
              *
              * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE02 & DD052.
              * THE HARD-CODE VALUE IS 80% OF CE02 AND 60% OF DD052'S CONTRIBUTING AREA.
              * SEE DIVERSION DE02 AND DD052.
              *
              * DDM   ***** Preserved *****

 582          KK    CD06
 583          KM        OSBORN ROAD AND 86TH STREET
 584          HC       3   0.254
              *
```

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

 585          KK    DD06
 586          KM        CREATED (4/17/07 RAK) TO REPRESENT THE FLOW SPLIT AT OSBORN RD & THE
 587          KM        86TH ST ALLEY
 588          DT   DD06I
 589          DI       0     1.4    12.3    44.8    98.6   169.5   255.6   356.7   432.3
 590          DQ       0    0.75     2.3     9.8    26.6    50.4    81.7   121.1   152.2
              *
              * ***Route is a Minor Arterial Road.
              *
              *
              * ***KK  RD06
              * ***RS     1    FLOW       0
              * ***RC 0.035   0.015   0.035     609  0.0033
              * ***RX     0       1      26      27      62      63      88      89
              * ***RY     8       3       2       0       0       2       3       8
              *

 591          KK   RD06S
 592          KM        * MODIFIED (2/14/07 RAK) TO REROUTE TO EARLL DR & 86TH ST PER FIELD
 593          KM        * VISIT, MAPPING & CONVERSATION WITH LOCAL RESIDENTS
 594          KM        MODIFIED (4/17/07 RAK) TO BE THE SOUTHERN ROUTE OF THE FLOW SPLIT
 595          RS       1    FLOW       0
 596          RC   0.035   0.015   0.035    1310  0.0030
 597          RX       0       1      26      27      45      46      71      72
 598          RY       8       3       2     0.5     0.5       2       3       8
              *

 599          KK   DRD13
 600          DR   DD13I
              *

 601          KK   RD13E
 602          KM        CREATED (5/7/07 RAK) TO REPRESENT FLOW FROM GRANITE REEF RD TO 86TH ST
 603          KM        ALONG EARLL DR
 604          RS       4    FLOW       0
 605          RC   0.035   0.015   0.035    1310  0.0024
 606          RX       0       1      26      27      62      63      88      89
 607          RY       8       2       1     0.5     0.5       1       2       8
              *

 608          KK    D02A   BASIN
 609          KM        CREATED (2/14/07 RAK) USING DDMS-W TO REPRESENT PORTION OF SUBBASIN DO2
 610          KM        NORTH OF EARLL DR
 611          BA    0.07
 612          LG    0.23    0.25    4.80    0.36      51
 613          UC   0.471   0.379
 614          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 615          UA     100
              *
```



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

 616          KK    CD10
 617          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DRIVE AND 86TH STREET
 618          HC       4   0.258
              *

 619          KK    PPDB
 620          KM        CREATED (4/11/07 RAK) TO DIVERT FLOW INTO A 5.94 AC-FT BASIN AT
 621          KM        PIMA PARK
 622          DT   PPDBI
 623          DI       0     255     418     500
 624          DQ       0       0     163     163
              *

 625          KK    DD10
 626          KM        CREATED (2/14/07 RAK) TO REPRESENT THE FLOW SPLIT AT EARLL DR & 86TH ST
 627          KM        1/3 TO THE SOUTH AND 2/3 TO THE EAST
 628          KM        MODIFIED (4/17/07 RAK) BASED ON FLOW SPLIT ANALYSIS
 629          DT   DD10I
              * ***DI     0      15      30      60     120     240     480     960
 630          DI       0     1.6     9.2    34.4   115.1   208.7   349.6   542.5
              * ***DQ     0      10      20      40      80     160     320     640
 631          DQ       0     1.6     5.9    12.5    52.0    84.3   142.6   229.1
              *
```

```
632          KK   RD10S
633          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW SOUTH ALONG 86TH ST
634          RS       2    FLOW       0
635          RC   0.035   0.015   0.035    1320  0.0030
636          RX       0       1      28      29      57      58      86      87
637          RY       8       2       1     0.5     0.5       1       2       8
             *

638          KK    D02B   BASIN
639          KM        CREATED (2/14/07 RAK) USING DDMS-W TO REPRESENT PORTION OF SUBBASIN D02
640          KM        SOUTH OF EARLL DR
641          BA    0.07
642          LG    0.23    0.25    4.80    0.36      51
643          UC   0.504   0.452
644          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
645          UA     100
             *

646          KK    CD02
647          KM        THOMAS ROAD AND 86TH STREET
648          HC       3   0.351
             *

649          KK    DD02
650          KM        CREATED (5/8/07 RAK) BASED ON UPDATED ON FLOW SPLIT ANALYSIS
651          DT   DD02I
652          DI       0      46      55      70     101     153     260     391     492
653          DQ       0       0       1       3      11      25      46      73      96
             *
```



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

654          KK   RD02E
655          RS       2    FLOW       0
656          RC   0.035   0.015   0.035    1063  0.0045
657          RX       0       1      40      41     104     105     145     146
658          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

659          KK     D07   BASIN
660          KO       3
661          BA   0.049
662          LG    0.25    0.25    4.80    0.35      51
663          UC   0.508   0.576
664          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
665          UA     100
             *

666          KK   DRD06
667          KM        CREATED (4/17/07 RAK)
668          DR   DD06I
             *

669          KK   RD06E
670          KM        CREATED (4/17/07 RAK) TO REPRESENT FLOW EAST ALONG OSBORN RD
671          RS       1    FLOW       0
672          RC   0.035   0.015   0.035     609  0.0033
673          RX       0       1      26      27      62      63      88      89
674          RY       8       3       2       0       0       2       3       8
             *
             * DDM   ***** Preserved *****

675          KK    CD07
676          KM        OSBORN ROAD AND 87TH STREET
677          HC       2   0.133
             *
             *
             * Route is a Minor Arterial Road.
             *

678          KK    RD07
679          RS       2    FLOW       0
680          RC   0.035   0.015   0.035    1330  0.0025
681          RX       0       1      26      27      62      63      88      89
682          RY       8       2       1     0.5     0.5       1       2       8
             *

683          KK   DRD10
```

```
 684          KM        CREATED (2/14/07 RAK)
 685          DR   DD10I
              *
1                                        HEC-1 INPUT                                                    PAGE 29

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


 686          KK   RD10E
 687          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW EAST IN RESIDENTIAL CHANNEL
 688          KM        ALONG EARLL DR
 689          RS       1    FLOW       0
 690          RC   0.035   0.015   0.035     420  0.0048
 691          RX       0       1      26      46      52      60      85      86
 692          RY       8       3       2       2       0       3       4       8
              *

 693          KK    CD11
 694          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DR AND 87TH ST
 695          HC       2   0.240
              *

 696          KK    RD11
 697          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW EAST IN THE ALLEY (EARLL DR)
 698          RS       1    FLOW       0
 699          RC   0.035   0.015   0.035     835  0.0048
 700          RX       0       1      26      46      52      60      85      86
 701          RY       8       3       2       2       0       3       4       8
              *
              * DIVERSION RECALL DE03
              *

 702          KK   DRE03
 703          DR   DE03I
              *
              *
              *
              * Route is a Subdivision Road.
              *

 704          KK   RE03S
 705          RS       6    FLOW       0
 706          RC   0.035   0.015   0.035    3444  0.0032
 707          RX       0       1      28      29      57      58      86      87
 708          RY       8       2       1     0.5     0.5       1       2       8
              *
              *

 709          KK     D08   BASIN
 710          BA   0.054
 711          LG    0.24    0.25    4.80    0.36      53
 712          UC   0.658   0.955
 713          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 714          UA     100
              *
              *
              * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE03.
              * THE HARD-CODE VALUE IS 95% OF CE03'S CONTRIBUTING AREA.
              * SEE DIVERSION DE03.
              *
              * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                                    PAGE 30

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


 715          KK    CD08
 716          KM        OSBORN ROAD AND PIMA FRONTAGE ROAD
 717          HC       2   0.877
              *
              *
              * Route is a Minor Arterial Road with a wall on the west side.
              *

 718          KK    RD08
 719          RS       1    FLOW       0
 720          RC   0.035   0.015   0.035    1290  0.0039
 721          RX       0       1      19      25      30      49      79      80
 722          RY      10     1.5       0       0       0       0     1.5       8
              *
```

```
723          KK    D03A
724          KM        CREATED (2/14/07 RAK) TO REPRESENT SUB BASIN D03 NORTH OF EARLL DR
725          BA   0.052
726          LG    0.20    0.25    4.50    0.45      52
727          UC   0.471   0.497
728          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
729          UA     100
             *

730          KK    CD12
731          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DR AND PIMA FRONTAGE RD
732          HC       3
             *

733          KK    RD12
734          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW SOUTH ALONG TRAIL (PIMA RD)
735          RS       2    FLOW       0
736          RC   0.035   0.015   0.035    1500  0.0027
737          RX       0       1      19      25      30      49      79      80
738          RY      10     1.5       0       0       0       0     1.5       8
             *
             *
             * ***KK   D03   BASIN
             * ***BA 0.103
             * ***LG  0.20    0.25    4.50    0.45      52
             * ***UC 0.613   0.608
             * ***UA     0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0
             * ***UA   100
             *
             *
             *
             *
             * DIVERSION RECOVER DE09
             *
1                                        HEC-1 INPUT                                        PAGE 31

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

739          KK  DRE09I
740          DR   DE09I
             *
             *
             * Route is a Minor Arterial Road along Pima Rd.
             *

741          KK   RE09S
742          RS       7    FLOW       0
743          RC   0.035   0.015   0.035    5501  0.0037
744          RX       0       1      26      27      62      63      88      89
745          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

746          KK     D09   BASIN
747          KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
748          BA   0.216
749          LG    0.10    0.29    2.65    1.70      80
750          UC   0.463   0.379
751          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
752          UA     100
             *
             *
             * *** STORAGE ROUTING LD09 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****

753          KK    LD09
754          DT   LD09D    13.6
755          DI       0     100    1000   10000
756          DQ       0     100    1000   10000
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION DE09.
             * THE HARD-CODE VALUE IS 90% OF CE09'S CONTRIBUTING AREA.
             * SEE DIVERSION DE09.
             *
             * DDM   ***** Preserved *****
```

```
 757          KK    CD09
 758          KM        THOMAS ROAD AND PIMA ROAD
 759          HC       2   0.686
              *
              *

 760          KK    D03B
 761          KM        CREATED (2/14/07 RAK) TO REPRESENT SUB BASIN D03 SOUTH OF EARLL DR
 762          BA   0.052
 763          LG    0.20    0.25    4.50    0.45      52
 764          UC   0.500   0.514
 765          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1                                          HEC-1 INPUT                                          PAGE 32

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

 766          UA     100
              *
              *
              * DDM   ***** Preserved *****

 767          KK    CD03
 768          KM        THOMAS ROAD AND 87TH STREET
 769          HC       4   2.191
              *
              *
              *
              * Route is a Minor Arterial Road.
              *

 770          KK    RD03
 771          RS       1    FLOW       0
 772          RC   0.035   0.015   0.035    1307   0.004
 773          RX       0       1      26      27      62      63      88      89
 774          RY       8       2       1     0.5     0.5       1       2       8
              *

 775          KK     C11   BASIN
 776          BA   0.050
 777          LG    0.25    0.25    4.40    0.45      49
 778          UC   0.358   0.322
 779          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 780          UA     100
              *

 781          KK     C10   BASIN
 782          BA   0.054
 783          LG    0.25    0.25    4.65    0.38      50
 784          UC   0.433   0.409
 785          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 786          UA     100
              *

 787          KK   DRD02
 788          DR   DD02I
              *

 789          KK   RD02S
 790          KM        CREATED (5/8/07 RAK) TO REPRESENT FLOW FROM GRANITE REEF RD TO 86TH ST
 791          KM        ALONG EARLL DR
 792          RS       4    FLOW       0
 793          RC   0.035   0.015   0.035    1329  0.0036
 794          RX       0       1      26      27      62      63      88      89
 795          RY       8       2       1     0.5     0.5       1       2       8
              *
1                                          HEC-1 INPUT                                          PAGE 33

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

 796          KK    CC10
 797          KM        CREATED (5/8/07 RAK) TO REPRESENT VIRGINIA AVE AND 86TH ST
 798          HC       2   0.121
              *
              * Route is a Minor Arterial Road.
              *

 799          KK    RC10
 800          RS       1    FLOW       0
 801          RC   0.035   0.015   0.035     688   0.009
 802          RX       0       1      26      27      62      63      88      89
```

```
803          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * DDM   ***** Preserved *****

804          KK    CC11
805          KM        VIRGINIA AVENUE AND 87TH STREET
806          HC       3
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

807          KK    RC11
808          RS       1    FLOW       0
809          RC   0.035   0.015   0.035    1334  0.0015
810          RX       0       1      26      27      62      63      88      89
811          RY       8       2       1     0.5     0.5       1       2       8
             *

812          KK     C08   BASIN
813          BA   0.118
814          LG    0.25    0.25    4.40    0.45      51
815          UC   0.588   0.434
816          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
817          UA     100
             *
             * DDM   ***** Preserved *****

818          KK    CC08
819          KM        OAK STREET AND 87TH STREET
820          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road.
             *
```



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

821          KK    RC08
822          RS       4    FLOW       0
823          RC   0.035   0.015   0.035    2205  0.0026
824          RX       0       1      26      27      62      63      88      89
825          RY       8       2       1     0.5     0.5       1       2       8
             *

826          KK     C06   BASIN
827          KM
828          KM    This basin's original area was 0.162 sq mi.  The infield area is bermed
829          KM    so it is self-detained.  The infield area (0.0095 sq mi) was subtracted
830          KM    from the subbasin calculations to account for the storage.
831          KM
832          BA   0.153
833          LG    0.23    0.25    4.30    0.49      52
834          UC   0.554   0.435
835          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
836          UA     100
             *
             * DDM   ***** Preserved *****

837          KK    CC06
838          KM        CORONADO ROAD AND 87TH STREET
839          HC       2
             *
             *
             *
             * This is a channel.
             *

840          KK    RC06
841          RS       1    FLOW       0
842          RC    0.04   0.035    0.04    1271  0.0056
843          RX       0       1      30      40      70      80     110     111
844          RY      20      10       8       0       0       8      10      20
             *
             *
             * DIVERSION RECALL D01
```

```
                *
 845            KK   DRDO1
 846            DR   DD01I
                *
                *
                * Route is a Minor Arterial Road.
                *
 847            KK   RD01S
 848            RS       8    FLOW       0
 849            RC   0.035   0.015   0.035    2611  0.0023
 850            RX       0       1      26      27      62      63      88      89
 851            RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                *
1                                          HEC-1 INPUT                                                          PAGE 35

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

 852            KK     C07   BASIN
 853            KO       3
 854            BA   0.072
 855            LG    0.25    0.25    4.80    0.35      50
 856            UC   0.667   0.699
 857            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 858            UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DD01.
                * THE HARD-CODE VALUE IS 40% OF CD01'S CONTRIBUTING AREA.
                * SEE DIVERSION DD01.
                *
                * DDM   ***** Preserved *****

 859            KK    CC07
 860            KM        OAK STREET AND GRANITE REEF ROAD
 861            HC       2    0.15
                *

 862            KK   HESDB
 863            KM        CREATED (4/11/07 RAK) TO DIVERT FLOW INTO A 14.49 AC-FT BASIN AT HOHOKAM
 864            KM        ELEMENTARY SCHOOL ALONG OAK STREET
 865            DT  HESDBI
 866            DI       0       4     139     200
 867            DQ       0       0     135     135
                *
                *
                * Route is a Minor Arterial Road.
                *

 868            KK    RC07
 869            RS       6    FLOW       0
 870            RC   0.035   0.015   0.035    2638   0.003
 871            RX       0       1      26      27      62      63      88      89
 872            RY       8       2       1     0.5     0.5       1       2       8
                *
                *

 873            KK     C09   BASIN
 874            BA   0.057
 875            LG    0.25    0.25    4.80    0.36      50
 876            UC   0.596   0.646
 877            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 878            UA     100
                *
                * *** CC09 IS LOCATED AT OAK STREET AND 82ND STREET ****************************
                *
                * Route is a Minor Arterial Road.
                *
1                                          HEC-1 INPUT                                                          PAGE 36

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

 879            KK    RC09
 880            RS       1    FLOW       0
 881            RC   0.035   0.015   0.035    3368   0.003
 882            RX       0       1      26      27      62      63      88      89
```

```
883          RY       8       2       1       0       0       1       2       8
             *

884          KK     C05   BASIN
885          BA   0.137
886          LG    0.23    0.25    4.70    0.37      54
887          UC   0.754   0.675
888          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
889          UA     100
             *

890          KK     C01   BASIN
891          BA   0.032
892          LG    0.22    0.25    4.80    0.37      57
893          UC   0.546   0.711
894          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
895          UA     100
             *
             * *** CC01 LOCATED AT MCDOWELL ROAD AND 82ND PLACE ****************************
             *
             * Route is a Major Arterial Road.
             *

896          KK    RC01
897          RS       8    FLOW       0
898          RC   0.035   0.015   0.035    1217  0.0013
899          RX       0       1      40      41     104     105     145     146
900          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

901          KK     C02   BASIN
902          BA   0.036
903          LG    0.15    0.25    4.80    0.40      70
904          UC   0.554   0.780
905          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
906          UA     100
             *
             * DDM   ***** Preserved *****

907          KK    CC02
908          KM        MCDOWELL ROAD AND GRANITE REEF ROAD
909          HC       5    .436
             *

910          KK    DC02
911          KM        CREATED (2/26/07) TO REPRESENT THE FLOW SPLIT AT MCDOWELL ROAD AND
912          KM        GRANITE REEF ROAD
913          DT   DC02I
914          DI       0     160     186     221     268     323     384     446
915          DQ       0     0.3     4.5    11.9    24.7    40.7    59.3    78.1
             *
             *
             * Route is a Major Arterial Road.
             *
             *
             * ***KK  RC02
```



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

916          KK   RC02E
917          KM        MODIFIED (2/26/07)
918          RS       1    FLOW       0
919          RC   0.035   0.015   0.035     632  0.0063
920          RX       0       1      40      45     100     105     145     146
921          RY       8       3       2       0       0       2       3       8
             *

922          KK     C03   BASIN
923          BA   0.040
924          LG    0.18    0.25    4.10    0.61      62
925          UC   0.333   0.388
926          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
927          UA     100
             *
             *

928          KK     C12   BASIN
929          BA   0.010
930          LG    0.19    0.25    4.10    0.58      64
```

```
931          UC   1.500   4.505
932          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
933          UA     100
             *
             * *** CC12 LOCATED AT OAK STREET AND PIMA ROAD (WEST SIDE OF WALL) *************
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *

934          KK    RC12
935          RS      22    FLOW       0
936          RC   0.035   0.015   0.035    2693  0.0007
937          RX       0       1      19      25      30      49      79      80
938          RY      10     1.5       0       0       0       0     1.5       8
             *
             *

939          KK     C13   BASIN
940          KM         SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
941          BA   0.176
942          LG    0.10    0.35    2.65    1.70      80
943          UC   0.546   0.508
944          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
945          UA     100
             *
             * *** STORAGE ROUTING LC13 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****
```



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

946          KK    LC13
947          DT   LC13D    11.2
948          DI       0     100    1000   10000
949          DQ       0     100    1000   10000
             *
             *
             * DDM   ***** Preserved *****

950          KK    CC13
951          KM        MCDOWELL ROAD AND PIMA ROAD
952          HC       2
             *
             *
             * *** DIVERSION DC13 *******************************************************
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 51 CFS.
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             * 20% clogging factor means 41cfs, (51cfs * 0.8 = 41cfs).
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

953          KK    DC13
954          DT   DC13I
955          DI       0      10      50     100     200     300     400     500
956          DQ       0       4      30      59     159     259     359     459
             *
             * ROUTE IS A 42" RCP WITH A SLOPE OF 0.0044 FT/FT.
             *

957          KK   RC13W
958          RS       5    FLOW      -1
959          RD    2052   0.005   0.012            CIRC     3.5
             *

960          KK     C04   BASIN
961          BA   0.044
962          LG    0.18    0.28    4.20    0.51      44
963          UC   0.650   0.830
964          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
965          UA     100
             *
             *
             *
             * Route is a Major Arterial Road.
```

```
                *
 966            KK    RC04
 967            RS       5    FLOW       0
 968            RC   0.035   0.015   0.035    1563  0.0106
 969            RX       0       1      40      41     104     105     145     146
 970            RY       8       3     1.5       0       0     1.5       3       8
                *
                *
                * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION D13.
                * THE HARD-CODE VALUE IS 20% OF CC13'S CONTRIBUTING AREA.
                * SEE DIVERSION D13.
                *
                * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                          PAGE 39

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

 971            KK    CC03
 972            KM        MCDOWELL ROAD AND GRANITE REEF WASH
 973            HC       5    3.37
                *

 974            KK    APDB
 975            KM        CREATED (4/11/07 RAK) TO DIVERT FLOW INTO A 6.18 AC-FT BASIN AT
 976            KM        APACHE PARK
 977            DT   APDBI
 978            DI       0    1707    1953    2000
 979            DQ       0       0     246     246
                *
                *
                * This route is a channel.
                *

 980            KK    RC03
 981            RS       2    FLOW       0
 982            RC    0.04    0.03    0.04    1097  0.0009
 983            RX       0       1      30      40      70      80     110     111
 984            RY      20      10       8       0       0       8      10      20
                *

 985            KK     B07   BASIN
 986            BA   0.016
 987            LG    0.13    0.28    4.35    0.51      49
 988            UC   0.192   0.234
 989            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 990            UA     100
                *
                * DDM   ***** Preserved *****

 991            KK    CB07
 992            KM        84TH PLACE AND GRANITE REEF WASH
 993            HC       2
                *
                *
                *
                * Route is a Minor Arterial Road.
                *

 994            KK    RB07
 995            RS       2    FLOW       0
 996            RC   0.035   0.015   0.035    1525  0.0026
 997            RX       0       1      40      41     104     105     145     146
 998            RY       8       3     1.5     .75    0.75     1.5       3       8
                *

 999            KK     B05   BASIN
1000            BA   0.088
1001            LG    0.22    0.26    4.15    0.58      44
1002            UC   0.583   0.685
1003            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1004            UA     100
                *
                * *** STORAGE ROUTING LB05 ***********************************************
                *
                * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                          PAGE 40

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

```
1005          KK    LB05
1006          DT   LB05D    0.16
1007          DI       0     100    1000   10000
1008          DQ       0     100    1000   10000
              *

1009          KK   DRC02
1010          KM        CREATED (2/26/07)
1011          DR   DC02I
              *

1012          KK   RC02S
1013          KM        CREATED (2/26/07) TO REPRESENT FLOW SOUTH ALONG GRANITE REEF ROAD
1014          RS       2    FLOW       0
1015          RC   0.035   0.015   0.035    2385  0.0063
1016          RX       0       1      26      27      62      63      88      89
1017          RY       8       2       1     0.5     0.5       1       2       8
              *

1018          KK     B06   BASIN
1019          BA   0.015
1020          LG    0.13    0.26    4.00    0.64      60
1021          UC   0.304   0.589
1022          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1023          UA     100
              *
              *
              * DDM   ***** Preserved *****

1024          KK    CB05
1025          KM        84TH PLACE AND GRANITE REEF ROAD
1026          HC       4
              *
              *
              *
              * Route is a Minor Arterial Road.
              * Normal Depth Routing did not work for this Route.

1027          KK    RB05
1028          RD
1029          RC   0.035    0.02   0.035     500  0.0052
1030          RX       0       1      40      51      94     105     145     146
1031          RY       8       3       2       0       0       2       3       8
              *

1032          KK     B04   BASIN
1033          BA   0.077
1034          LG    0.15    0.25    4.45    0.50      71
1035          UC   0.271   0.232
1036          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1037          UA     100
              *
              *
              * *** STORAGE ROUTING LB04 ***********************************************
              *
              * MOTOROLA DETENTION BASINS (SEE CALCULATIONS)
              *
              * DDM   ***** Preserved *****
```



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

1038          KK    LB04
1039          DT   LB04D   12.95
1040          DI       0     100    1000   10000
1041          DQ       0     100    1000   10000
              *

1042          KK     B02   BASIN
1043          BA   0.101
1044          LG    0.15    0.25    4.70    0.41      68
1045          UC   0.363   0.335
1046          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1047          UA     100
              *
              * *** CB02 IS LOCATED AT ROOSEVELT STREET WEST OF GRANITE REEF ROAD ************
              *
              * *** STORAGE ROUTING LB02 ***********************************************
              *
```

```
                * DDM   ***** Preserved *****

1048            KK    LB02
1049            DT   LB02D    2.64
1050            DI       0     100    1000   10000
1051            DQ       0     100    1000   10000
                *
                *
                *
                * Route is a Minor Arterial Road.
                * Normal Depth Routing did not work for this Route.

1052            KK    RB02
1053            RD
1054            RC   0.035   0.015   0.035     548  0.0186
1055            RX       0       1      40      41     104     105     145     146
1056            RY       8       3     1.5     .75    0.75     1.5       3       8
                *

1057            KK     B03   BASIN
1058            BA   0.007
1059            LG    0.25    0.35    4.65    0.41      47
1060            UC   0.271   0.474
1061            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1062            UA     100
                *
                *
                * DDM   ***** Preserved *****

1063            KK    CB03
1064            KM        ROOSEVELT STREET AND GRANITE REEF ROAD
1065            HC       4    3.66
                *
                *
                *
                * Route is a Minor Arterial Road.
                *
```



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

1066            KK    RB03
1067            RS       2    FLOW       0
1068            RC   0.035   0.015   0.035    1348   0.003
1069            RX       0       1      40      41     104     105     145     146
1070            RY       8       3     1.5     .75    0.75     1.5       3       8
                *

1071            KK     B01   BASIN
1072            BA   0.071
1073            LG    0.25    0.25    4.30    0.54      44
1074            UC   0.267   0.188
1075            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1076            UA     100
                *
                *
                * *** STORAGE ROUTING LB01 ***********************************************
                *
                * DDM   ***** Preserved *****

1077            KK    LB01
1078            DT   LB01D    1.15
1079            DI       0     100    1000   10000
1080            DQ       0     100    1000   10000
                *
                *
                *
                * DDM   ***** Preserved *****

1081            KK    CB01
1082            KM        GRANITE REEF ROAD AND GRANITE REEF WASH
1083            HC       2
                *
                *
                * Route is a channel.
                *

1084            KK    RB01
1085            RS       1    FLOW       0
1086            RC   0.035   0.015   0.035    1320  0.0019
```

```
1087          RX       0       1      34      40      50      56      80      81
1088          RY      12       6       4       0       0       4       6      12
              *

1089          KK     B12   BASIN
1090          KM        SRPMIC LANDS WEST OF THE PIMA RD ALIGNMENT AND NORTH OF MCKELLIPS RD
1091          BA   0.119
1092          LG    0.25    0.25    4.80    0.38      39
1093          UC   0.442   0.233
1094          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1095          UA     100
              *
1                                          HEC-1 INPUT                                          PAGE 43

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

1096          KK     B11   BASIN
1097          BA   0.060
1098          LG    0.24    0.34    4.80    0.39      37
1099          UC   0.400   0.277
1100          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1101          UA     100
              *
              * *** STORAGE ROUTING LB11 ************************************************
              * Pond was assumed to have 1 foot of freeboard.
              * DDM   ***** Preserved *****

1102          KK    LB11
1103          DT   LB11D    2.87
1104          DI       0     100    1000   10000
1105          DQ       0     100    1000   10000
              *
              *
              * DIVERSION RECALL DC13I
              *

1106          KK  DRDC13
1107          DR   DC13I
              *
              *
              * Route is overland flow. (SLOPE ESTIMATED.)
              *

1108          KK   RC13S
1109          RS      33    FLOW       0
1110          RC   0.035   0.035   0.035    5197   .0058
1111          RX       0     200     300     400     500     600     700     900
1112          RY       5       4       3       0       0       3       4       5
              *

1113          KK     B13   BASIN
1114          BA   0.222
1115          LG    0.22    0.26    4.55    0.42      44
1116          UC   0.375   0.232
1117          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1118          UA     100
              *
              * *** STORAGE ROUTING LB13 ************************************************
              *
              * DDM   ***** Preserved *****

1119          KK    LB13
1120          DT   LB13D    18.4
1121          DI       0     100    1000   10000
1122          DQ       0     100    1000   10000
              *
              *
              * Route is shallow flow. (SLOPE WAS ESTIMATED.)
              *
1                                          HEC-1 INPUT                                          PAGE 44

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

1123          KK    RB13
1124          RS       7    FLOW       0
1125          RC   0.035   0.035   0.035    1269   0.004
1126          RX       0     200     300     400     500     600     700     900
1127          RY       5       4       3       0       0       3       4       5
              *
```

```
1128        KK     B14   BASIN
1129        KM        SRPMIC LANDS BETWEEN THE ALIGNMENT OF PIMA ROAD & PIMA FRWY (SR 101L)
1130        BA   0.149
1131        LG    0.10    0.25    4.60    0.48      80
1132        UC   0.608   0.628
1133        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1134        UA     100
            *
            * *** STORAGE ROUTING LB14 ***********************************************
            *
            * See the detention calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            * DDM   ***** Preserved *****

1135        KK    LB14
1136        DT   LB14D    10.4
1137        DI       0     100    1000   10000
1138        DQ       0     100    1000   10000
            *
            * DDM   ***** Preserved *****

1139        KK    CB14
1140        KM        MCKELLIPS ROAD AND PIMA ROAD
1141        HC       3   0.524
            *
            *
            * Route is a MAJOR ARTERIAL. (SLOPE WAS ESTIMATED.)
            *

1142        KK    RB14
1143        RS       4    FLOW       0
1144        RC   0.035   0.015   0.035    2746   0.004
1145        RX       0       1      30      40     100     110     145     300
1146        RY       8       4       3       0       0       3       4       5
            *
            *
            * DDM   ***** Preserved *****

1147        KK    CB12
1148        KM        MCKELLIPS ROAD AND GRANITE REEF WASH
1149        HC       4
            *
            *
            * Route is a channel. (SLOPE ESTIMATED FROM UPSTREAM CHANNEL'S SLOPE.)
            *
```



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


1150        KK    RB12
1151        RS       6    FLOW       0
1152        RC   0.035    .035   0.035    4395  0.0019
1153        RX       0     200     330     340     370     380     410     600
1154        RY       9       8       6       0       0       6       8       9
            *

1155        KK     A01   BASIN
1156        KM        SRPMIC LANDS SOUTH OF MCKELLIPS ROAD
1157        BA   0.507
1158        LG    0.10    0.25    5.40    0.32      80
1159        UC   0.542   0.238
1160        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1161        UA     100
            *
            * *** STORAGE ROUTING LA01 ***********************************************
            *
            * See the detention calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            * DDM   ***** Preserved *****

1162        KK    LA01
1163        DT   LA01D    35.2
1164        DI       0     100    1000   10000
1165        DQ       0     100    1000   10000
            *
            * DDM   ***** Preserved *****

1166        KK    CA01
1167        KM        OUTFALL TO SALT RIVER
```

```
1168          HC       2
              *

1169          KK     B10   BASIN
1170          BA   0.110
1171          LG    0.21    0.25    4.60    0.49      28
1172          UC   0.742   0.765
1173          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1174          UA     100
              *
              * *** STORAGE ROUTING LB10 ***********************************************
              *
              * DDM   ***** Preserved *****

1175          KK    LB10
1176          DT   LB10D    10.5
1177          DI       0     100    1000   10000
1178          DQ       0     100    1000   10000
              *
1179          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

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

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

   49        G03
             .
             .
   56        .------->   DG03I
   55      DG03
             V
             V
   59     RG03S
             .
             .
   64        .        G01
             .          .
             .          .
   70      CG01............
             .
             .
   74        .------->   DG01I
   73      DG01
             V
             V
   77     RG01S
             .
             .
   82        .        F04
             .          .
             .          .
   93        .          .        G04
             .          .         V
             .          .         V
  100        .          .       RG04
             .          .         .
             .          .         .
  105        .          .         .        G05
             .          .         .         V
             .          .         .         V
  111        .          .         .       RG05
             .          .         .         .
             .          .         .         .
  116        .          .         .         .        G06
             .          .         .         .         .
             .          .         .         .         .
  124        .          .         .         .         .------->   LG06D
  123        .          .         .         .       LG06
             .          .         .         .         .
             .          .         .         .         .
  128        .          .         .         .         .------->   DG06I
  127        .          .         .         .       DG06
             .          .         .         .         .
             .          .         .         .         .
  132        .          .         .         .         .------->  LG06AD
  131        .          .         .         .      LG06A
             .          .         .         .         .
             .          .         .         .         .
  135        .          .         .         .         .        G02
```

```
                .          .          .          .          .          .
                .          .          .          .          .          .
141             .          .       CG02.......................................
                .          .          V
                .          .          V
144             .          .       RG02
                .          .          .
                .          .          .
149             .          .          .         F06
                .          .          .           .
                .          .          .           .
155             .          .       CF06............
                .          .          V
                .          .          V
158             .          .       RF06
                .          .          .
                .          .          .
163             .          .          .         F05
                .          .          .           .
                .          .          .           .
169             .          .       CF05............
                .          .          .
                .          .          .
173             .          .          .-------->   DF05I
172             .          .       DF05
                .          .          V
                .          .          V
176             .          .      RF05W
                .          .          .
                .          .          .
178          CF04........................
                .
                .
182             .-------->   DF04I
181          DF04
                .
                .
186             .          .<-------   DF05I
185             .       F05R
                .          V
                .          V
187             .      RF05S
                .          .
                .          .
192             .          .        F03
                .          .          .
                .          .          .
198             .       CF03............
                .          V
                .          V
201             .       RF03
                .          .
                .          .
207             .          .          .<-------   DG06I
206             .          .       G06R
                .          .          V
                .          .          V
208             .          .      RG06S
                .          .          .
                .          .          .
213             .          .          .         F07
                .          .          .           .
                .          .          .           .
221             .          .          .           .-------->   LF07D
220             .          .          .        LF07
                .          .          .           .
                .          .          .           .
224             .          .       CF07............
                .          .          .
                .          .          .
228             .          .          .-------->   DF07I
227             .          .       DF07
                .          .          V
                .          .          V
231             .          .      RF07W
                .          .          .
                .          .          .
233             .          .          .         F02
                .          .          .           .
                .          .          .           .
239             .       CF02........................
```

```
                .          .
                .          .
243             .          .-------->   DF02I
242             .       DF02
                .          V
                .          V
246             .      RF02W
                .          .
                .          .
249             .          .          .<-------   DF04I
248             .          .       F04R
                .          .          V
                .          .          V
250             .          .      RF04S
                .          .          .
                .          .          .
256             .          .          .-------->  DRF04I
255             .          .      DRF04
                .          .          .
                .          .          .
259             .          .          .         F01
                .          .          .           .
                .          .          .           .
265             .       CF01........................
                .          .
                .          .
269             .          .-------->   DF01I
268             .       DF01
                .          .
                .          .
273             .          .          .<-------   DF02I
272             .          .      DRF02
                .          .          V
                .          .          V
274             .          .      RF02S
                .          .          .
                .          .          .
279             .          .          .         E07
                .          .          .           .
                .          .          .           .
285             .          .       CE07............
                .          .          V
                .          .          V
288             .          .       RE07
                .          .          .
                .          .          .
293             .          .          .         E05
                .          .          .           .
                .          .          .           .
304             .          .       CE05............
                .          .          .
                .          .          .
308             .          .          .-------->   DE05I
307             .          .       DE05
                .          .          V
                .          .          V
311             .          .      RE05W
                .          .          .
                .          .          .
313             .          .          .         E04
                .          .          .           .
                .          .          .           .
320             .          .          .           .-------->   LE04D
319             .          .          .        LE04
                .          .          .           .
                .          .          .           .
324             .          .          .           .          .<-------   DF01I
323             .          .          .           .      DRF01I
                .          .          .           .          V
                .          .          .           .          V
325             .          .          .           .       RF01S
                .          .          .           .          .
                .          .          .           .          .
330             .          .       CE04........................
                .          .          .
                .          .          .
334             .          .          .-------->   DE04I
333             .          .       DE04
                .          .          .
                .          .          .
337          DUMMY........................
```

```
                .
                .
339             .        E08
                .         V
                .         V
345             .       RE08
                .         .
                .         .
350             .         .        E06
                .         .         .
                .         .         .
356             .       CE06............
                .         V
                .         V
359             .       RE06
                .         .
                .         .
364             .         .        E03
                .         .         .
                .         .         .
371             .         .         .          .<-------   DF07I
370             .         .         .      DRF07
                .         .         .         V
                .         .         .         V
372             .         .         .      RF07S
                .         .         .         .
                .         .         .         .
377             .         .         .         .        E09
                .         .         .         .          .
                .         .         .         .          .
385             .         .         .         .          .------->   LE09D
384             .         .         .         .       LE09
                .         .         .         .          .
                .         .         .         .          .
388             .         .         .       CE09............
                .         .         .         .
                .         .         .         .
393             .         .         .         .------->   DE09I
391             .         .         .       DE09
                .         .         .         V
                .         .         .         V
396             .         .         .      RE09W
                .         .         .         .
                .         .         .         .
400             .         .         .         .          .<-------   DE05I
399             .         .         .         .     DRE05I
                .         .         .         .          V
                .         .         .         .          V
401             .         .         .         .      RE05S
                .         .         .         .          .
                .         .         .         .          .
406             .       CE03.................................
                .         .
                .         .
411             .         .------->   DE03I
409             .       DE03
                .         V
                .         V
414             .      RE03W
                .         .
                .         .
417             .         .        E02
                .         .         .
                .         .         .
423             .       CE02............
                .         .
                .         .
428             .         .------->   DE02I
426             .       DE02
                .         V
                .         V
431             .      RE02W
                .         .
                .         .
434             .         .        E01
                .         .         .
                .         .         .
441             .         .         .          .<-------   DE04I
440             .         .         .      DRE04I
                .         .         .         V
                .         .         .         V
```

```
442          .           .           .       RE04S
             .           .           .           .
             .           .           .           .
447          .        CE01.......................
             .           .
             .           .
452          .           .-------->   DE01I
450          .        DE01
             .           .
             .           .
456          .           .           .<-------   DE01I
455          .           .       DRE01
             .           .          V
             .           .          V
457          .           .       RE01S
             .           .           .
             .           .           .
462          .           .           .        D05
             .           .           .           .
             .           .           .           .
473          .           .        CD05............
             .           .           .
             .           .           .
478          .           .           .-------->   DD05I
476          .           .        DD05
             .           .          V
             .           .          V
481          .           .       RD05S
             .           .           .
             .           .           .
488          .           .           .        D13
             .           .           .           .
             .           .           .           .
495          .           .        CD13............
             .           .           .
             .           .           .
501          .           .           .-------->   DD13I
499          .           .        DD13
             .           .          V
             .           .          V
504          .           .       RD13S
             .           .           .
             .           .           .
511          .           .           .        D04
             .           .           .          V
             .           .           .          V
518          .           .           .       RD04
             .           .           .           .
             .           .           .           .
523          .           .           .           .        D01
             .           .           .           .          .
             .           .           .           .          .
531          .           .        CD01........................
             .           .           .
             .           .           .
536          .           .           .-------->   DD01I
534          .           .        DD01
             .           .          V
             .           .          V
539          .           .       RD01E
             .           .           .
             .           .           .
545          .           .           .           .<-------   DD05I
544          .           .           .      DRD05
             .           .           .          V
             .           .           .          V
546          .           .           .      RD05E
             .           .           .           .
             .           .           .           .
553          .           .           .           .-------->  DD052I
551          .           .           .      DD052
             .           .           .          V
             .           .           .          V
556          .           .           .     RD05S2
             .           .           .           .
             .           .           .           .
563          .           .           .           .           .<-------   DE02I
562          .           .           .           .       DRE02
             .           .           .           .          V
             .           .           .           .          V
564          .           .           .           .       RE02S
```

```
                .         .         .         .         .
                .         .         .         .         .
570             .         .         .         .         .           .<-------  DD052I
569             .         .         .         .         .      DRD052
                .         .         .         .         .          V
                .         .         .         .         .          V
571             .         .         .         .         .      RD05E2
                .         .         .         .         .          .
                .         .         .         .         .          .
576             .         .         .         .         .          .        D06
                .         .         .         .         .          .          .
                .         .         .         .         .          .          .
582             .         .         .         .      CD06.......................
                .         .         .         .         .
                .         .         .         .         .
588             .         .         .         .         .-------->   DD06I
585             .         .         .         .      DD06
                .         .         .         .         V
                .         .         .         .         V
591             .         .         .         .      RD06S
                .         .         .         .         .
                .         .         .         .         .
600             .         .         .         .         .           .<-------   DD13I
599             .         .         .         .         .      DRD13
                .         .         .         .         .          V
                .         .         .         .         .          V
601             .         .         .         .         .      RD13E
                .         .         .         .         .          .
                .         .         .         .         .          .
608             .         .         .         .         .          .        D02A
                .         .         .         .         .          .          .
                .         .         .         .         .          .          .
616             .         .         .      CD10.................................
                .         .         .         .
                .         .         .         .
622             .         .         .         .-------->   PPDBI
619             .         .         .      PPDB
                .         .         .         .
                .         .         .         .
629             .         .         .         .-------->   DD10I
625             .         .         .      DD10
                .         .         .         V
                .         .         .         V
632             .         .         .      RD10S
                .         .         .         .
                .         .         .         .
638             .         .         .         .      DO2B
                .         .         .         .         .
                .         .         .         .         .
646             .         .      CD02......................
                .         .         .
                .         .         .
651             .         .         .-------->   DD02I
649             .         .      DD02
                .         .         V
                .         .         V
654             .         .      RD02E
                .         .         .
                .         .         .
659             .         .         .      D07
                .         .         .         .
                .         .         .         .
668             .         .         .         .         .<-------   DD06I
666             .         .         .         .      DRD06
                .         .         .         .         V
                .         .         .         .         V
669             .         .         .         .      RD06E
                .         .         .         .         .
                .         .         .         .         .
675             .         .         .      CD07............
                .         .         .         V
                .         .         .         V
678             .         .         .      RD07
                .         .         .         .
                .         .         .         .
685             .         .         .         .         .<-------   DD10I
683             .         .         .         .      DRD10
                .         .         .         .         V
                .         .         .         .         V
686             .         .         .         .      RD10E
                .         .         .         .         .
```

```
                .         .         .         .         .
693             .         .         .      CD11...........
                .         .         .         V
                .         .         .         V
696             .         .         .      RD11
                .         .         .         .
                .         .         .         .
703             .         .         .         .         .<-------   DE03I
702             .         .         .         .      DRE03
                .         .         .         .         V
                .         .         .         .         V
704             .         .         .         .      RE03S
                .         .         .         .         .
                .         .         .         .         .
709             .         .         .         .         .         D08
                .         .         .         .         .           .
                .         .         .         .         .           .
715             .         .         .         .      CD08...........
                .         .         .         .         V
                .         .         .         .         V
718             .         .         .         .      RD08
                .         .         .         .         .
                .         .         .         .         .
723             .         .         .         .         .       D03A
                .         .         .         .         .           .
                .         .         .         .         .           .
730             .         .         .      CD12......................
                .         .         .         V
                .         .         .         V
733             .         .         .      RD12
                .         .         .         .
                .         .         .         .
740             .         .         .         .         .<-------   DE09I
739             .         .         .         .    DRE09I
                .         .         .         .         V
                .         .         .         .         V
741             .         .         .         .    RE09S
                .         .         .         .         .
                .         .         .         .         .
746             .         .         .         .         .         D09
                .         .         .         .         .           .
                .         .         .         .         .           .
754             .         .         .         .         .           .-------->   LD09D
753             .         .         .         .         .       LD09
                .         .         .         .         .           .
                .         .         .         .         .           .
757             .         .         .         .      CD09...........
                .         .         .         .         .
                .         .         .         .         .
760             .         .         .         .         .       D03B
                .         .         .         .         .           .
                .         .         .         .         .           .
767             .         .      CD03.................................
                .         .         V
                .         .         V
770             .         .      RD03
                .         .         .
                .         .         .
775             .         .         .      C11
                .         .         .         .
                .         .         .         .
781             .         .         .         .      C10
                .         .         .         .         .
                .         .         .         .         .
788             .         .         .         .         .           .<-------   DD02I
787             .         .         .         .         .      DRD02
                .         .         .         .         .         V
                .         .         .         .         .         V
789             .         .         .         .         .      RD02S
                .         .         .         .         .           .
                .         .         .         .         .           .
796             .         .         .         .      CC10...........
                .         .         .         .         V
                .         .         .         .         V
799             .         .         .         .      RC10
                .         .         .         .         .
                .         .         .         .         .
804             .         .      CC11......................
                .         .         V
                .         .         V
807             .         .      RC11
```

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812                 C08
                     .
818            CC08...........
                  V
                  V
821            RC08
                     .
826                 C06
                     .
837            CC06...........
                  V
                  V
840            RC06
                     .
846                  .<-------   DD01I
845         DRD01
                  V
                  V
847         RD01S
                     .
852                  .         C07
                     .           .
859             CC07...........
                     .
865                  .-------> HESDBI
862         HESDB
                  V
                  V
868             RC07
                     .
873                  .         C09
                     .           V
                     .           V
879                  .        RC09
                     .           .
884                  .           .         C05
                     .           .           .
890                  .           .           .        C01
                     .           .           .          V
                     .           .           .          V
896                  .           .           .       RC01
                     .           .           .          .
901                  .           .           .          .         C02
                     .           .           .          .           .
907             CC02.............................................
                     .
913                  .------->  DC02I
910             DC02
                  V
                  V
916         RC02E
                     .
922                  .         C03
                     .           .
928                  .           .         C12
                     .           .           V
934                  .           .           V
                     .           .        RC12
                     .           .           .
939                  .           .           .        C13
                     .           .           .          .
947                  .           .           .          .-------> LC13D
```

```
946          .          .          .          .          .          .       LC13
             .          .          .          .          .          .          .
             .          .          .          .          .          .          .
950          .          .          .          .          .       CC13............
             .          .          .          .          .          .
             .          .          .          .          .          .
954          .          .          .          .          .          .-------->  DC13I
953          .          .          .          .          .       DC13
             .          .          .          .          .          V
             .          .          .          .          .          V
957          .          .          .          .          .      RC13W
             .          .          .          .          .          .
             .          .          .          .          .          .
960          .          .          .          .          .          .        C04
             .          .          .          .          .          .          V
             .          .          .          .          .          .          V
966          .          .          .          .          .          .       RC04
             .          .          .          .          .          .          .
             .          .          .          .          .          .          .
971          .          .       CC03.............................................
             .          .          .
             .          .          .
977          .          .          .-------->  APDBI
974          .          .       APDB
             .          .          V
             .          .          V
980          .          .       RC03
             .          .          .
             .          .          .
985          .          .          .        B07
             .          .          .          .
             .          .          .          .
991          .          .       CB07............
             .          .          V
             .          .          V
994          .          .       RB07
             .          .          .
             .          .          .
999          .          .          .        B05
             .          .          .          .
             .          .          .          .
1006         .          .          .          .-------->  LB05D
1005         .          .          .       LB05
             .          .          .          .
             .          .          .          .
1011         .          .          .          .          .<--------  DC02I
1009         .          .          .          .      DRC02
             .          .          .          .          V
             .          .          .          .          V
1012         .          .          .          .      RC02S
             .          .          .          .          .
             .          .          .          .          .
1018         .          .          .          .          .       B06
             .          .          .          .          .          .
             .          .          .          .          .          .
1024         .          .       CB05...................................
             .          .          V
             .          .          V
1027         .          .       RB05
             .          .          .
             .          .          .
1032         .          .          .        B04
             .          .          .          .
             .          .          .          .
1039         .          .          .          .-------->  LB04D
1038         .          .          .       LB04
             .          .          .          .
             .          .          .          .
1042         .          .          .          .         B02
             .          .          .          .          .
             .          .          .          .          .
1049         .          .          .          .          .-------->  LB02D
1048         .          .          .          .       LB02
             .          .          .          .          V
             .          .          .          .          V
1052         .          .          .          .       RB02
             .          .          .          .          .
             .          .          .          .          .
1057         .          .          .          .          .       B03
             .          .          .          .          .          .
             .          .          .          .          .          .
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1063          .          .        CB03.................................
              .          .          V
              .          .          V
1066          .          .        RB03
              .          .          .
              .          .          .
1071          .          .          .        B01
              .          .          .          .
              .          .          .          .
1078          .          .          .          .-------->   LB01D
1077          .          .          .        LB01
              .          .          .          .
              .          .          .          .
1081          .          .        CB01............
              .          .          V
              .          .          V
1084          .          .        RB01
              .          .          .
              .          .          .
1089          .          .          .        B12
              .          .          .          .
              .          .          .          .
1096          .          .          .          .         B11
              .          .          .          .          .
              .          .          .          .          .
1103          .          .          .          .          .-------->   LB11D
1102          .          .          .          .        LB11
              .          .          .          .          .
              .          .          .          .          .
1107          .          .          .          .          .           .<-------   DC13I
1106          .          .          .          .          .      DRDC13
              .          .          .          .          .          V
              .          .          .          .          .          V
1108          .          .          .          .          .      RC13S
              .          .          .          .          .          .
              .          .          .          .          .          .
1113          .          .          .          .          .          .        B13
              .          .          .          .          .          .          .
              .          .          .          .          .          .          .
1120          .          .          .          .          .          .          .-------->   LB13D
1119          .          .          .          .          .          .      LB13
              .          .          .          .          .          .          V
              .          .          .          .          .          .          V
1123          .          .          .          .          .          .      RB13
              .          .          .          .          .          .          .
              .          .          .          .          .          .          .
1128          .          .          .          .          .          .          .         B14
              .          .          .          .          .          .          .          .
              .          .          .          .          .          .          .          .
1136          .          .          .          .          .          .          .          .-------->   LB14D
1135          .          .          .          .          .          .          .        LB14
              .          .          .          .          .          .          .          .
              .          .          .          .          .          .          .          .
1139          .          .          .          .          .        CB14.......................
              .          .          .          .          .          V
              .          .          .          .          .          V
1142          .          .          .          .          .        RB14
              .          .          .          .          .          .
              .          .          .          .          .          .
1147          .          .        CB12.................................
              .          .          V
              .          .          V
1150          .          .        RB12
              .          .          .
              .          .          .
1155          .          .          .        A01
              .          .          .          .
              .          .          .          .
1163          .          .          .          .-------->   LA01D
1162          .          .          .        LA01
              .          .          .          .
              .          .          .          .
1166          .          .        CA01............
              .          .          .
              .          .          .
1169          .          .          .        B10
              .          .          .          .
              .          .          .          .
1176          .          .          .          .-------->   LB10D
1175          .          .          .        LB10
```

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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
*                                      *                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
*           VERSION 4.1                *                                    *          609 SECOND STREET           *
*                                      *                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE   22JAN08  TIME  18:00:04  *                                    *          (916) 756-1104              *
*                                      *                                    *                                      *
****************************************                                    ****************************************


                    Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
                    ****************************************************************************
                    **                                                                        **
                    **                    Updated Granite Reef ADMP                           **
                    **                                                                        **
                    ****************************************************************************
                    ****************************************************************************
                    PROJECT:                Granite Reef Wash DMP Update
                    CLIENT:                 City of Scottsdale
                    PREPARED BY:            Psomas
                    PROJECT No:             COS              Psomas 06077-01
                    FILE NAME: BASIN6.DAT                   CREATED DATE: Feb 26, 2007
                    MODIFIED: Jan 15, 2008 (RAK/JKK PSOMAS)
                         * ELEMENTS ADDED TO REPRESENT OUTFALLS TO DETENTION BASINS
                         * ORIGINAL CARDS STARRED-OUT
                         * COMMENT CARDS ADDED
                    STORM:                  100-year 6-hour Storm
                    DEVELOPMENT CONDITIONS: Future Conditions



                    DDM MCUHP1


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

    IT          HYDROGRAPH TIME DATA
                       NMIN          5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME       0000  STARTING TIME
                         NQ       1000  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4    0  ENDING DATE
                     NDTIME       1115  ENDING TIME
                      ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   83.25 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

 28 JD          INDEX STORM NO. 1
                       STRM       3.20  PRECIPITATION DEPTH
                       TRDA        .01  TRANSPOSITION DRAINAGE AREA

 29 PI            PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .01       .01       .01       .01       .01       .03
                      .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                      .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00

 32 JD          INDEX STORM NO. 2
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```
                STRM        3.18  PRECIPITATION DEPTH
                TRDA         .50  TRANSPOSITION DRAINAGE AREA

 0 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

33 JD       INDEX STORM NO. 3
                STRM        3.12  PRECIPITATION DEPTH
                TRDA        2.80  TRANSPOSITION DRAINAGE AREA

34 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

37 JD       INDEX STORM NO. 4
                STRM        2.95  PRECIPITATION DEPTH
                TRDA       16.00  TRANSPOSITION DRAINAGE AREA

38 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .01
                .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

41 JD       INDEX STORM NO. 5
                STRM        2.60  PRECIPITATION DEPTH
                TRDA       90.00  TRANSPOSITION DRAINAGE AREA

42 PI        PRECIPITATION PATTERN
                .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01

45 JD       INDEX STORM NO. 6
                STRM        1.82  PRECIPITATION DEPTH
                TRDA      500.00  TRANSPOSITION DRAINAGE AREA

46 PI        PRECIPITATION PATTERN
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .04       .04       .04       .04       .04       .04       .04       .04
                .04       .03       .03       .03       .02       .02       .02       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01

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

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          *            *
93 KK     *     G04    *        BASIN
          *            *
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94 KO       OUTPUT CONTROL VARIABLES
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                    IPRNT          3  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

              SUBBASIN RUNOFF DATA

  95 BA         SUBBASIN CHARACTERISTICS
                    TAREA        .05  SUBBASIN AREA

  96 LG         GREEN AND AMPT LOSS RATE
                    STRTL        .25  STARTING LOSS
                      DTH        .25  MOISTURE DEFICIT
                     PSIF       4.80  WETTING FRONT SUCTION
                    XKSAT        .35  HYDRAULIC CONDUCTIVITY
                    RTIMP      51.00  PERCENT IMPERVIOUS AREA

  97 UC         CLARK UNITGRAPH
                       TC        .30  TIME OF CONCENTRATION
                        R        .26  STORAGE COEFFICIENT

  98 UA         ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                     .0      5.0     16.0     30.0     65.0     77.0     84.0     90.0     94.0     97.0
                  100.0

                                                  ***

                                                UNIT HYDROGRAPH PARAMETERS
                                          CLARK   TC=   .30 HR,       R=   .26 HR
                                         SNYDER   TP=   .22 HR,      CP=   .53

                                                UNIT HYDROGRAPH
                                           19 END-OF-PERIOD ORDINATES
              13.      49.      68.      58.      44.      32.      23.      17.      12.       9.
               6.       5.       3.       2.       2.       1.       1.       1.       0.

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

                    HYDROGRAPH AT STATION      G04
                  TRANSPOSITION AREA       .0 SQ MI

    TOTAL RAINFALL =    3.20, TOTAL LOSS =     .81, TOTAL EXCESS =    2.39

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+      94.      4.08                 11.          3.          1.          1.
                        (INCHES)   2.371       2.381       2.381       2.381
                         (AC-FT)      6.          6.          6.          6.

                    CUMULATIVE AREA =     .05 SQ MI

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

                    HYDROGRAPH AT STATION      G04
                  TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .81, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+      93.      4.08                 11.          3.          1.          1.
                        (INCHES)   2.352       2.363       2.363       2.363
                         (AC-FT)      6.          6.          6.          6.

                    CUMULATIVE AREA =     .05 SQ MI

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

                    HYDROGRAPH AT STATION      G04
                  TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .93, TOTAL EXCESS =    2.19

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
```

```
                    (CFS)
+     59.     4.08                10.          3.          1.          1.
                  (INCHES)      2.164       2.177       2.177       2.177
                   (AC-FT)        5.          5.          5.          5.

                  CUMULATIVE AREA =     .05 SQ MI


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

                   HYDROGRAPH AT STATION      G04
                 TRANSPOSITION AREA     16.0 SQ MI

   TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.94

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     44.     4.08                 9.          2.          1.          1.
                  (INCHES)      1.924       1.937       1.937       1.937
                   (AC-FT)        5.          5.          5.          5.

                  CUMULATIVE AREA =     .05 SQ MI


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

                   HYDROGRAPH AT STATION      G04
                 TRANSPOSITION AREA     90.0 SQ MI

   TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.56

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     30.     4.17                 7.          2.          1.          1.
                  (INCHES)      1.540       1.559       1.559       1.559
                   (AC-FT)        4.          4.          4.          4.

                  CUMULATIVE AREA =     .05 SQ MI

       WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                   HYDROGRAPH AT STATION      G04
                 TRANSPOSITION AREA    500.0 SQ MI

   TOTAL RAINFALL =    1.82, TOTAL LOSS =     .89, TOTAL EXCESS =     .93

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     11.     4.33                 4.          1.          0.          0.
                  (INCHES)       .913        .929        .929        .929
                   (AC-FT)        2.          2.          2.          2.

                  CUMULATIVE AREA =     .05 SQ MI

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


                  INTERPOLATED HYDROGRAPH AT      G04

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     94.     4.08                11.          3.          1.          1.
                  (INCHES)      2.364       2.374       2.374       2.374
                   (AC-FT)        6.          6.          6.          6.

                  CUMULATIVE AREA =     .05 SQ MI
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*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

              **************
              *            *
  659 KK      *      D07   *        BASIN
              *            *
              **************

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

                SUBBASIN RUNOFF DATA

  661 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .05  SUBBASIN AREA

  662 LG          GREEN AND AMPT LOSS RATE
                        STRTL         .25  STARTING LOSS
                          DTH         .25  MOISTURE DEFICIT
                         PSIF        4.80  WETTING FRONT SUCTION
                        XKSAT         .35  HYDRAULIC CONDUCTIVITY
                        RTIMP       51.00  PERCENT IMPERVIOUS AREA

  663 UC          CLARK UNITGRAPH
                           TC         .51  TIME OF CONCENTRATION
                            R         .58  STORAGE COEFFICIENT

  664 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                        .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                     100.0

                                                          ***

                                                UNIT HYDROGRAPH PARAMETERS
                                          CLARK   TC=   .51 HR,       R=   .58 HR
                                         SNYDER   TP=   .33 HR,      CP=   .38

                                                   UNIT HYDROGRAPH
                                              40 END-OF-PERIOD ORDINATES
                 3.       13.       28.       36.       36.       34.       31.       27.       23.       20.
                17.       15.       13.       11.       10.        8.        7.        6.        5.        5.
                 4.        4.        3.        3.        2.        2.        2.        1.        1.        1.
                 1.        1.        1.        1.        1.        0.        0.        0.        0.        0.

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

                        HYDROGRAPH AT STATION      D07
                      TRANSPOSITION AREA       .0 SQ MI

     TOTAL RAINFALL =    3.20, TOTAL LOSS =     .81, TOTAL EXCESS =    2.39

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      64.      4.25                  12.         3.          1.          1.
                        (INCHES)    2.348       2.380       2.380       2.380
                         (AC-FT)      6.          6.          6.          6.

                        CUMULATIVE AREA =     .05 SQ MI


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

                        HYDROGRAPH AT STATION      D07
                      TRANSPOSITION AREA       .5 SQ MI

     TOTAL RAINFALL =    3.18, TOTAL LOSS =     .81, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      63.      4.25                  12.         3.          1.          1.
                        (INCHES)    2.329       2.361       2.361       2.361
                         (AC-FT)      6.          6.          6.          6.

                        CUMULATIVE AREA =     .05 SQ MI
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***          ***          ***          ***          ***

                HYDROGRAPH AT STATION      D07
               TRANSPOSITION AREA      2.8 SQ MI

   TOTAL RAINFALL =   3.12, TOTAL LOSS =     .93, TOTAL EXCESS =    2.19

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     46.       4.33                11.          3.          1.          1.
                        (INCHES)   2.141       2.176       2.176       2.176
                         (AC-FT)     6.          6.          6.          6.

                        CUMULATIVE AREA =     .05 SQ MI

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

                HYDROGRAPH AT STATION      D07
               TRANSPOSITION AREA     16.0 SQ MI

   TOTAL RAINFALL =   2.95, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.94

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     36.       4.33                10.          3.          1.          1.
                        (INCHES)   1.897       1.936       1.936       1.936
                         (AC-FT)     5.          5.          5.          5.

                        CUMULATIVE AREA =     .05 SQ MI

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

                HYDROGRAPH AT STATION      D07
               TRANSPOSITION AREA     90.0 SQ MI

   TOTAL RAINFALL =   2.60, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.56

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     25.       4.33                 8.          2.          1.          1.
                        (INCHES)   1.510       1.558       1.558       1.558
                         (AC-FT)     4.          4.          4.          4.

                        CUMULATIVE AREA =     .05 SQ MI

     WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                HYDROGRAPH AT STATION      D07
               TRANSPOSITION AREA    500.0 SQ MI

   TOTAL RAINFALL =   1.82, TOTAL LOSS =     .89, TOTAL EXCESS =     .93

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     11.       4.50                 5.          1.          0.          0.
                        (INCHES)    .889        .928        .928        .928
                         (AC-FT)     2.          2.          2.          2.

                        CUMULATIVE AREA =     .05 SQ MI

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


               INTERPOLATED HYDROGRAPH AT      D07

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
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                                        6-HR        24-HR        72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     63.       4.25                    12.           3.           1.           1.
                        (INCHES)      2.340        2.372        2.372        2.372
                         (AC-FT)        6.           6.           6.           6.

                        CUMULATIVE AREA =      .05 SQ MI


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


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            *            *
 852 KK     *      C07   *        BASIN
            *            *
            **************

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

                SUBBASIN RUNOFF DATA

 854 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .07  SUBBASIN AREA

 855 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .25  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.80  WETTING FRONT SUCTION
                      XKSAT         .35  HYDRAULIC CONDUCTIVITY
                      RTIMP       50.00  PERCENT IMPERVIOUS AREA

 856 UC          CLARK UNITGRAPH
                         TC         .67  TIME OF CONCENTRATION
                          R         .70  STORAGE COEFFICIENT

 857 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                       .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                    100.0
                                                          ***

                                                UNIT HYDROGRAPH PARAMETERS
                                          CLARK   TC=   .67 HR,       R=   .70 HR
                                         SNYDER   TP=   .41 HR,      CP=   .38

                                                   UNIT HYDROGRAPH
                                              48 END-OF-PERIOD ORDINATES
                 2.        9.       24.       38.       43.       43.       41.       39.       36.       32.
                28.       25.       22.       20.       18.       16.       14.       12.       11.       10.
                 9.        8.        7.        6.        5.        5.        4.        4.        3.        3.
                 3.        2.        2.        2.        2.        1.        1.        1.        1.        1.
                 1.        1.        1.        1.        0.        0.        0.        0.

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

                        HYDROGRAPH AT STATION      C07
                       TRANSPOSITION AREA       .0 SQ MI

   TOTAL RAINFALL =    3.20, TOTAL LOSS =     .83, TOTAL EXCESS =    2.37

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     79.       4.33                    18.           5.           2.           1.
                        (INCHES)      2.315        2.362        2.362        2.362
                         (AC-FT)        9.           9.           9.           9.

                        CUMULATIVE AREA =      .07 SQ MI

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

                        HYDROGRAPH AT STATION      C07
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                    TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .82, TOTAL EXCESS =    2.35

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     78.       4.33                  18.         5.          2.          1.
                        (INCHES)    2.297       2.343       2.343       2.343
                         (AC-FT)      9.          9.          9.          9.

                    CUMULATIVE AREA =     .07 SQ MI


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

                     HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .95, TOTAL EXCESS =    2.17

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     60.       4.42                  16.         4.          1.          1.
                        (INCHES)    2.107       2.156       2.156       2.156
                         (AC-FT)      8.          8.          8.          8.

                    CUMULATIVE AREA =     .07 SQ MI


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

                     HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA     16.0 SQ MI

    TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     47.       4.42                  14.         4.          1.          1.
                        (INCHES)    1.860       1.914       1.914       1.914
                         (AC-FT)      7.          7.          7.          7.

                    CUMULATIVE AREA =     .07 SQ MI


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

                     HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA     90.0 SQ MI

    TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.05, TOTAL EXCESS =    1.54

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     33.       4.42                  11.         3.          1.          1.
                        (INCHES)    1.473       1.536       1.536       1.536
                         (AC-FT)      6.          6.          6.          6.

                    CUMULATIVE AREA =     .07 SQ MI

        WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                     HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA    500.0 SQ MI

    TOTAL RAINFALL =    1.82, TOTAL LOSS =     .91, TOTAL EXCESS =     .91

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
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+      15.      4.58                    7.          2.          1.          1.
                          (INCHES)    .861        .910        .910        .910
                           (AC-FT)     3.          3.          3.          3.

                          CUMULATIVE AREA =     .07 SQ MI

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


                          INTERPOLATED HYDROGRAPH AT      C07

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                            (CFS)
+      78.      4.33                   18.          5.          2.          1.
                          (INCHES)   2.306       2.353       2.353       2.353
                           (AC-FT)     9.          9.          9.          9.

                          CUMULATIVE AREA =     .07 SQ MI

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

                                     PEAK   TIME OF    AVERAGE FLOW FOR MAXIMUM PERIOD      BASIN    MAXIMUM    TIME OF
          OPERATION        STATION   FLOW    PEAK                                          AREA     STAGE    MAX STAGE
+                                                          6-HOUR     24-HOUR     72-HOUR
          HYDROGRAPH AT
+                            G03     188.    4.17          25.         6.          2.        .09
          DIVERSION TO
+                           DG03I     96.    4.17          13.         3.          1.        .09
          HYDROGRAPH AT
+                           DG03      92.    4.17          12.         3.          1.        .09
          ROUTED TO
+                           RG03S     84.    4.25          12.         3.          1.        .09
          HYDROGRAPH AT
+                            G01      62.    4.25          13.         3.          1.        .05
          2 COMBINED AT
+                           CG01     146.    4.25          25.         6.          2.        .10
          DIVERSION TO
+                           DG01I    104.    4.25          18.         5.          2.        .10
          HYDROGRAPH AT
+                           DG01      42.    4.25           7.         2.          1.        .10
          ROUTED TO
+                           RG01S     39.    4.67           7.         2.          1.        .10
          HYDROGRAPH AT
+                            F04      74.    4.25          17.         4.          1.        .06
          HYDROGRAPH AT
+                            G04      94.    4.08          11.         3.          1.        .05
          ROUTED TO
+                           RG04      92.    4.17          11.         3.          1.        .05
          HYDROGRAPH AT
+                            G05      96.    4.08          13.         3.          1.        .05
          ROUTED TO
+                           RG05      95.    4.25          13.         3.          1.        .05
          HYDROGRAPH AT
+                            G06     333.    4.08          37.         9.          3.        .13
          DIVERSION TO
+                           LG06D    226.    3.92          16.         4.          1.        .13
          HYDROGRAPH AT
+                           LG06     333.    4.08          21.         5.          2.        .13
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	DIVERSION TO						
+		DG06I	142.	4.08	9.	2.	1.	.13
	HYDROGRAPH AT						
+		DG06	191.	4.08	12.	3.	1.	.13
	DIVERSION TO						
+		LG06AD	191.	4.08	9.	2.	1.	.13
	HYDROGRAPH AT						
+		LG06A	43.	4.42	3.	1.	0.	.13
	HYDROGRAPH AT						
+		G02	100.	4.25	19.	5.	2.	.08
	4 COMBINED AT						
+		CG02	283.	4.25	46.	12.	4.	.23
	ROUTED TO						
+		RG02	283.	4.33	46.	12.	4.	.23
	HYDROGRAPH AT						
+		F06	151.	4.25	26.	6.	2.	.10
	2 COMBINED AT						
+		CF06	427.	4.33	71.	18.	6.	.33
	ROUTED TO						
+		RF06	425.	4.33	71.	18.	6.	.33
	HYDROGRAPH AT						
+		F05	137.	4.25	22.	6.	2.	.09
	2 COMBINED AT						
+		CF05	552.	4.33	94.	24.	8.	.42
	DIVERSION TO						
+		DF05I	503.	4.33	68.	17.	6.	.42
	HYDROGRAPH AT						
+		DF05	49.	3.92	25.	6.	2.	.42
	ROUTED TO						
+		RF05W	49.	4.00	25.	6.	2.	.42
	3 COMBINED AT						
+		CF04	147.	4.50	49.	12.	4.	.17
	DIVERSION TO						
+		DF04I	80.	4.50	26.	7.	2.	.17
	HYDROGRAPH AT						
+		DF04	67.	4.50	23.	6.	2.	.17
	HYDROGRAPH AT						
+		F05R	503.	4.33	68.	17.	6.	.42
	ROUTED TO						
+		RF05S	492.	4.42	68.	17.	6.	.42
	HYDROGRAPH AT						
+		F03	243.	4.25	45.	11.	4.	.17
	2 COMBINED AT						
+		CF03	705.	4.42	112.	28.	9.	.56
	ROUTED TO						
+		RF03	700.	4.42	112.	28.	9.	.56
	HYDROGRAPH AT						
+		G06R	142.	4.08	9.	2.	1.	.13
	ROUTED TO						
+		RG06S	127.	4.42	9.	2.	1.	.13
	HYDROGRAPH AT						
+		F07	392.	4.25	72.	18.	6.	.25
	DIVERSION TO						
+		LF07D	381.	4.17	31.	8.	3.	.25

	HYDROGRAPH AT							
+		LF07	370.	4.33	42.	10.	3.	.25
	2 COMBINED AT							
+		CF07	462.	4.42	51.	13.	4.	.31
	DIVERSION TO							
+		DF07I	449.	4.42	45.	11.	4.	.31
	HYDROGRAPH AT							
+		DF07	16.	6.33	6.	2.	1.	.31
	ROUTED TO							
+		RF07W	16.	6.33	6.	2.	1.	.31
	HYDROGRAPH AT							
+		F02	62.	4.25	12.	3.	1.	.05
	3 COMBINED AT							
+		CF02	751.	4.42	129.	33.	11.	.63
	DIVERSION TO							
+		DF02I	701.	4.42	102.	26.	9.	.63
	HYDROGRAPH AT							
+		DF02	50.	3.92	27.	7.	2.	.63
	ROUTED TO							
+		RF02W	50.	4.00	27.	7.	2.	.63
	HYDROGRAPH AT							
+		F04R	80.	4.50	26.	7.	2.	.17
	ROUTED TO							
+		RF04S	80.	4.67	26.	7.	2.	.17
	DIVERSION TO							
+		DRF04I	40.	4.67	13.	3.	1.	.17
	HYDROGRAPH AT							
+		DRF04	40.	4.67	13.	3.	1.	.17
	HYDROGRAPH AT							
+		F01	42.	4.25	8.	2.	1.	.03
	3 COMBINED AT							
+		CF01	127.	4.25	48.	12.	4.	.10
	DIVERSION TO							
+		DF01I	3.	4.25	0.	0.	0.	.10
	HYDROGRAPH AT							
+		DF01	123.	4.25	48.	12.	4.	.10
	HYDROGRAPH AT							
+		DRF02	701.	4.42	102.	26.	9.	.63
	ROUTED TO							
+		RF02S	699.	4.50	102.	26.	9.	.63
	HYDROGRAPH AT							
+		E07	153.	4.17	21.	5.	2.	.08
	2 COMBINED AT							
+		CE07	773.	4.42	122.	31.	10.	.66
	ROUTED TO							
+		RE07	771.	4.50	122.	31.	10.	.66
	HYDROGRAPH AT							
+		E05	91.	4.17	12.	3.	1.	.05
	2 COMBINED AT							
+		CE05	804.	4.50	133.	33.	11.	.71
	DIVERSION TO							
+		DE05I	779.	4.50	120.	30.	10.	.71
	HYDROGRAPH AT							
+		DE05	25.	3.83	13.	3.	1.	.71

	ROUTED TO						
+	RE05W	25.	3.92	13.	3.	1.	.71
	HYDROGRAPH AT						
+	E04	42.	4.25	9.	2.	1.	.04
	DIVERSION TO						
+	LE04D	40.	4.25	3.	1.	0.	.04
	HYDROGRAPH AT						
+	LE04	42.	4.33	6.	2.	1.	.04
	HYDROGRAPH AT						
+	DRF01I	3.	4.25	0.	0.	0.	.10
	ROUTED TO						
+	RF01S	3.	4.58	0.	0.	0.	.10
	3 COMBINED AT						
+	CE04	68.	4.33	19.	5.	2.	.07
	DIVERSION TO						
+	DE04I	0.	.00	0.	0.	0.	.07
	HYDROGRAPH AT						
+	DE04	68.	4.33	19.	5.	2.	.07
	3 COMBINED AT						
+	DUMMY	255.	4.33	89.	23.	8.	.34
	HYDROGRAPH AT						
+	E08	42.	4.25	8.	2.	1.	.03
	ROUTED TO						
+	RE08	41.	4.33	8.	2.	1.	.03
	HYDROGRAPH AT						
+	E06	48.	4.25	9.	2.	1.	.04
	2 COMBINED AT						
+	CE06	87.	4.33	17.	4.	1.	.07
	ROUTED TO						
+	RE06	85.	4.58	17.	4.	1.	.07
	HYDROGRAPH AT						
+	E03	47.	4.58	17.	5.	2.	.07
	HYDROGRAPH AT						
+	DRF07	449.	4.42	45.	11.	4.	.31
	ROUTED TO						
+	RF07S	404.	4.67	45.	11.	4.	.31
	HYDROGRAPH AT						
+	E09	338.	4.25	64.	16.	5.	.22
	DIVERSION TO						
+	LE09D	325.	4.17	27.	7.	2.	.22
	HYDROGRAPH AT						
+	LE09	321.	4.33	37.	9.	3.	.22
	2 COMBINED AT						
+	CE09	596.	4.67	82.	20.	7.	.51
	DIVERSION TO						
+	DE09I	551.	4.67	64.	16.	5.	.51
	HYDROGRAPH AT						
+	DE09	45.	4.33	18.	4.	1.	.51
	ROUTED TO						
+	RE09W	45.	4.42	18.	4.	1.	.51
	HYDROGRAPH AT						
+	DRE05I	779.	4.50	120.	30.	10.	.71
	ROUTED TO						
+	RE05S	766.	4.58	120.	30.	10.	.71

	4 COMBINED AT						
+		CE03	907.	4.58	169.	43.	14.	.86
	DIVERSION TO						
+		DE03I	817.	4.58	122.	31.	10.	.86
	HYDROGRAPH AT						
+		DE03	90.	4.08	46.	12.	4.	.86
	ROUTED TO						
+		RE03W	90.	4.17	46.	12.	4.	.86
	HYDROGRAPH AT						
+		E02	186.	4.33	37.	9.	3.	.15
	2 COMBINED AT						
+		CE02	276.	4.33	82.	21.	7.	.18
	DIVERSION TO						
+		DE02I	142.	4.33	21.	5.	2.	.18
	HYDROGRAPH AT						
+		DE02	134.	4.17	62.	16.	5.	.18
	ROUTED TO						
+		RE02W	134.	4.67	61.	16.	5.	.18
	HYDROGRAPH AT						
+		E01	84.	4.25	15.	4.	1.	.06
	HYDROGRAPH AT						
+		DRE04I	0.	.00	0.	0.	0.	.07
	ROUTED TO						
+		RE04S	0.	.00	0.	0.	0.	.07
	3 COMBINED AT						
+		CE01	217.	4.25	77.	20.	7.	.17
	DIVERSION TO						
+		DE01I	38.	4.25	6.	2.	1.	.17
	HYDROGRAPH AT						
+		DE01	179.	4.17	71.	18.	6.	.17
	HYDROGRAPH AT						
+		DRE01	38.	4.25	6.	2.	1.	.17
	ROUTED TO						
+		RE01S	36.	4.50	6.	2.	1.	.17
	HYDROGRAPH AT						
+		D05	197.	4.33	39.	10.	3.	.16
	2 COMBINED AT						
+		CD05	221.	4.42	45.	12.	4.	.28
	DIVERSION TO						
+		DD05I	54.	4.42	8.	2.	1.	.28
	HYDROGRAPH AT						
+		DD05	167.	4.42	37.	9.	3.	.28
	ROUTED TO						
+		RD05S	167.	4.42	37.	9.	3.	.28
	HYDROGRAPH AT						
+		D13	54.	4.25	11.	3.	1.	.04
	2 COMBINED AT						
+		CD13	216.	4.42	48.	12.	4.	.26
	DIVERSION TO						
+		DD13I	121.	4.42	27.	7.	2.	.26
	HYDROGRAPH AT						
+		DD13	95.	4.42	21.	5.	2.	.26
	ROUTED TO						
+		RD13S	95.	4.50	21.	5.	2.	.26

	HYDROGRAPH AT							
+		D04	16.	4.25	3.	1.	0.	.01
	ROUTED TO							
+		RD04	15.	4.42	3.	1.	0.	.01
	HYDROGRAPH AT							
+		D01	73.	4.42	19.	5.	2.	.08
	3 COMBINED AT							
+		CD01	181.	4.42	43.	11.	4.	.21
	DIVERSION TO							
+		DD01I	68.	4.42	15.	4.	1.	.21
	HYDROGRAPH AT							
+		DD01	113.	4.42	29.	8.	3.	.21
	ROUTED TO							
+		RD01E	112.	4.50	29.	8.	3.	.21
	HYDROGRAPH AT							
+		DRD05	54.	4.42	8.	2.	1.	.28
	ROUTED TO							
+		RD05E	54.	4.42	8.	2.	1.	.28
	DIVERSION TO							
+		DD052I	40.	4.42	7.	2.	1.	.28
	HYDROGRAPH AT							
+		DD052	14.	4.42	2.	0.	0.	.28
	ROUTED TO							
+		RD05S2	13.	4.58	2.	0.	0.	.28
	HYDROGRAPH AT							
+		DRE02	142.	4.33	21.	5.	2.	.18
	ROUTED TO							
+		RE02S	141.	4.42	21.	5.	2.	.18
	HYDROGRAPH AT							
+		DRD052	40.	4.42	7.	2.	1.	.28
	ROUTED TO							
+		RD05E2	40.	4.50	7.	2.	1.	.28
	HYDROGRAPH AT							
+		D06	130.	4.33	28.	7.	2.	.11
	3 COMBINED AT							
+		CD06	306.	4.42	55.	14.	5.	.25
	DIVERSION TO							
+		DD06I	101.	4.42	16.	4.	1.	.25
	HYDROGRAPH AT							
+		DD06	205.	4.42	39.	10.	3.	.25
	ROUTED TO							
+		RD06S	202.	4.50	39.	10.	3.	.25
	HYDROGRAPH AT							
+		DRD13	121.	4.42	27.	7.	2.	.26
	ROUTED TO							
+		RD13E	120.	4.50	27.	7.	2.	.26
	HYDROGRAPH AT							
+		D02A	114.	4.17	18.	4.	1.	.07
	4 COMBINED AT							
+		CD10	418.	4.42	85.	21.	7.	.26
	DIVERSION TO							
+		PPDBI	162.	4.42	12.	3.	1.	.26
	HYDROGRAPH AT							
+		PPDB	255.	4.42	73.	19.	6.	.26

	DIVERSION TO						
+		DD10I	104.	4.42	31.	8.	3.	.26
	HYDROGRAPH AT						
+		DD10	152.	4.42	42.	11.	4.	.26
	ROUTED TO						
+		RD10S	152.	4.33	42.	11.	4.	.26
	HYDROGRAPH AT						
+		DO2B	103.	4.25	18.	4.	1.	.07
	3 COMBINED AT						
+		CD02	345.	4.42	88.	23.	8.	.35
	DIVERSION TO						
+		DD02I	63.	4.42	12.	3.	1.	.35
	HYDROGRAPH AT						
+		DD02	281.	4.42	76.	20.	7.	.35
	ROUTED TO						
+		RD02E	282.	4.42	76.	20.	7.	.35
	HYDROGRAPH AT						
+		D07	63.	4.25	12.	3.	1.	.05
	HYDROGRAPH AT						
+		DRD06	101.	4.42	16.	4.	1.	.25
	ROUTED TO						
+		RD06E	100.	4.42	16.	4.	1.	.25
	2 COMBINED AT						
+		CD07	157.	4.42	28.	7.	2.	.13
	ROUTED TO						
+		RD07	154.	4.50	28.	7.	2.	.13
	HYDROGRAPH AT						
+		DRD10	104.	4.42	31.	8.	3.	.26
	ROUTED TO						
+		RD10E	104.	4.25	31.	8.	3.	.26
	2 COMBINED AT						
+		CD11	257.	4.50	59.	15.	5.	.24
	ROUTED TO						
+		RD11	255.	4.50	59.	15.	5.	.24
	HYDROGRAPH AT						
+		DRE03	817.	4.58	122.	31.	10.	.86
	ROUTED TO						
+		RE03S	813.	4.75	122.	31.	10.	.86
	HYDROGRAPH AT						
+		D08	49.	4.33	13.	3.	1.	.05
	2 COMBINED AT						
+		CD08	847.	4.75	135.	34.	11.	.88
	ROUTED TO						
+		RD08	844.	4.75	135.	34.	11.	.88
	HYDROGRAPH AT						
+		D03A	72.	4.25	13.	3.	1.	.05
	3 COMBINED AT						
+		CD12	1048.	4.75	201.	51.	17.	1.17
	ROUTED TO						
+		RD12	1041.	4.83	201.	51.	17.	1.17
	HYDROGRAPH AT						
+		DRE09I	551.	4.67	64.	16.	5.	.51
	ROUTED TO						
+		RE09S	487.	4.92	64.	16.	5.	.51

	HYDROGRAPH AT						
+	D09	360.	4.17	62.	16.	5.	.22
	DIVERSION TO						
+	LD09D	346.	4.17	27.	7.	2.	.22
	HYDROGRAPH AT						
+	LD09	352.	4.25	35.	9.	3.	.22
	2 COMBINED AT						
+	CD09	560.	4.92	96.	24.	8.	.69
	HYDROGRAPH AT						
+	D03B	71.	4.25	13.	3.	1.	.05
	4 COMBINED AT						
+	CD03	1619.	4.92	362.	92.	31.	2.19
	ROUTED TO						
+	RD03	1619.	4.92	362.	92.	31.	2.19
	HYDROGRAPH AT						
+	C11	90.	4.17	12.	3.	1.	.05
	HYDROGRAPH AT						
+	C10	85.	4.17	13.	3.	1.	.05
	HYDROGRAPH AT						
+	DRD02	63.	4.42	12.	3.	1.	.35
	ROUTED TO						
+	RD02S	63.	4.50	12.	3.	1.	.35
	2 COMBINED AT						
+	CC10	135.	4.33	26.	6.	2.	.12
	ROUTED TO						
+	RC10	134.	4.33	26.	6.	2.	.12
	3 COMBINED AT						
+	CC11	1689.	4.92	394.	100.	33.	2.36
	ROUTED TO						
+	RC11	1683.	4.92	394.	100.	33.	2.36
	HYDROGRAPH AT						
+	C08	170.	4.25	29.	7.	2.	.12
	2 COMBINED AT						
+	CC08	1730.	4.92	419.	106.	35.	2.48
	ROUTED TO						
+	RC08	1729.	5.00	419.	106.	35.	2.48
	HYDROGRAPH AT						
+	C06	222.	4.25	38.	9.	3.	.15
	2 COMBINED AT						
+	CC06	1780.	5.00	451.	115.	38.	2.63
	ROUTED TO						
+	RC06	1779.	5.00	451.	115.	38.	2.63
	HYDROGRAPH AT						
+	DRD01	68.	4.42	15.	4.	1.	.21
	ROUTED TO						
+	RD01S	67.	4.67	15.	4.	1.	.21
	HYDROGRAPH AT						
+	C07	78.	4.33	18.	5.	2.	.07
	2 COMBINED AT						
+	CC07	139.	4.50	32.	8.	3.	.15
	DIVERSION TO						
+	HESDBI	135.	4.50	29.	7.	2.	.15
	HYDROGRAPH AT						
+	HESDB	4.	4.50	3.	1.	0.	.15

	ROUTED TO						
+		RC07	4.	4.75	3.	1.	0.	.15
	HYDROGRAPH AT						
+		C09	66.	4.25	14.	4.	1.	.06
	ROUTED TO						
+		RC09	56.	4.50	14.	4.	1.	.06
	HYDROGRAPH AT						
+		C05	151.	4.33	35.	9.	3.	.14
	HYDROGRAPH AT						
+		C01	37.	4.25	8.	2.	1.	.03
	ROUTED TO						
+		RC01	36.	4.50	8.	2.	1.	.03
	HYDROGRAPH AT						
+		C02	41.	4.25	10.	3.	1.	.04
	5 COMBINED AT						
+		CC02	280.	4.42	70.	18.	6.	.44
	DIVERSION TO						
+		DC02I	28.	4.42	3.	1.	0.	.44
	HYDROGRAPH AT						
+		DC02	252.	4.42	68.	17.	6.	.44
	ROUTED TO						
+		RC02E	251.	4.42	68.	17.	6.	.44
	HYDROGRAPH AT						
+		C03	68.	4.17	11.	3.	1.	.04
	HYDROGRAPH AT						
+		C12	3.	5.25	2.	1.	0.	.01
	ROUTED TO						
+		RC12	3.	5.75	2.	1.	0.	.01
	HYDROGRAPH AT						
+		C13	248.	4.25	50.	13.	4.	.18
	DIVERSION TO						
+		LC13D	248.	4.25	23.	6.	2.	.18
	HYDROGRAPH AT						
+		LC13	224.	4.42	28.	7.	2.	.18
	2 COMBINED AT						
+		CC13	224.	4.42	30.	8.	3.	.19
	DIVERSION TO						
+		DC13I	183.	4.42	20.	5.	2.	.19
	HYDROGRAPH AT						
+		DC13	41.	4.33	10.	3.	1.	.19
	ROUTED TO						
+		RC13W	41.	4.58	10.	3.	1.	.19
	HYDROGRAPH AT						
+		C04	40.	4.33	10.	3.	1.	.04
	ROUTED TO						
+		RC04	40.	4.42	10.	3.	1.	.04
	5 COMBINED AT						
+		CC03	1953.	5.00	532.	136.	45.	3.37
	DIVERSION TO						
+		APDBI	220.	4.92	14.	3.	1.	3.37
	HYDROGRAPH AT						
+		APDB	1733.	5.00	519.	133.	44.	3.37
	ROUTED TO						
+		RC03	1720.	5.08	519.	133.	44.	3.37

+	HYDROGRAPH AT	B07	35.	4.08	4.	1.	0.	.02
+	2 COMBINED AT	CB07	1721.	5.08	522.	133.	44.	3.39
+	ROUTED TO	RB07	1717.	5.08	522.	133.	44.	3.39
+	HYDROGRAPH AT	B05	91.	4.25	20.	5.	2.	.09
+	DIVERSION TO	LB05D	2.	1.50	0.	0.	0.	.09
+	HYDROGRAPH AT	LB05	91.	4.25	20.	5.	2.	.09
+	HYDROGRAPH AT	DRC02	28.	4.42	3.	1.	0.	.44
+	ROUTED TO	RC02S	25.	4.58	3.	1.	0.	.44
+	HYDROGRAPH AT	B06	20.	4.17	4.	1.	0.	.01
+	4 COMBINED AT	CB05	1756.	5.08	542.	139.	46.	3.49
+	ROUTED TO	RB05	1754.	5.08	542.	139.	46.	3.49
+	HYDROGRAPH AT	B04	178.	4.08	22.	6.	2.	.08
+	DIVERSION TO	LB04D	178.	4.08	22.	6.	2.	.08
+	HYDROGRAPH AT	LB04	0.	.00	0.	0.	0.	.08
+	HYDROGRAPH AT	B02	191.	4.17	28.	7.	2.	.10
+	DIVERSION TO	LB02D	50.	3.75	5.	1.	0.	.10
+	HYDROGRAPH AT	LB02	191.	4.17	23.	6.	2.	.10
+	ROUTED TO	RB02	189.	4.17	23.	6.	2.	.10
+	HYDROGRAPH AT	B03	10.	4.17	2.	0.	0.	.01
+	4 COMBINED AT	CB03	1782.	5.08	563.	144.	48.	3.66
+	ROUTED TO	RB03	1779.	5.08	562.	144.	48.	3.66
+	HYDROGRAPH AT	B01	162.	4.08	16.	4.	1.	.07
+	DIVERSION TO	LB01D	25.	3.67	2.	1.	0.	.07
+	HYDROGRAPH AT	LB01	162.	4.08	14.	3.	1.	.07
+	2 COMBINED AT	CB01	1782.	5.08	574.	147.	49.	3.73
+	ROUTED TO	RB01	1781.	5.17	574.	147.	49.	3.73
+	HYDROGRAPH AT	B12	233.	4.17	27.	7.	2.	.12

	HYDROGRAPH AT							
+		B11	107.	4.17	13.	3.	1.	.06
	DIVERSION TO							
+		LB11D	103.	4.08	6.	1.	0.	.06
	HYDROGRAPH AT							
+		LB11	95.	4.25	7.	2.	1.	.06
	HYDROGRAPH AT							
+		DRDC13	183.	4.42	20.	5.	2.	.19
	ROUTED TO							
+		RC13S	166.	5.08	20.	5.	2.	.19
	HYDROGRAPH AT							
+		B13	445.	4.08	52.	13.	4.	.22
	DIVERSION TO							
+		LB13D	445.	4.08	37.	9.	3.	.22
	HYDROGRAPH AT							
+		LB13	224.	4.42	15.	4.	1.	.22
	ROUTED TO							
+		RB13	216.	4.58	15.	4.	1.	.22
	HYDROGRAPH AT							
+		B14	195.	4.25	44.	11.	4.	.15
	DIVERSION TO							
+		LB14D	195.	4.25	21.	5.	2.	.15
	HYDROGRAPH AT							
+		LB14	174.	4.50	24.	6.	2.	.15
	3 COMBINED AT							
+		CB14	367.	4.58	59.	15.	5.	.52
	ROUTED TO							
+		RB14	336.	4.67	59.	15.	5.	.52
	4 COMBINED AT							
+		CB12	1938.	5.00	640.	164.	55.	4.43
	ROUTED TO							
+		RB12	1924.	5.33	639.	164.	55.	4.43
	HYDROGRAPH AT							
+		A01	1075.	4.17	154.	39.	13.	.51
	DIVERSION TO							
+		LA01D	953.	4.08	71.	18.	6.	.51
	HYDROGRAPH AT							
+		LA01	1041.	4.25	84.	21.	7.	.51
	2 COMBINED AT							
+		CA01	1985.	5.25	709.	181.	60.	4.94
	HYDROGRAPH AT							
+		B10	95.	4.33	22.	6.	2.	.11
	DIVERSION TO							
+		LB10D	95.	4.33	21.	5.	2.	.11
	HYDROGRAPH AT							
+		LB10	7.	6.75	1.	0.	0.	.11

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

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR STORM = 1	STORM AREA (SQ MI) =			.01					
RF05W	MANE	.86	49.00	236.76	.57	5.00	49.00	240.00	.57

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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1279E+02 EXCESS= .0000E+00 OUTFLOW= .1279E+02 BASIN STORAGE= .1300E-12 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RF05W  MANE          .82     49.00    237.07       .57      5.00     49.00    240.00         .57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1275E+02 EXCESS= .0000E+00 OUTFLOW= .1275E+02 BASIN STORAGE= .1314E-12 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RF05W  MANE          .87     49.00    232.10       .60      5.00     49.00    235.00         .60

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1342E+02 EXCESS= .0000E+00 OUTFLOW= .1342E+02 BASIN STORAGE= .1328E-12 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RF05W  MANE          .76     49.00    236.65       .64      5.00     49.00    240.00         .64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1428E+02 EXCESS= .0000E+00 OUTFLOW= .1428E+02 BASIN STORAGE= .1323E-12 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RF05W  MANE          .73     49.00    236.91       .66      5.00     49.00    240.00         .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1473E+02 EXCESS= .0000E+00 OUTFLOW= .1473E+02 BASIN STORAGE= .1352E-12 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RF05W  MANE          .85     46.98    275.88       .55      5.00     46.98    275.00         .55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1242E+02 EXCESS= .0000E+00 OUTFLOW= .1242E+02 BASIN STORAGE= .1305E-12 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
            RF03  MANE          .78    723.47    265.93      1.92      5.00    720.34    265.00        1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5696E+02 EXCESS= .0000E+00 OUTFLOW= .5697E+02 BASIN STORAGE= .3554E-04 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
            RF03  MANE          .78    715.27    265.63      1.90      5.00    712.47    265.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5639E+02 EXCESS= .0000E+00 OUTFLOW= .5639E+02 BASIN STORAGE= .3461E-04 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
            RF03  MANE          .91    510.61    266.71      1.69      5.00    508.28    270.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4999E+02 EXCESS= .0000E+00 OUTFLOW= .4999E+02 BASIN STORAGE= .3662E-04 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
            RF03  MANE         1.05    384.44    269.83      1.41      5.00    384.36    270.00        1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4184E+02 EXCESS= .0000E+00 OUTFLOW= .4184E+02 BASIN STORAGE= .3605E-04 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
            RF03  MANE         1.35    248.91    271.16      1.04      5.00    248.31    270.00        1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3081E+02 EXCESS= .0000E+00 OUTFLOW= .3081E+02 BASIN STORAGE= .3478E-04 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
            RF03  MANE         2.68     83.31    281.86       .51      5.00     83.27    280.00         .51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1526E+02 EXCESS= .0000E+00 OUTFLOW= .1526E+02 BASIN STORAGE= .3969E-04 PERCENT ERROR=    .0
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FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RF07W  MANE         5.00     15.82    380.00       .18      5.00     15.82    380.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3032E+01 EXCESS= .0000E+00 OUTFLOW= .3012E+01 BASIN STORAGE= .6039E-03 PERCENT ERROR=    .6

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RF07W  MANE         5.00     15.82    380.00       .18      5.00     15.82    380.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3029E+01 EXCESS= .0000E+00 OUTFLOW= .3010E+01 BASIN STORAGE= .6008E-03 PERCENT ERROR=    .6

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RF07W  MANE         5.00     15.86    390.00       .19      5.00     15.86    390.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3146E+01 EXCESS= .0000E+00 OUTFLOW= .3124E+01 BASIN STORAGE= .7440E-03 PERCENT ERROR=    .7

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RF07W  MANE         5.00     15.82    390.00       .18      5.00     15.82    390.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3073E+01 EXCESS= .0000E+00 OUTFLOW= .3054E+01 BASIN STORAGE= .7580E-03 PERCENT ERROR=    .6

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RF07W  MANE         5.00     15.85    395.00       .18      5.00     15.85    395.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3052E+01 EXCESS= .0000E+00 OUTFLOW= .3032E+01 BASIN STORAGE= .4244E-03 PERCENT ERROR=    .6

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RF07W  MANE         5.00     15.83    390.00       .14      5.00     15.83    390.00         .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2318E+01 EXCESS= .0000E+00 OUTFLOW= .2296E+01 BASIN STORAGE= .3909E-03 PERCENT ERROR=    .9

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RF02W  MANE         1.90     50.00    239.64       .41      5.00     50.00    240.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1382E+02 EXCESS= .0000E+00 OUTFLOW= .1382E+02 BASIN STORAGE= .7249E-11 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RF02W  MANE         1.90     50.00    239.86       .41      5.00     50.00    240.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1378E+02 EXCESS= .0000E+00 OUTFLOW= .1378E+02 BASIN STORAGE= .7126E-11 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RF02W  MANE         1.90     50.00    235.22       .43      5.00     50.00    240.00         .43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1445E+02 EXCESS= .0000E+00 OUTFLOW= .1445E+02 BASIN STORAGE= .6911E-11 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RF02W  MANE         1.84     50.00    238.78       .46      5.00     50.00    240.00         .46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1533E+02 EXCESS= .0000E+00 OUTFLOW= .1533E+02 BASIN STORAGE= .7064E-11 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RF02W  MANE         1.84     50.00    243.75       .47      5.00     50.00    245.00         .47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1574E+02 EXCESS= .0000E+00 OUTFLOW= .1575E+02 BASIN STORAGE= .7000E-11 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RF02W  MANE         1.92     48.76    283.04       .41      5.00     48.73    285.00         .41
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1356E+02 EXCESS= .0000E+00 OUTFLOW= .1356E+02 BASIN STORAGE= .7742E-11 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RE05W  MANE        1.75     25.00    235.00       .17      5.00     25.00    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6361E+01 EXCESS= .0000E+00 OUTFLOW= .6363E+01 BASIN STORAGE= .3600E-11 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RE05W  MANE        1.75     25.00    235.20       .17      5.00     25.00    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6344E+01 EXCESS= .0000E+00 OUTFLOW= .6346E+01 BASIN STORAGE= .3609E-11 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RE05W  MANE        1.87     25.00    228.79       .18      5.00     25.00    230.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6667E+01 EXCESS= .0000E+00 OUTFLOW= .6668E+01 BASIN STORAGE= .3706E-11 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RE05W  MANE        1.82     25.00    230.13       .19      5.00     25.00    235.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7006E+01 EXCESS= .0000E+00 OUTFLOW= .7007E+01 BASIN STORAGE= .3672E-11 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RE05W  MANE        1.83     25.00    234.15       .19      5.00     25.00    235.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7073E+01 EXCESS= .0000E+00 OUTFLOW= .7074E+01 BASIN STORAGE= .3758E-11 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RE05W  MANE        1.78     25.00    269.91       .15      5.00     25.00    270.00         .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5814E+01 EXCESS= .0000E+00 OUTFLOW= .5815E+01 BASIN STORAGE= .3736E-11 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RE09W  MANE         .70     45.00    256.49       .32      5.00     45.00    260.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8814E+01 EXCESS= .0000E+00 OUTFLOW= .8815E+01 BASIN STORAGE= .9349E-13 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RE09W  MANE         .70     45.00    256.49       .32      5.00     45.00    260.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8798E+01 EXCESS= .0000E+00 OUTFLOW= .8799E+01 BASIN STORAGE= .9238E-13 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RE09W  MANE         .70     45.00    261.49       .33      5.00     45.00    265.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9004E+01 EXCESS= .0000E+00 OUTFLOW= .9005E+01 BASIN STORAGE= .9231E-13 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RE09W  MANE         .70     45.00    261.49       .34      5.00     45.00    265.00         .34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9184E+01 EXCESS= .0000E+00 OUTFLOW= .9185E+01 BASIN STORAGE= .9150E-13 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RE09W  MANE         .81     45.00    272.04       .33      5.00     45.00    275.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8927E+01 EXCESS= .0000E+00 OUTFLOW= .8926E+01 BASIN STORAGE= .9130E-13 PERCENT ERROR=    .0
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FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RE09W  MANE          .81     45.00    341.94       .20      5.00     45.00    345.00          .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5502E+01 EXCESS= .0000E+00 OUTFLOW= .5501E+01 BASIN STORAGE= .9215E-13 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RE03W  MANE         1.00     90.00    249.48       .52      5.00     90.00    250.00          .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2384E+02 EXCESS= .0000E+00 OUTFLOW= .2385E+02 BASIN STORAGE= .7045E-11 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RE03W  MANE         1.00     90.00    249.64       .52      5.00     90.00    250.00          .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2378E+02 EXCESS= .0000E+00 OUTFLOW= .2378E+02 BASIN STORAGE= .6965E-11 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RE03W  MANE         1.02     90.00    249.09       .54      5.00     90.00    250.00          .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2473E+02 EXCESS= .0000E+00 OUTFLOW= .2474E+02 BASIN STORAGE= .6923E-11 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RE03W  MANE         1.01     90.00    254.41       .55      5.00     90.00    255.00          .55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2525E+02 EXCESS= .0000E+00 OUTFLOW= .2526E+02 BASIN STORAGE= .7197E-11 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RE03W  MANE         1.00     90.00    259.10       .54      5.00     90.00    260.00          .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2489E+02 EXCESS= .0000E+00 OUTFLOW= .2490E+02 BASIN STORAGE= .6928E-11 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RE03W  MANE         1.10     88.34    322.43       .40      5.00     88.20    320.00          .40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1840E+02 EXCESS= .0000E+00 OUTFLOW= .1840E+02 BASIN STORAGE= .6994E-11 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RE02W  MANE         1.22    134.00    284.09      3.29      5.00    134.00    280.00         3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3211E+02 EXCESS= .0000E+00 OUTFLOW= .3209E+02 BASIN STORAGE= .1246E-03 PERCENT ERROR=    .1

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RE02W  MANE         1.22    134.00    284.09      3.28      5.00    134.00    280.00         3.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3202E+02 EXCESS= .0000E+00 OUTFLOW= .3200E+02 BASIN STORAGE= .1240E-03 PERCENT ERROR=    .1

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RE02W  MANE         1.22    134.00    279.21      3.39      5.00    133.99    275.00         3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3314E+02 EXCESS= .0000E+00 OUTFLOW= .3312E+02 BASIN STORAGE= .1236E-03 PERCENT ERROR=    .1

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RE02W  MANE         1.22    132.85    264.92      3.44      5.00    132.85    265.00         3.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3357E+02 EXCESS= .0000E+00 OUTFLOW= .3356E+02 BASIN STORAGE= .1230E-03 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RE02W  MANE         1.25    119.92    267.83      3.31      5.00    119.86    270.00         3.31
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .3235E+02 EXCESS= .0000E+00 OUTFLOW= .3234E+02 BASIN STORAGE= .1242E-03 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RE02W  MANE         1.29     98.31    322.37      2.51      5.00     98.23    325.00        2.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2450E+02 EXCESS= .0000E+00 OUTFLOW= .2449E+02 BASIN STORAGE= .1240E-03 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RC13W  MANE         3.65     46.50    266.13       .53      5.00     41.26    275.00         .53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5226E+01 EXCESS= .0000E+00 OUTFLOW= .5228E+01 BASIN STORAGE= .2942E-03 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RC13W  MANE         3.65     46.50    266.13       .53      5.00     41.26    275.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5207E+01 EXCESS= .0000E+00 OUTFLOW= .5208E+01 BASIN STORAGE= .2924E-03 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RC13W  MANE         3.65     42.53    269.78       .51      5.00     42.52    270.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5095E+01 EXCESS= .0000E+00 OUTFLOW= .5096E+01 BASIN STORAGE= .2926E-03 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RC13W  MANE         3.65     42.54    277.07       .50      5.00     41.27    285.00         .50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4910E+01 EXCESS= .0000E+00 OUTFLOW= .4911E+01 BASIN STORAGE= .2910E-03 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RC13W  MANE         3.69     42.42    280.61       .40      5.00     38.41    280.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4009E+01 EXCESS= .0000E+00 OUTFLOW= .4011E+01 BASIN STORAGE= .2894E-03 PERCENT ERROR=   -.1

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RC13W  MANE         4.55     14.08    332.19       .16      5.00     13.43    335.00         .16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1538E+01 EXCESS= .0000E+00 OUTFLOW= .1539E+01 BASIN STORAGE= .2917E-03 PERCENT ERROR=   -.1

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
            RB05  MANE          .78   2313.95    301.12      1.65      5.00   2302.88    300.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3061E+03 EXCESS= .0000E+00 OUTFLOW= .3061E+03 BASIN STORAGE= .3969E-04 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
            RB05  MANE          .78   2284.33    301.38      1.63      5.00   2273.04    300.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3034E+03 EXCESS= .0000E+00 OUTFLOW= .3034E+03 BASIN STORAGE= .3968E-04 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
            RB05  MANE          .76   1785.97    305.76      1.50      5.00   1785.57    305.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2789E+03 EXCESS= .0000E+00 OUTFLOW= .2789E+03 BASIN STORAGE= .3939E-04 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
            RB05  MANE          .80   1556.65    310.91      1.32      5.00   1555.69    310.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2465E+03 EXCESS= .0000E+00 OUTFLOW= .2465E+03 BASIN STORAGE= .3949E-04 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
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RB05  MANE          .95    975.46    321.04       .99      5.00    975.27    320.00         .99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1846E+03 EXCESS= .0000E+00 OUTFLOW= .1846E+03 BASIN STORAGE= .3950E-04 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =      500.00
RB05  MANE         1.53    321.81    296.05       .48      5.00    321.70    295.00         .48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8925E+02 EXCESS= .0000E+00 OUTFLOW= .8925E+02 BASIN STORAGE= .3960E-04 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =         .01
RB02  MANE         1.75    190.13    250.69      2.16      5.00    189.98    250.00        2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1162E+02 EXCESS= .0000E+00 OUTFLOW= .1162E+02 BASIN STORAGE= .1872E-04 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =         .50
RB02  MANE         1.76    189.50    251.52      2.14      5.00    188.67    250.00        2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1151E+02 EXCESS= .0000E+00 OUTFLOW= .1151E+02 BASIN STORAGE= .1908E-04 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =        2.80
RB02  MANE         1.50    128.65    252.00      1.99      5.00    127.78    250.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1071E+02 EXCESS= .0000E+00 OUTFLOW= .1071E+02 BASIN STORAGE= .1908E-04 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =       16.00
RB02  MANE         2.00     99.49    252.00      1.77      5.00     98.75    250.00        1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9544E+01 EXCESS= .0000E+00 OUTFLOW= .9544E+01 BASIN STORAGE= .2246E-04 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =       90.00
RB02  MANE         2.25     69.04    254.25      1.41      5.00     68.84    255.00        1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7572E+01 EXCESS= .0000E+00 OUTFLOW= .7572E+01 BASIN STORAGE= .2417E-04 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =      500.00
RB02  MANE         2.00     33.16    262.00       .74      5.00     33.11    260.00         .74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4012E+01 EXCESS= .0000E+00 OUTFLOW= .4011E+01 BASIN STORAGE= .2000E-04 PERCENT ERROR=    .0


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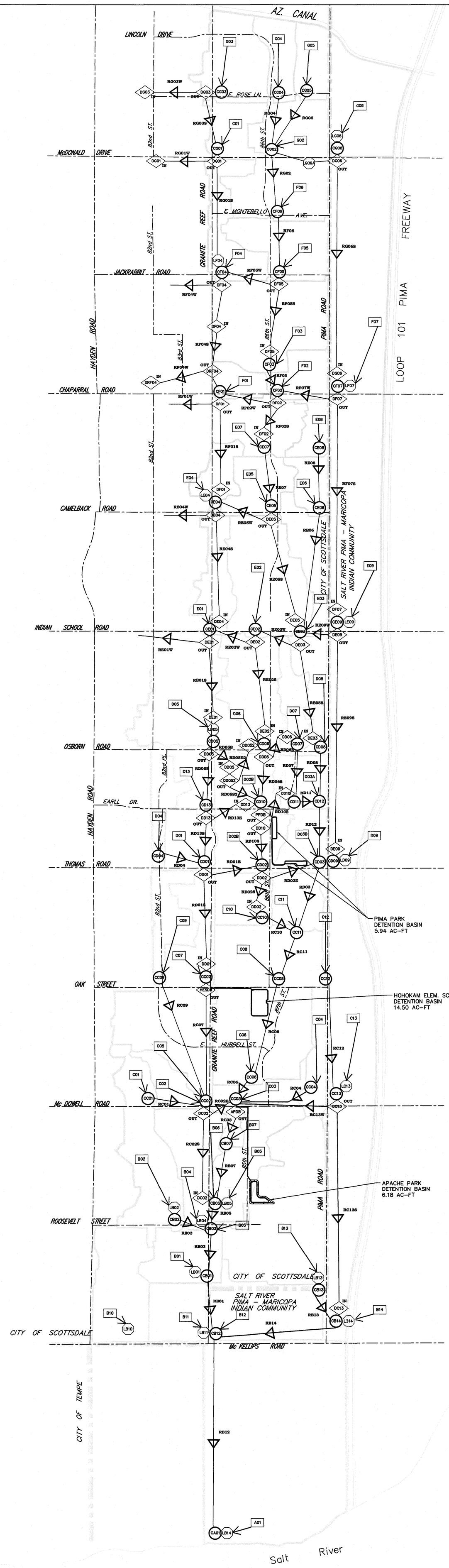


LEGEND

- Basin Boundary
- G03 — Basin Label
- CG03 — Concentration Point
- DG03 (OUT) — Diversion Point
- DG03 (IN) — Diversion Recovery Point
- RG03W — Routing Reach
- LE04 — Storage Routing
- Roadway Center Line
- Community Boundary
- Watershed Boundary

1,000 0 1,000 2,000

PSOMAS

3800 N. Central Ave., Suite 1200
Phoenix, AZ 85012
Tel (602) 222-8260 Fax (602) 266-0218

Updated: RAK
Date: 12/07
Project No. 06077-01

GRANITE REEF WASH DRAINAGE STUDY
AND PRELIMINARY DESIGN PROJECT

CITY OF SCOTTSDALE STORMWATER MANAGEMENT
PROJECT NO. F207

EXHIBIT 2

HEC-1 SCHEMATIC DRAWING DETENTION BASINS

ORIGINAL DRAWING CREATED BY:

Entellus™

FOR:

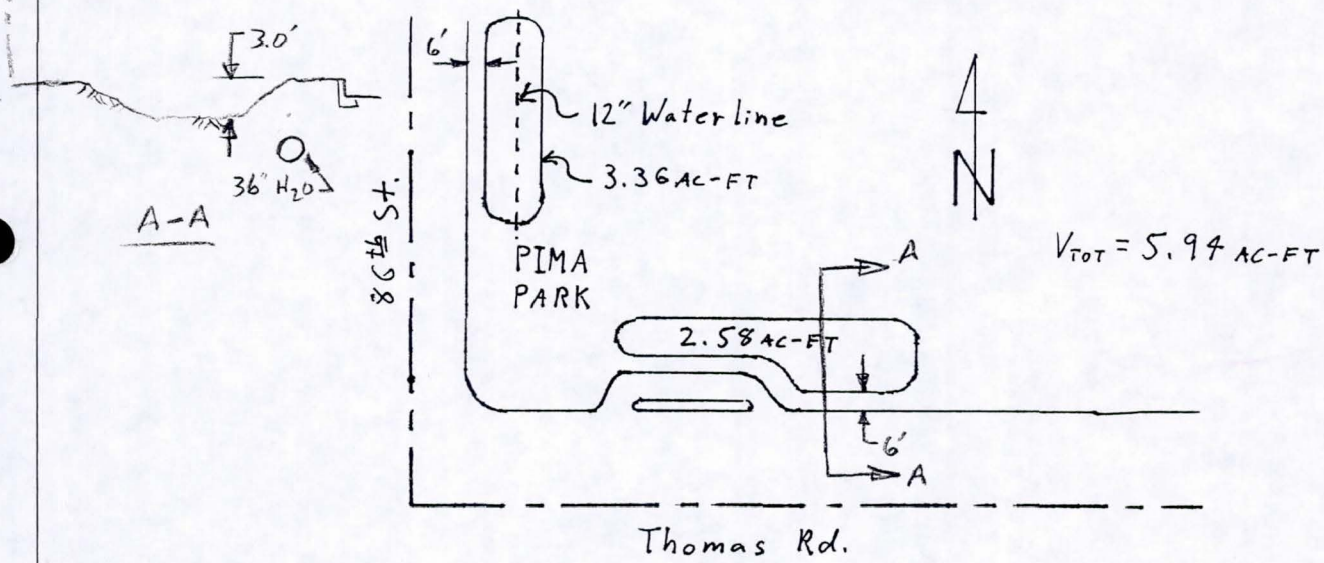
GRANITE REEF DRAINAGE MASTER PLAN
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

Job No. 06077-01 Sheet 1 of ____ Prepared by RAK Date 4/11/07

Project Name Granite Reef Wash Reviewed by JKK Date 5/8/07

Title Pima Park Detention Basins FWA No. ____

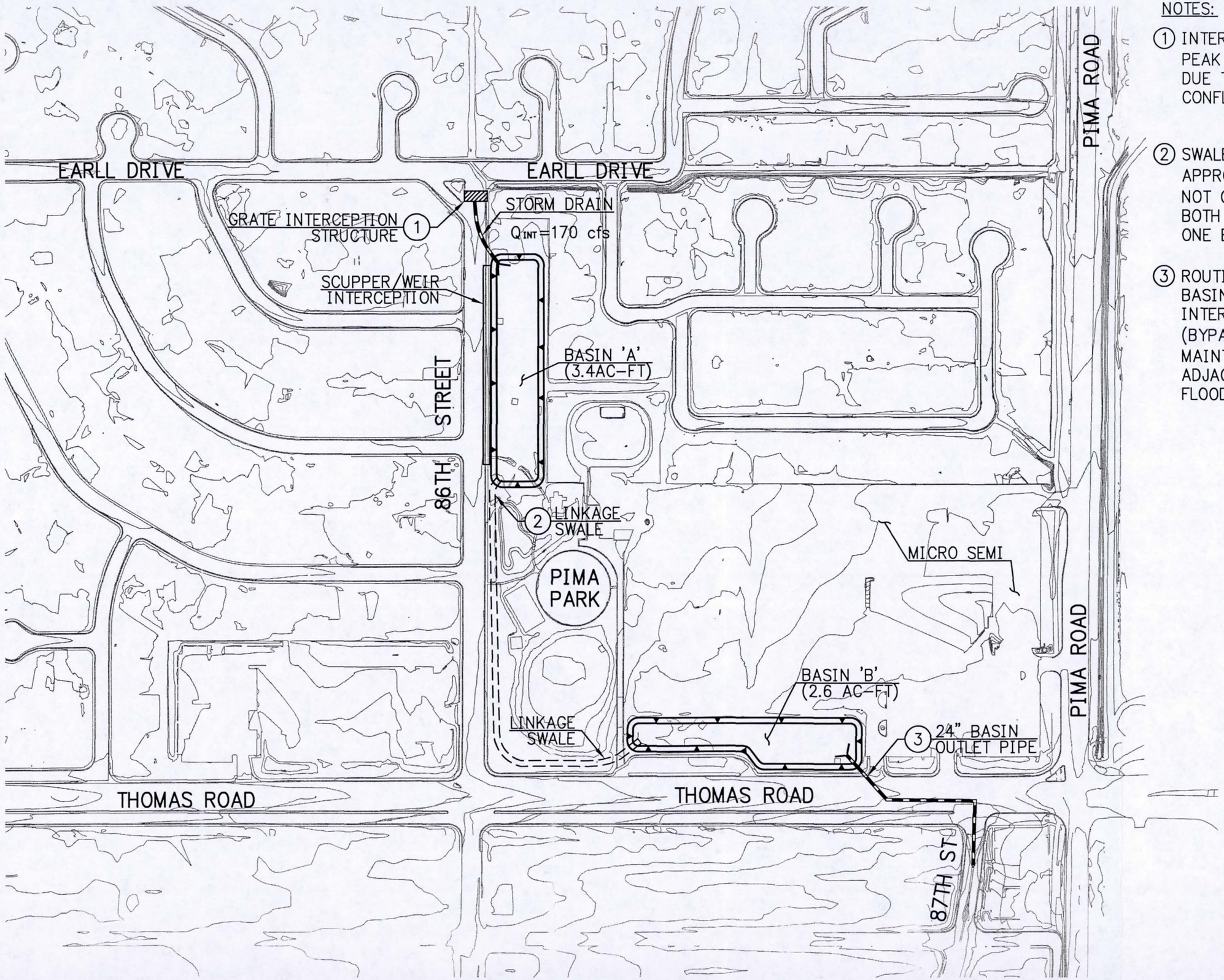
~~These are~~ THIS ALTERNATIVE ASSUMES two detention basins located within Pima Park at the intersection of 86th St. and Thomas Rd. They will be designed to reduce the peak discharges for CD10 (Earll Dr. + 86th St.) HEC-1 CONC. POINT AT. Both basins will be 3 feet deep and have 4:1 side slopes.



Based on the January 1989 plans for the Pima Park Reservoirs and Pump Station provided by City of Scottsdale, the 12" water line underneath the detention basin along 86th St. will have to be relocated. All other utilities will be unaffected.

Changes to HEC-1 model:

A flow diversion (PPDB) was added at Earll Dr. + 86th St. to account for flow into the detention basin. The diverted flow was assumed to be removed from the model since the basin outflow is considered to be minor and HYDROLOGICALLY insignificant to overall system.



NOTES:

1. INTERCEPTION OF HYDROGRAPH PEAK (ONLY) MAY BE DIFFICULT DUE TO SEVERAL POSSIBLE UTILITY CONFLICTS IN THE VICINITY.

2. SWALE MUST BE SIZED APPROPRIATELY SO BASIN 'A' DOES NOT OVERTOP BEFORE BASIN 'B'. BOTH BASINS MUST FUNCTION AS ONE BASIN.

3. ROUTING TOO MUCH FLOW TO THE BASIN MUST BE AVOIDED IN THE INTERCEPTION STRUCTURE DESIGN (BYPASS FLOWS MUST BE MAINTAINED). THIS WILL INSURE ADJACENT PROPERTIES ARE NOT FLOODED DUE TO OVERTOPPING.

N

200 0 200

SCALE

HORIZ: 1"=200'

DATE	REVISION	BY

ENGINEER

PRELIMINARY NOT FOR CONSTRUCTION

MUNICIPAL SERVICES DEPARTMENT

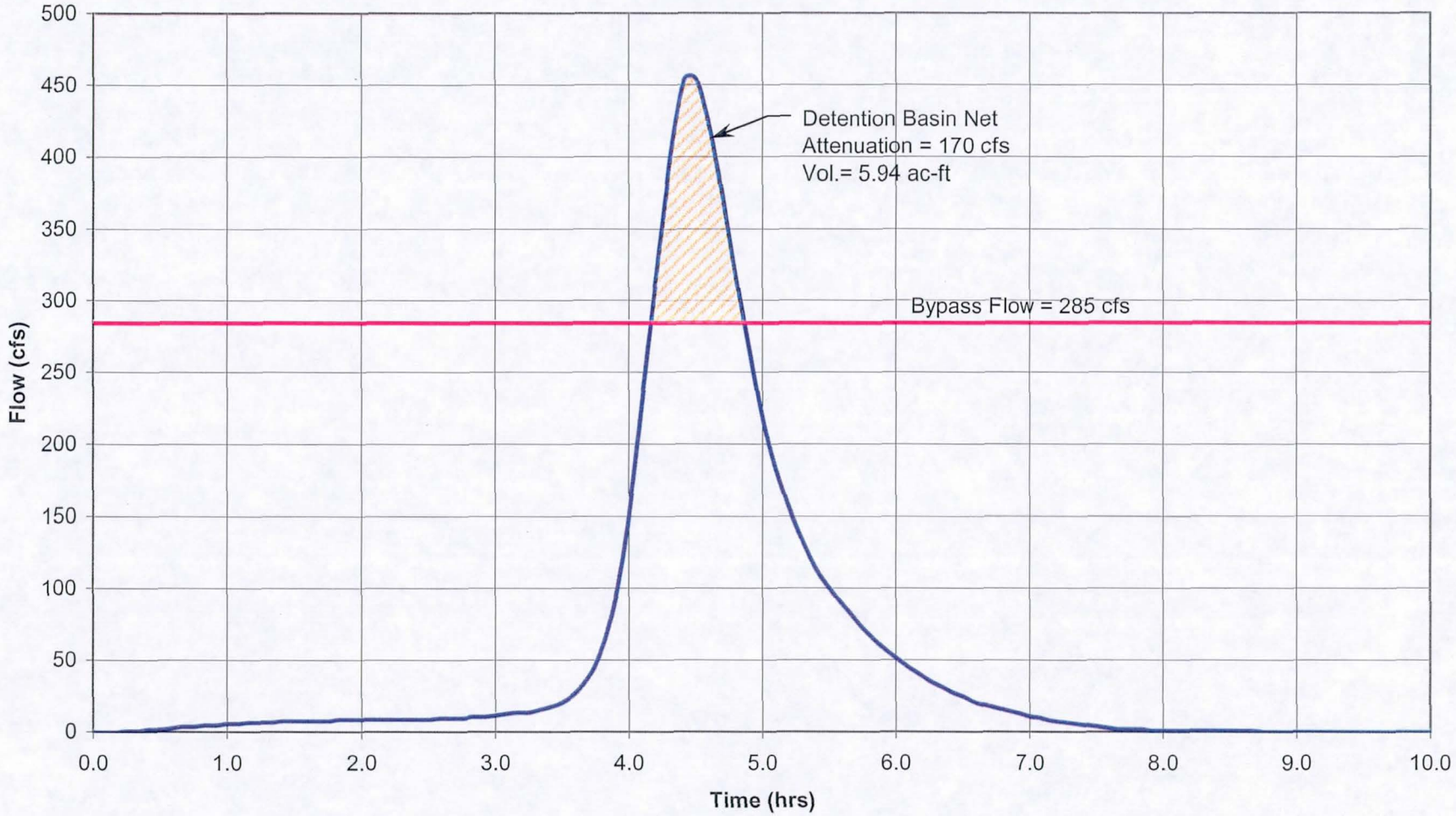
CAPITAL PROJECT MANAGEMENT

7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE

FIGURE 4
PIMA PARK
DETENTION BASIN
ALTERNATIVE

Pima Park
Detention Basin Diversion
(HEC-1 ID: CD10)



CITY OF SCOTTSDALE

PUBLIC IMPROVEMENTS

COUNCIL

HERBERT R. DRINKWATER (Mayor)
SUSAN BITTER SMITH
SAM KATHRYN CAMPANA
ROSS DEAN
MYRON DEIBEL
BILL SODERQUIST
BILL WALTON

CITY MANAGER

JORGE CARRASCO

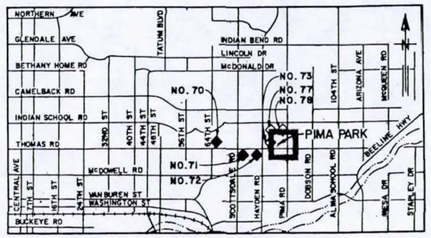
CITY ATTORNEY

TOM WILSON

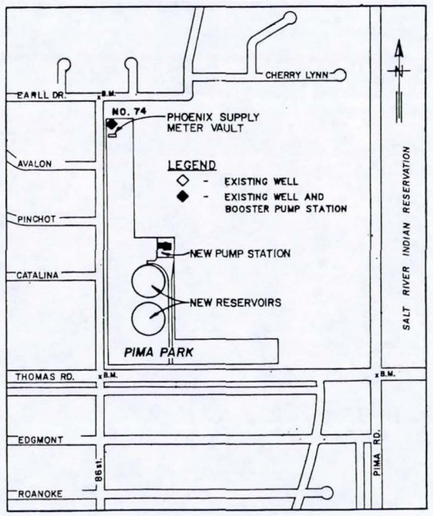
CITY CLERK

MARK MAZZIE

WATER SYSTEM MODIFICATIONS
CONTRACT NO. 10
PIMA PARK RESERVOIRS AND PUMP STATION
PROJECT NO. W-9504 BID CALL 89-55



VICINITY MAP



LOCATION MAP

INDEX

SH NO	DWG NO	TITLE
GENERAL		
1	G1	GENERAL NOTES AND BENCH MARKS
2	G2	PIPING SYMBOL LEGEND
3	G3	EXISTING GRADING AND DEMOLITION PLAN
4	G4	FINAL GRADING PLAN, DRIVEWAY AND SIDEWALK DETAILS
5	G5	SITE PLAN, YARD PIPING PLAN AND DETAILS
6	G6	OVERFLOW PIPE PLAN AND DETAILS
7	G7	OVERFLOW PIPE PROFILE
8	G8	RESERVOIR SUPPLY, PUMP STATION SUPPLY AND OVERFLOW PIPE PROFILES
9	G9	WATER LINE PROFILES
10	G10	DISTRIBUTION PIPE PROFILES AND MISCELLANEOUS DETAILS
11	G11	VAULTS - PLANS AND SECTIONS
12	G12	MISCELLANEOUS DETAILS
13	G13	PIPE JOINT AND OUTLET DETAILS
14	G14	EXISTING WELL AND BOOSTER PUMP STATION MODIFICATIONS
15	G15	EXISTING WELL AND BOOSTER PUMP STATION MODIFICATIONS
16	G16	EXISTING WELL MODIFICATIONS
LANDSCAPING		
17	L1	LANDSCAPE PLAN
18	L2	CONSTRUCTION DETAILS
19	L4	IRRIGATION PLAN
20	L5	IRRIGATION DETAILS
21	L6	IRRIGATION DETAILS
STRUCTURAL		
22	S1	RESERVOIR SECTIONAL PLANS AND SECTIONS
23	S2	RESERVOIR TOP PLANS
24	S3	PUMP STATION PLANS AND SECTIONS
25	S4	SECTIONS
26	S5	SECTIONS
27	S6	GENERAL NOTES AND TYPICAL DETAILS

SH NO	DWG NO	TITLE
ARCHITECTURAL		
28	A1	FLOOR PLAN, REFLECTED CEILING PLAN AND ROOF PLAN
29	A2	ELEVATIONS
30	A3	BUILDING SECTIONS AND SCHEDULES
31	A4	DETAILS
32	A5	RAMADA - PLANS AND DETAILS
33	A6	RAMADA - SECTIONS AND DETAILS
MECHANICAL		
34	M1	RESERVOIRS AND PUMP STATION FLOW DIAGRAM AND INSTRUMENTATION LEGEND
35	M2	MISCELLANEOUS FLOW DIAGRAMS
36	M3	PUMP STATION PLAN AND SECTIONS
37	M4	UTILITY YARD, GENERATOR ROOM AND CHLORINE ROOM PLANS AND SECTIONS
38	M5	MISCELLANEOUS SECTIONS AND DETAILS
HVAC		
39	H1	MECHANICAL/PLUMBING PLANS
ELECTRICAL		
40	E1	LEGEND
41	E2	SITE PLAN
42	E3	DETAILS, DIAGRAMS AND CONDUIT AND CABLE SCHEDULES
43	E4	OVERALL ONE LINE DIAGRAM
44	E5	MOTOR CONTROL CENTER MCC1 - ONE LINE DIAGRAM
45	E6	MOTOR CONTROL CENTER MCC2 - ONE LINE DIAGRAM
46	E7	CONTROL DIAGRAMS
47	E8	CONDUIT AND CABLE SCHEDULES
48	E9	PUMP STATION - POWER PLAN AND DETAILS
49	E10	PUMP STATION - LIGHTING PLAN AND CIRCUIT SCHEDULES
50	E11	PUMP CONTROL PANEL DETAILS
51	E12	WELL AND BOOSTER PUMP STATIONS ONE LINE DIAGRAMS AND MCC INTERIOR FRONT ELEVATIONS
52	E13	WELL AND BOOSTER PUMP STATIONS CONTROL DIAGRAMS

SURVEYED "AS BUILT" DATE

GREELEY AND HANSEN
ENGINEERS
426 N. 44TH STREET • SUITE 400
PHOENIX, AZ 85008 • (602) 275 - 5595

2057

JANUARY 1989

CITY OF SCOTTSDALE

REVIEWED & RECOMMENDED APPROVAL BY:

FIRE DEPT.	N/A	CIVIL	
WATER & SEWER	2/8/89	PLANNING	2/8/89

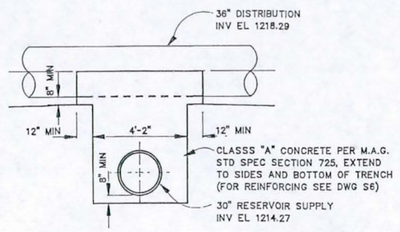
APPROVED BY:

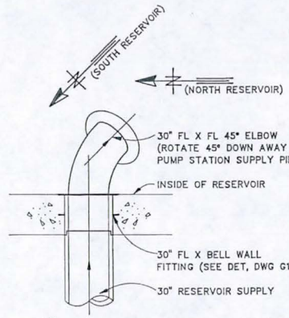
PROJECT REVIEW MANAGER — DATE 2/9/89

APPROVED BY:

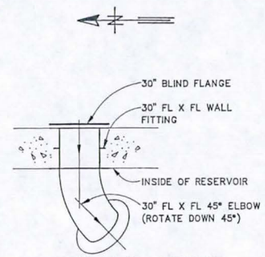
Donald Conroy PE
MARICOPA COUNTY HEALTH DEPT. 89006 — DATE 1/10/89

CONTRACT NO. 10
PROJECT NO. W-9504
BID CALL 89-55





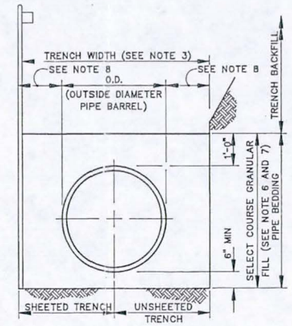
30" RESERVOIR SUPPLY PIPE



30" CGTF FUTURE

RESERVOIR CONNECTION DETAILS

SCALE: 1/4"=1'-0"

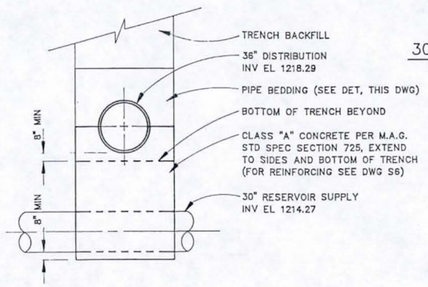


TYPICAL PIPE BEDDING DETAIL

NOT TO SCALE

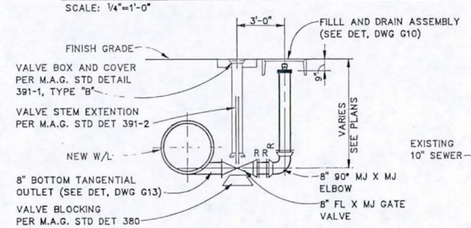
BEDDING NOTES

1. ALL WATER LINE CONSTRUCTION, EXCAVATION, LAYING AND JOINTING OF PIPE, BACKFILLING, AND TESTING SHALL BE IN ACCORDANCE WITH M.A.G. UNIFORM STANDARD SPECIFICATIONS SECTION 600 AS AMENDED BY THE CITY OF SCOTTSDALE UNLESS OTHERWISE SPECIFIED (SEE SPECIFICATIONS).
2. ALL TYPES OF BEDDING SHALL EXTEND TO UNDISTURBED EARTH AT THE SIDES AND BOTTOM OF THE TRENCH.
3. TRENCH WIDTHS SHALL BE IN ACCORDANCE WITH M.A.G. UNIFORM STANDARD SPECIFICATION SECTION 601.2.2.
4. ADDITIONAL LOAD BEARING CAPACITY, BY MEANS OF BEDDING HAVING A HIGHER BEDDING FACTOR THAN CLASS B BEDDING, SHALL BE PROVIDED BY THE CONTRACTOR, IF DEEMED NECESSARY BY THE ENGINEER, AT NO ADDITIONAL COST TO THE CITY, IF THE MAXIMUM TRENCH WIDTH AT THE TOP OF THE PIPE AS SPECIFIED IN M.A.G. UNIFORM STANDARD SPECIFICATION SECTION 601.2.2 IS EXCEEDED.
5. CLASS C CONCRETE SHALL BE USED FOR CONCRETE ENCASEMENT AND SHALL BE IN ACCORDANCE WITH M.A.G. UNIFORM STANDARD SPECIFICATION SECTION 725.
6. SELECT COARSE GRANULAR FILL MATERIAL FOR PIPE BEDDING SHALL BE EITHER SELECT MATERIAL TYPE "B" OR AGGREGATE BASE COURSE IN ACCORDANCE WITH M.A.G. UNIFORM STANDARD SPECIFICATIONS SECTION 702, WITH A MAXIMUM MATERIAL SIZE NO GREATER THAN 1-1/2 INCH DIAMETER.
7. SELECT COARSE GRANULAR FILL MATERIAL SHALL BE PLACED AND THOROUGHLY COMPACTED IN ACCORDANCE WITH M.A.G. UNIFORM STANDARD SPECIFICATIONS SECTION 601.
8. THE PIPE SHALL BE CENTERED IN THE TRENCH WITH AN EQUAL DISTANCE ON EITHER SIDE OF THE OUTSIDE DIAMETER OF THE PIPE TO THE TRENCH WALLS.
9. PROVIDE UNIFORM CONTINUOUS SUPPORT OF PIPE BARREL BETWEEN BELL OR COUPLING HOLES.



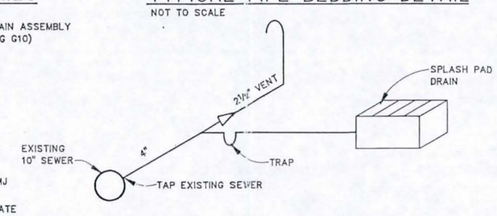
CONCRETE PIPE SUPPORT

SCALE 1/4"=1'-0"



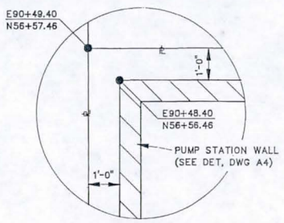
PIPE DRAIN DETAIL

SCALE: 1/4"=1'-0"



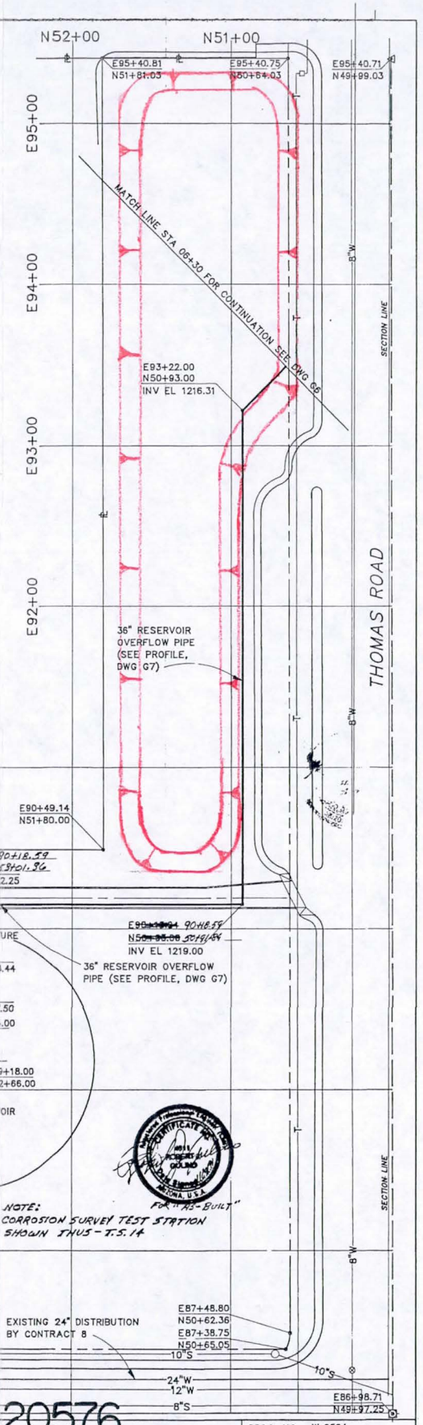
SPRAY PAD DRAIN DIAGRAM

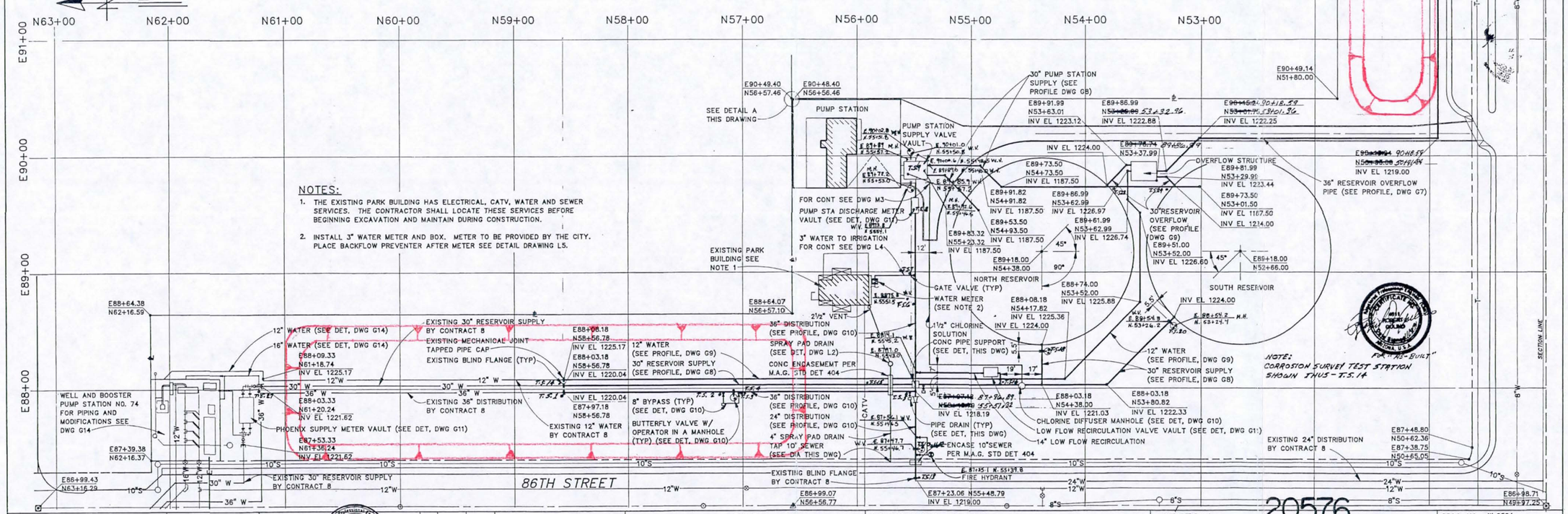
NO SCALE



DETAIL A

NOT TO SCALE





NOTE: CORROSION SURVEY TEST STATION SHOWN THUS - T.S. 14

"FOR "AS-BUILT"

NOTES:

1. THE EXISTING PARK BUILDING HAS ELECTRICAL, CATV, WATER AND SEWER SERVICES. THE CONTRACTOR SHALL LOCATE THESE SERVICES BEFORE BEGINNING EXCAVATION AND MAINTAIN DURING CONSTRUCTION.
2. INSTALL 3" WATER METER AND BOX. METER TO BE PROVIDED BY THE CITY. PLACE BACKFLOW PREVENTER AFTER METER SEE DETAIL DRAWING L5.

GREELEY AND HANSEN ENGINEERS 426 NORTH 44TH STREET PHOENIX, ARIZONA 85008	DESIGNED KEF DRAWN HEH, RAC CHECKED CMP	APPROVED	NO. DATE APPD REVISION	SCALE 40 0 40 80 FT 1"=40"	SCOTTSDALE, ARIZONA WATER SYSTEM MODIFICATIONS CONTRACT 10 - PIMA PARK RESERVOIRS AND PUMP STATION	GENERAL SITE PLAN, YARD PIPING PLAN AND DETAILS "AS-BUILT"	PROJ NO. W-9504 DWG G5 SHEET 5 OF 52 DATE JANUARY 1989 REV 0

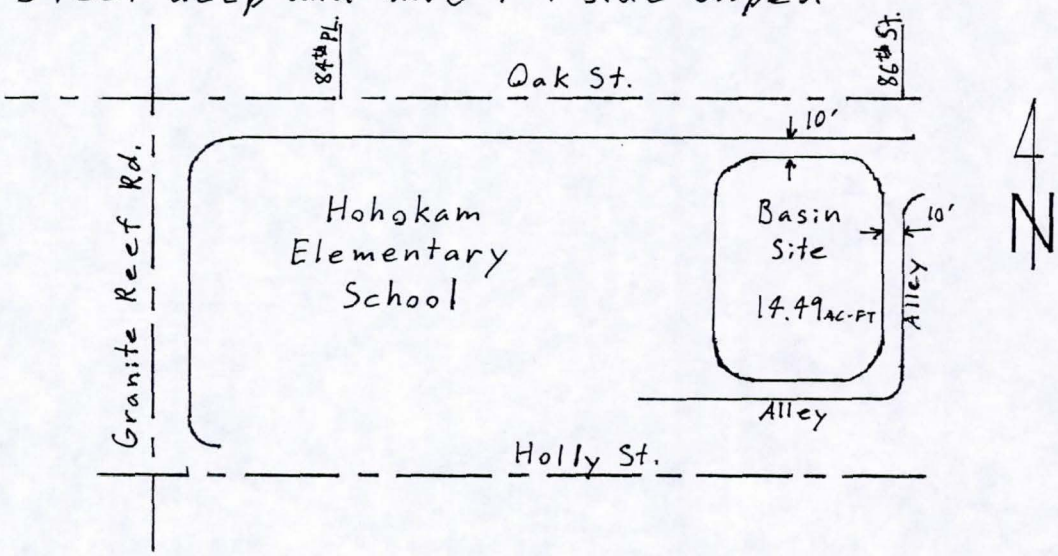
20576

Job No. 06077-01 Sheet 1 of ____ Prepared by RAK Date 4/13/07

Project Name Granite Reef Wash Reviewed by JKK Date 5/8/07

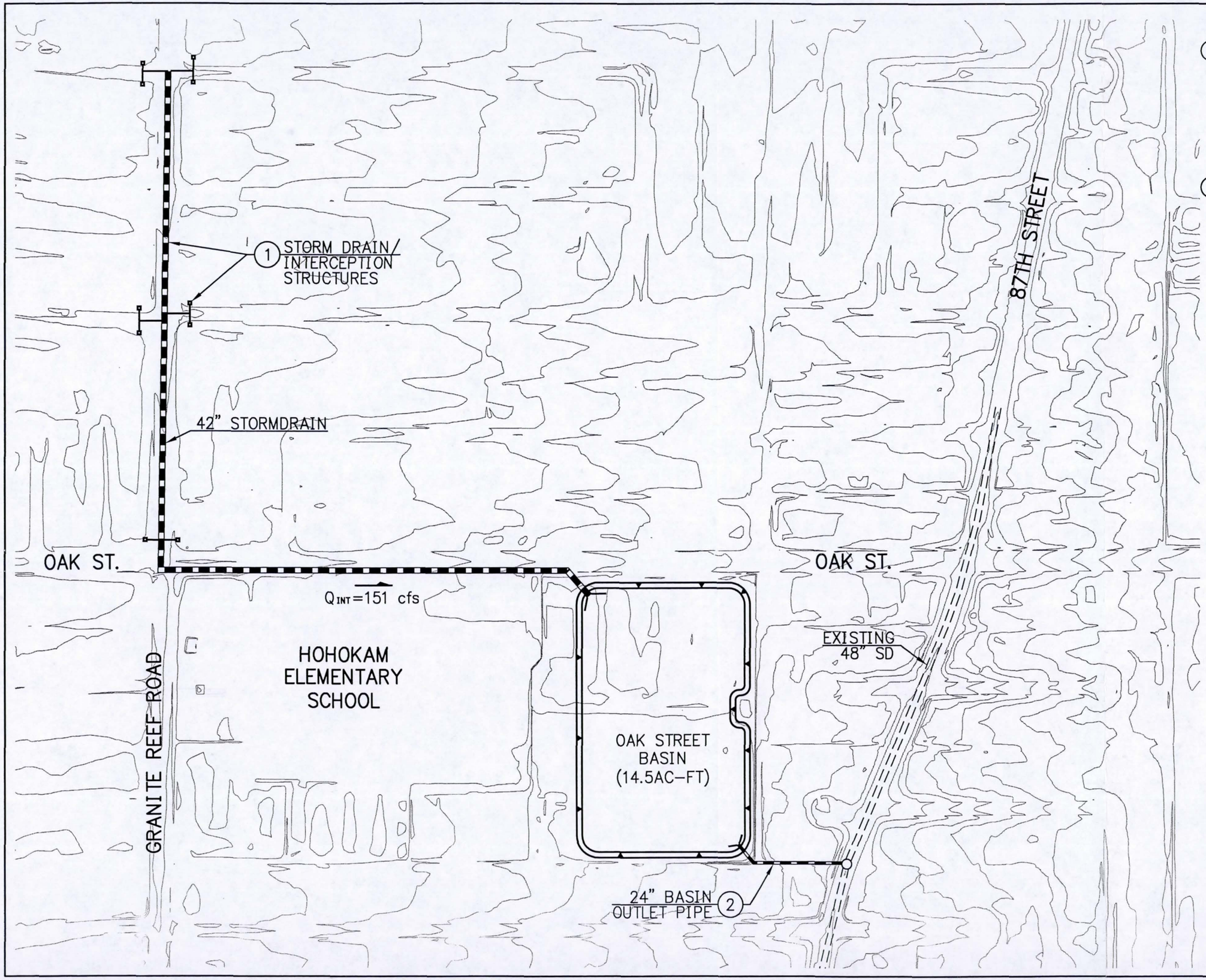
Title Hohokam Elementary School Detention Basin FWA No. ____

This detention basin is located within the athletic fields on the east side of Hohokam Elementary School along Oak St. It will be designed to intercept the peak discharges for CC07 (Granite Reef Rd + Oak St.). The basin is assumed to be 3 feet deep and have 4:1 side slopes.



Changes to HEC-1 model:

A flow diversion (HESDB) was added at Granite Reef Rd. + Oak St. to account for flow into the detention basin. Due to the small basin outflow, the diverted flow was assumed to be removed from the system.



NOTES:

1. INTERCEPTION OF HYDROGRAPH PEAK (ONLY) WILL REQUIRE COMPLEX STRUCTURAL IMPROVEMENTS BASED ON EXTENSIVE HYDRAULIC EVALUATION.

2. ROUTING TOO MUCH FLOW TO THE BASIN MUST BE AVOIDED IN THE INTERCEPTION STRUCTURE DESIGN (BYPASS FLOWS MUST BE MAINTAINED). THIS WILL INSURE ADJACENT PROPERTIES ARE NOT FLOODED DUE TO OVERTOPPING.

DATE	REVISION	BY

ENGINEER

PRELIMINARY NOT FOR CONSTRUCTION

CITY OF SCOTTSDALE ARIZONA

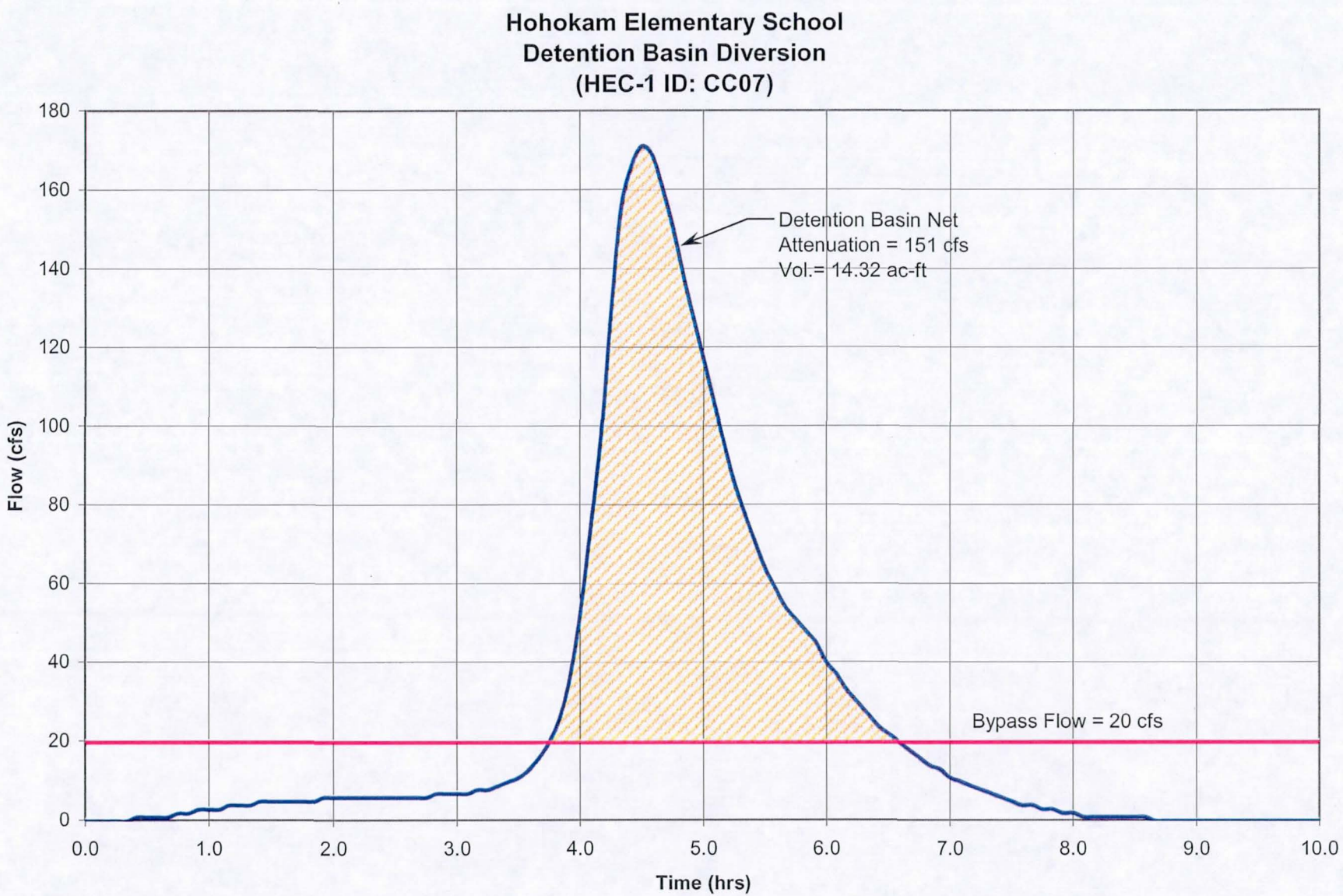
MUNICIPAL SERVICES DEPARTMENT

CAPITAL PROJECT MANAGEMENT

7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE

FIGURE 5
HOHOKAM ELEMENTARY SCHOOL
DETENTION BASIN
ALTERNATIVE

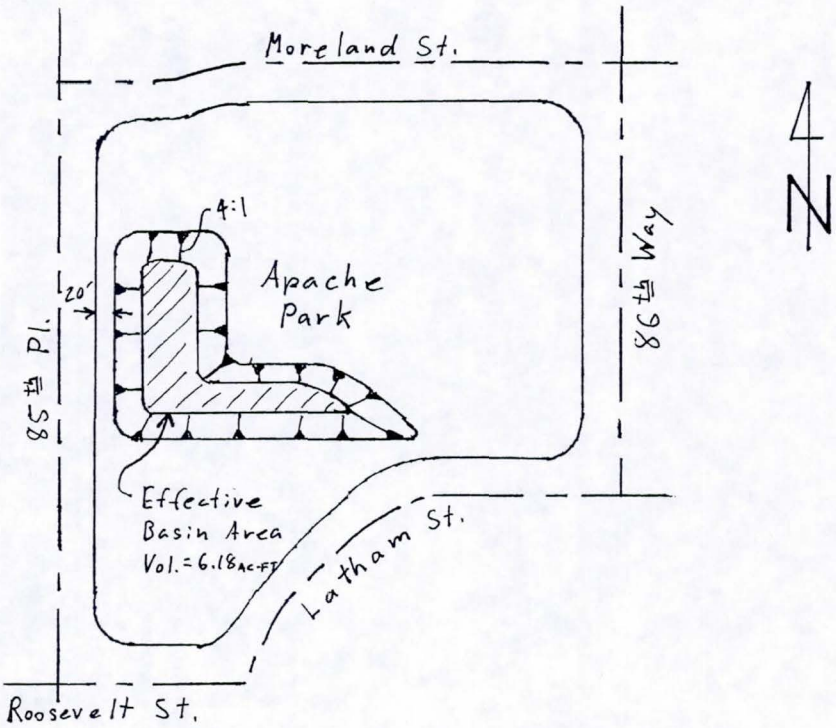

Hohokam Elementary School
Detention Basin Diversion
(HEC-1 ID: CC07)
Detention Basin Net
Attenuation = 151 cfs
Vol.= 14.32 ac-ft
Bypass Flow = 20 cfs
Flow (cfs)
Time (hrs)
0
20
40
60
80
100
120
140
160
180
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0

Job No. 06077-01 Sheet 1 of 2 Prepared by RAK Date 4/16/07

Project Name Granite Reef Wash Reviewed by JKK Date 5/8/07

Title Apache Park Detention Basin FWA No.

This detention basin is located within Apache Park along 85th Pl. between McDowell Rd. and Roosevelt St. It will be designed to reduce peak discharges for CC03 (McDowell Rd. + the crossing of Granite Reef Wash). In order to intercept flows at this location, a storm drain would have to be constructed. Assuming the storm drain has a slope of 0.15%, the basin was determined to be approximately 10 feet deep. The outlet structure will be designed so the WSE does not exceed the 3 feet of depth requirement from City of Scottsdale's standards. The basin was assumed to have 4:1 side slopes.



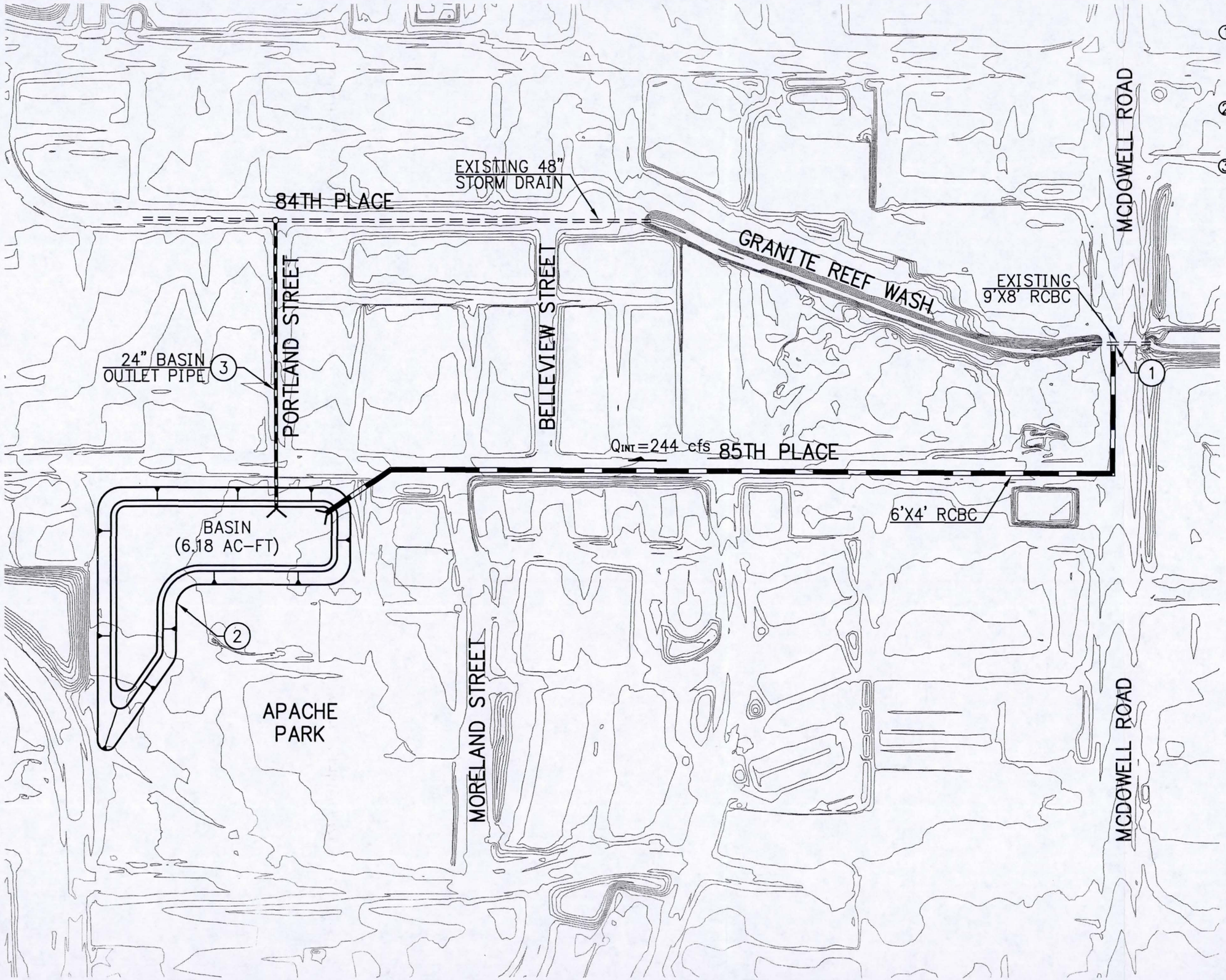
Job No. 06077-01 Sheet 2 of 2 Prepared by RAK Date 4/16/07

Project Name Granite Reef Wash Reviewed by GKK Date 5/8/07

Title Apache Park Detention Basin FWA No.

Changes to HEC-1 model:

A flow diversion (APDB) was added at McDowell Rd. + Granite Reef Wash to account for flow into the detention basin. Due to the small basin outflow, the diverted flow was assumed to be removed from the system.



NOTES:

1. INTERCEPTION OF HYDROGRAPH PEAK (ONLY) MAY BE DIFFICULT DUE TO IRRIGATION LINE ADJACENT TO EXISTING CULVERT.
2. BASED ON A PIPE SLOPE OF 0.15%, THE BASIN WAS DETERMINED TO BE 10+ FEET DEEP.
3. ROUTING TOO MUCH FLOW TO THE BASIN MUST BE AVOIDED IN THE INTERCEPTION STRUCTURE DESIGN (BYPASS FLOWS MUST BE MAINTAINED). THIS WILL INSURE ADJACENT PROPERTIES ARE NOT FLOODED DUE TO OVERTOPPING.

N

200 0 200

SCALE

HORIZ: 1"=200'

DATE	REVISION	BY
ENGINEER		

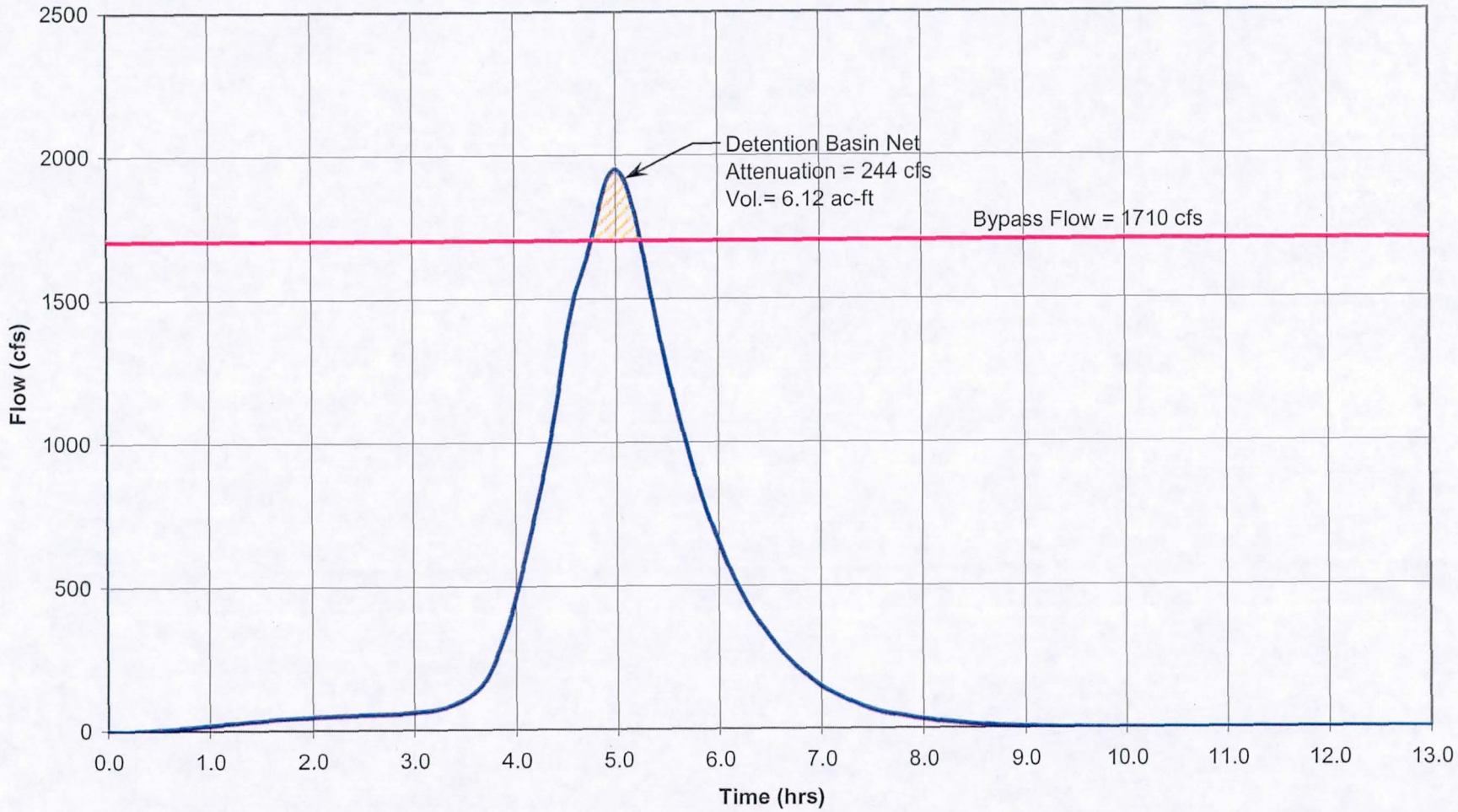
PRELIMINARY
NOT FOR
CONSTRUCTION

MUNICIPAL SERVICES DEPARTMENT
CAPITAL PROJECT MANAGEMENT
7447 E. INDIAN SCHOOL RD.
SCOTTSDALE, ARIZONA 85251

SHEET TITLE

FIGURE 6
APACHE PARK
DETENTION BASIN
ALTERNATIVE

Apache Park
Detention Basin Diversion
(HEC-1 ID: CC03)



2. Alternative Flow Path (FCDMC, 2002)

Job No. 06077-01 Sheet 1 of 1 Prepared by RAK Date 8/2/07

Project Name Granite Reef Wash Reviewed by JKK Date 8/15/07

Title Alt. 2 - Alternative Flow Path FWA No.

This alternative assumes the construction of a new flow path following the historical flow path of the Granite Reef Wash. Due to previous proposed alternatives presented in the FCDMC's 2002 study, Psomas determined it was only necessary to update the cost estimate for one of the alternatives based on current construction costs and property values.

Alternative 1: Water Course Restoration was chosen from the 2002 study to represent the current alternative for the updated cost estimate. Using a similar format as the previous cost estimate, a property acquisition table was created showing the details of each of the dwellings to be purchased. The Assessor's value (Full Cash Value) for each dwelling was updated to the current 2008 values from the Maricopa County Assessor website. Comparing these values with those found on Zillow.com* for the same properties, a 25% adjustment was added to account for actual sales price.

*Note: Property values from Zillow.com are only estimates and are determine based on local sales prices and perceived trends.

These property values were then included in a table showing the overall estimated implementation cost for the alternative. The construction costs were updated to current values and added to the property aquisition costs. Since this was a preliminary estimate, a 25% contingency was included to account for any variation in cost.

Estimated Implementation Cost

Channel / Interceptor Alternative

Item No.	Item Description	Units	# of Dwellings to be Purchased	Unit Cost	Quantity	Cost
1	Excavation	C.Y.		$5.50	602,050	$3,311,275
2	Removal of Structures	EA.		$50,000.00	123	$6,150,000
3	Landscaping Costs	S.F.		$3.50	1,850,560	$6,476,960
4	Roadway Crossings (Arterial)	EA.		$50,000.00	2	$100,000
5	Road Crossing (Collector)	EA.		$20,000.00	2	$40,000
6	Roadway Re-Alignment	L.S.		$750,000.00	1	$750,000
7	Pavement Removal	S.Y.		$4.00	51,404	$205,616
8	Outlet Structures	EA.		$50,000.00	3	$150,000
9	Proposed RCB	L.S.		$1,150,000.00	1	$1,150,000
10	Right-of-Way (ROW) Acquisition					
	Developed Residential (Homes)*	L.S.	94	$28,734,125.00	1	$28,734,125
	Developed Residential (Townhouses)*	L.S.	2	$838,125.00	1	$838,125
	Developed Industrial	AC.		$335,000.00	6	$2,010,000
	Mobile Home Park	AC.		$135,000.00	6	$810,000
	Mobile Homes*	EA.	21	$50,000.00	21	$1,312,500
	Other Buildings	EA.	4	$115,000.00	4	$460,000
	Commercial/Industrial Buildings	EA.	2	$100,000.00	2	$200,000
	Undeveloped Commercial	AC.		$170,000.00	5	$850,000
	SRP-MIC Land (Section 12)	AC.		$335,000.00	20	$6,700,000
		Sub-Total	123			$60,248,601

25% Contingency	$15,062,150
Estimated Implementation Cost	**$75,310,751**

*Refer to the Property Acquistion table for the breakdown of individual home values. 25% was added to the Assessor's value to compensate for the actual value.

Note: All cost estimate tables were obtained from Alternative 1 (Watercourse Restoration) of the FCDMC's 2002 study on Granite Reef Wash. All information was updated to match current values.

Property Acquisition

Single Family, Townhouses, Mobile homes

Single Family Homes

	Address	Parcel No.	2008 Assessors Value (Full Cash Value)	Sales Price	Date Purchased	# of Dwellings per Bldg
8	8624 E Coronado Rd., Lot 1035	131-46-089	$266,600			1
9	8632 E Coronado Rd., Lot 1036	131-46-090-A	$267,200			1
10	8628 E Granada Rd.	131-46-065	$334,000			1
11	8622 E Granada Rd.	131-46-064	$245,500	$142,000	3/1/2003	1
12	8637 E Palm Ln.	131-46-021	$244,500			1
13	8633 E Palm Ln.	131-46-020	$230,000			1
14	8625 E Palm Ln.	131-46-019	$248,500			1
15	8638 E Palm Ln.	131-46-023	$251,000			1
16	8632 E Palm Ln.	131-46-024	$247,500			1
17	8628 E Palm Ln.	131-46-025	$261,000			1
18	8624 E Palm Ln.	131-46-026	$231,000			1
19	1834 N 87th St.	131-46-049	$248,000	$159,000	4/1/2004	1
20	8643 E Hubbel St.	131-46-048	$242,000			1
21	8637 E Hubbel St.	131-46-047	$244,500			1
22	8631 E Hubbel St.	131-46-046	$241,500			1
23	8650 E Hubbel St.	131-45-054	$248,500			1
24	2010 N 87th St.	131-45-055	$216,500			1
25	2018 N 87th St.	131-45-056	$233,000	$134,900	1/1/2000	1
26	2026 N 87th St.	131-45-057	$253,500	$147,000	7/1/2000	1
27	2032 N 87th St.	131-45-058	$262,500	$149,900	6/1/2001	1
28	8646 E Hubbel St.	131-45-053	$266,500			1
29	2017 N 86th Pl.	131-45-052	$239,500	$216,500	9/1/2004	1
30	2023 N 86th Pl.	131-45-051	$255,000	$132,900	10/1/1999	1
31	8646 E Dianna Dr.	131-45-050	$270,000			1
32	8640 E Dianna Dr.	131-45-049	$239,000			1
33	8649 E Holly St.	131-45-061	$223,500	$139,300	4/1/2001	1
34	8643 E Holly St.	131-45-062	$214,500	$159,900	6/1/2003	1
35	8639 E Holly St.	131-45-063	$240,500	$152,000	4/1/2002	1
36	8646 E Holly St.	131-45-097	$241,000			1
37	8642 E Holly St.	131-45-096	$256,500	$365,000	3/1/2006	1
38	8636 E Holly St.	131-45-095	$241,000			1
39	8654 E Cypress St.	131-48-012	$258,500			1
40	8601 E Oak St.	131-48-011	$262,500			1
41	8607 E Oak St.	131-48-010	$265,000			1
42	8613 E Oak St.	131-48-009	$285,000			1
43	8619 E Oak St.	131-48-008	$242,500			1
44	8625 E Oak St.	131-48-007	$262,000	$127,000	5/1/1999	1
45	8628 E Oak St.	131-42-094	$266,000	$168,000	2/1/2002	1
46	8622 E Oak St.	131-42-093	$264,500			1
47	8616 E Oak St.	131-42-092	$289,000			1
48	8619 E Vernon Ave.	131-42-086	$252,500			1
49	8625 E Vernon Ave.	131-42-085	$220,500			1
50	8631 E Vernon Ave.	131-42-084	$235,500			1
51	8701 E Vernon Ave.	131-42-083	$213,500			1
52	8707 E Vernon Ave.	131-42-082	$249,500	$247,500	1/1/2005	1
53	8713 E Vernon Ave.	131-42-081	$237,000	$100,000	4/1/1996	1
54	8717 E Vernon Ave.	131-42-080	$242,500			1
55	8720 E Vernon Ave.	131-42-079	$224,000	$142,000	5/1/2002	1
56	8716 E Vernon Ave.	131-42-078	$268,500			1
57	8710 E Vernon Ave.	131-42-077	$195,500			1
58	8702 E Vernon Ave.	131-42-076	$196,500			1
59	8632 E Vernon Ave.	131-42-075	$249,000	$151,000	7/1/2001	1
60	8626 E Vernon Ave.	131-42-074	$259,000			1
61	8633 E Sheridan St.	131-42-064	$225,500			1
62	8701 E Sheridan St.	131-42-063	$208,000	$139,900	8/1/2003	1
63	8707 E Sheridan St.	131-42-062	$230,000			1
64	8713 E Sheridan St.	131-42-061	$216,000	$85,000	9/1/1999	1
65	8717 E Sheridan St.	131-42-060	$276,500	$145,000	12/1/1998	1
66	8716 E Sheridan St.	131-42-059	$271,000			1
67	8710 E Sheridan St.	131-42-058	$202,500			1
68	8702 E Sheridan St.	131-42-057	$193,500			1
69	8701 E Lewis Ave.	131-42-049	$221,000			1
70	8707 E Lewis Ave.	131-42-048	$249,000			1
71	8712 E Lewis Ave.	131-42-046	$266,500	$199,000	5/1/2004	1
72	8702 E Lewis Ave.	131-42-045	$235,500			1
73	8701 E Wilshire Dr.	131-42-036	$236,500			1
74	8707 E Wilshire Dr.	131-42-035	$261,500	$102,000	12/1/1996	1

Channel/Interceptor Alternative
Cost Estimate

	Address	Parcel No.	2008 Assessors Value (Full Cash Value)	Sales Price	Date Purchased	# of Dwellings per Bldg
75	8708 E Wilshire Dr.	131-42-034	$257,000			1
76	8702 E Wilshire Dr.	131-42-033	$214,000	$320,000	12/1/2005	1
77	8701 E Virginia Ave.	131-42-002	$247,500			1
78	8709 E Virginia Ave.	131-42-001	$247,000	$152,590	1/1/2004	1
79	8702 E Virginia Ave.	131-41-135	$240,000			1
80	8708 E Virginia Ave.	131-41-136	$227,500	$69,000	2/1/1996	1
81	8714 E Virginia Ave.	131-41-137-B	$220,500	$89,300	7/1/1997	1
82	8701 E Cambridge Ave.	131-41-115	$220,500	$94,900	4/1/1997	1
83	8707 E Cambridge Ave.	131-41-114	$326,500			1
84	8708 E Cambridge Ave.	131-41-113	$294,500			1
85	8702 E Cambridge Ave.	131-41-112	$243,000	$292,000	6/1/2006	1
86	8701 E Windsor Ave.	131-41-090	$195,000			1
87	8707 E Windsor Ave.	131-41-089	$230,000	$159,900	10/1/2003	1
88	8713 E Windsor Ave.	131-41-088	$266,000			1
89	8710 E Windsor Ave.	131-41-087	$292,500			1
90	8702 E Windsor Ave.	131-41-086	$215,000	$152,000	11/1/2004	1
91	8701 E Roanoke Ave.	131-41-061	$206,500			1
92	8707 E Roanoke Ave.	131-41-060	$197,500	$113,000	9/1/2000	1
93	8711 E Roanoke Ave.	131-41-059	$256,500	$155,000	1/1/2004	1
94	8710 E Roanoke Ave.	131-41-058	$294,000	$142,500	2/1/2000	1
95	8702 E Roanoke Ave.	131-41-057	$215,000			1
96	8701 E Edgemont Ave.	131-41-030	$269,000	$316,000	10/1/2005	1
97	8709 E Edgemont Ave.	131-41-029	$217,000	$78,000	6/1/1998	1
700	No Assessors Information		$240,000			1
701	No Assessors Information		$240,000			1
702	No Assessors Information		$240,000			1
703	No Assessors Information		$240,000			1

Sub-Total **$22,987,300**
25% Adjustment **$28,734,125** Adjustment based on comparison between Assessor's values and Zillow.com

Townhouses

	Address	Parcel No.	2008 Assessors Value (Full Cash Value)	Sales Price	Date Purchased	# of Dwellings per Bldg
	8521 E McDowell Rd., Lot I3	131-53-051	$102,500			1
	8521 E McDowell Rd., Lot B1	131-53-007	$102,500			1
	8521 E McDowell Rd., Lot B2	131-53-008	$79,000			1
	8521 E McDowell Rd., Lot B3	131-53-009	$102,500			1
	8521 E McDowell Rd., Lot A1	131-53-001	$102,500			1
	8521 E McDowell Rd., Lot A2	131-53-002	$79,000			1
	8521 E McDowell Rd., Lot A3	131-53-003	$102,500			1

Sub-Total **$670,500**
25% Adjustment **$838,125** Adjustment based on comparison between Assessor's values and Zillow.com

Mobile Homes

	Address	Parcel No.	2008 Assessors Value (Full Cash Value)	Sales Price	Date Purchased	# of Mobile Homes
	Mobile Home Park		$50,000			21

Sub-Total **$1,050,000**
25% Adjustment **$1,312,500** Adjustment based on comparison between Assessor's values and Zillow.com

Sub-Totals:

Single Family Homes	**$22,987,300**
Townhouses	**$670,500**
Mobile Homes	**$1,050,000**
	x 25%
Total	**$30,884,750**

Note: Refer to FCDMC's 2002 study for additional ownership information. ID 700 and greater indicates one or several homes with no Assessors information. For Townhomes the Parcel No. and Address shown are for one building only.

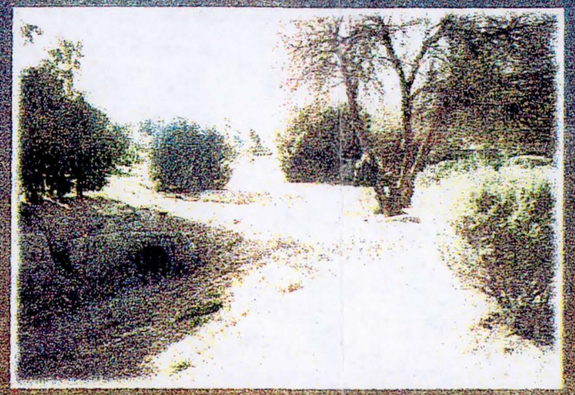
Granite Reef Wash
Drainage Master Plan Report

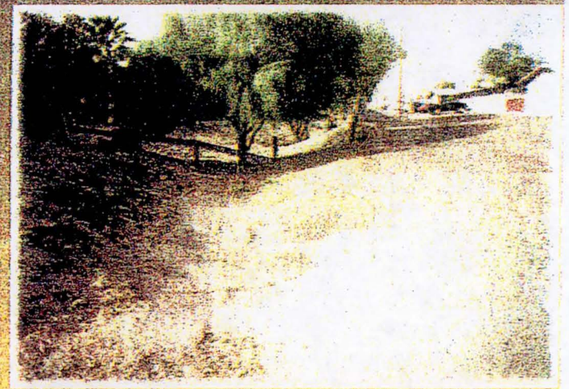
FCD 2000C038

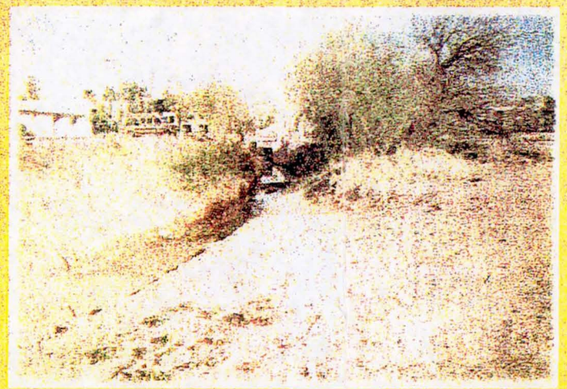
GRANITE REEF WASH

Drainage Master Plan Report

FCD 2000C038







GRANITE REEF WASH
DRAINAGE MASTER PLAN
FCD 2000C038

EXECUTIVE SUMMARY

PART 1 – DATA COLLECTION ES.1

PART 2 – ALTERNATIVE FORMULATION ES.1

PART 1: DATA COLLECTION

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PROJECT LOCATION 1.1

PROJECT AREA HISTORY 1.2

PROJECT NEED 1.3

PROJECT OBJECTIVES 1.4

PROJECT PARTICIPATION 1.4

PREVIOUS STUDIES 1.4

EXISTING FACILITIES 1.5

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GOALS 2.2
OPPORTUNITIES 2.2
CONSTRAINTS 2.2
SEED IDEAS 2.2
SCREENING ALTERNATIVE CONCEPTS 2.4
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LOOP 101 PIMA FREEWAY

SALT RIVER PIMA – MARICOPA INDIAN COMMUNITY

PIMA ROAD

CITY OF SCOTTSDALE

Proposed 160' Channel

Proposed 4– 7'x10' RBC

86th ST.

87th ST.

Proposed Wet Crossing

HUBBELL ST.

GRANITE REEF ROAD

REACH 1

REACH 2

Proposed 160' Channel

82nd ST.

THOMAS ROAD

OAK STREET

HAYDEN ROAD

Mc-DOWELL ROAD

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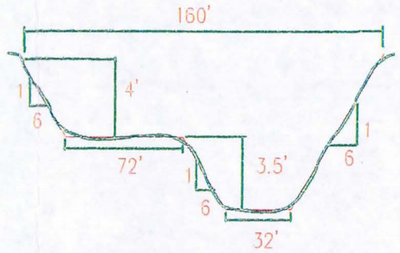
LEGEND

- Roadway Center Line
- Community Boundary
- Watershed Boundary
- Existing Storm Sewer
- Existing Open Channel
- Anticipated 100 Year Floodplain
- Proposed Limits of Residences Affected
- Proposed Channel Bank
- Proposed Channel Centerline
- Irrigation Retention Area
- Detention Basin
- Approximated Inundation Area



TYPICAL SECTION 1

350 0 350 700

Entelus

GRANITE REEF
DRAINAGE MASTER PLAN
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

Alternative 1

WATER COURSE RESTORATION

PLATE 2.1A

LOOP 101

PIMA FREEWAY

PIMA ROAD

85th ST.

CITY OF SCOTTSDALE

SALT RIVER PIMA – MARICOPA INDIAN COMMUNITY

Mc KELLIPS ROAD

GRANITE REEF ROAD

REACH 2

REACH 3

ROOSEVELT STREET

HAYDEN ROAD

CITY OF SCOTTSDALE

CITY OF TEMPE

Proposed 4– 7'x10' RBC

Proposed Wet Crossing

Proposed 160' Channel

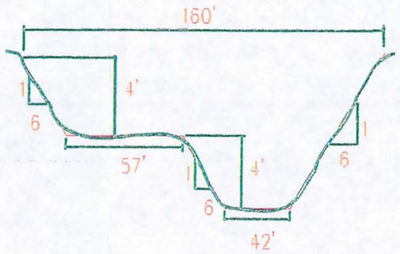
Proposed Outlet Structure

Study Limits of

SALT RIVER

LEGEND

- Roadway Center Line
- Community Boundary
- Watershed Boundary
- Existing Storm Sewer
- Existing Open Channel
- Anticipated 100 Year Floodplain
- Proposed Limits of Residences Affected
- Proposed Channel Bank
- Proposed Channel Centerline
- Irrigation Retention Area
- Detention Basin
- Approximated Inundation Area



TYPICAL SECTION 2

350 0 350 700

Entelus

GRANITE REEF
DRAINAGE MASTER PLAN
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

Alternative 1

WATER COURSE RESTORATION

PLATE 2.1B

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3. Pima Road Conduit (PRC)

Job No. 06077-01 Sheet 1 of 3 Prepared by RAK Date 7/26/07

Project Name Granite Reef Wash Reviewed by JAK Date 8/15/07

Title Alt. 3 - Pima Road SD FWA No.

This alternative assumes a large storm drain conduit will be constructed along Pima Road between Earll Drive and the Salt River. Five interception lines along the Pima Frontage Road, Osborn Rd., Earll Dr., Thomas Rd. and McDowell Rd. will be included to remove flow from the project corridor. The following was added to the base HEC-1 (BASE6.dat) to represent this alternative:

— 13 flow diversions were added to the model for the interception locations.

HEC-1 I.D.	Location (concentration point I.D.)
INT 1	Fairmont Ave. + Pima Frontage Road (DE03)
INT 2	Olive Ave. + Pima Frontage Road (RE03SA)
INT 3	Osborn Rd. + 86th St. (CD06)
INT 4	Osborn Rd. + 87th St. (CD07)
INT 5	Osborn Rd. + Pima Frontage Road (CD08)
INT 6	Earll Dr. + 86th St. (CD10)
INT 7	Earll Dr. + 87th St. (CD11)
INT 8	Earll Dr. + Pima Frontage Road (CD12)
INT 9	Thomas Rd. + 87th St. (CD03)
INT 10	Thomas Rd. + Pima Rd. (CD09)
INT 11	Coronado Rd. + 87th St. (CC06)
INT 12	McDowell Rd. + Pima Rd. (CC13)
INT 13	McKellips Rd. + Pima Rd. (CB14)

Job No. 06077-01 Sheet 2 of 3 Prepared by RAK Date 7/26/07

Project Name Granite Reef Wash Reviewed by JKK Date 8/15/07

Title Alt. 3 - Pima Road SD FWA No.

- 8 concentration points were added to account for peak flow in the storm drain junctions (CE3BSD, CD07SD, CD08SD, CD11SD, CD12SD, CD09SD, CC13SD and CB14SD). The HEC-1 ID's correspond to the existing ID's but include the letters "SD" to represent flow within the storm drain system.
- 13 routes were added to represent the storm drain lines and main conduit. The designation "SD" was included to show the routes are apart of the storm drain system.

Due to proposed benefits for the SRPMIC, no retention was assumed for the indian community lands adjacent to the conduit along Pima Road. The conduit is designed to capture and convey all flow from these lands. All related retention was removed from the HEC-1 model based on this assumption (LD09, LC13 and LB14).

All 13 interception locations were analyzed for intercepted and bypass flows. Bypass flow was determined based on street flow capacity adjacent to the inlet structure. Three of the proposed locations (INT3, INT4 and INT6) were shown to convey flow. The other locations either intercepted all flow or incrementally over several structures. Street capacities were obtained using Flow master and cross-sections taken from the DTM with the maximum elevation at the lowest ROW elevation. INT9 was able to convey flow but was assumed to intercept everything since flows were small.

Job No. 06077-01 Sheet 3 of 3 Prepared by RAK Date 7/26/07

Project Name Granite Reef Wash Reviewed by JAK Date 8/15/07

Title Alt. 3 - Pima Road SD FWA No.

In addition to the street capacity analysis, each of the 13 interception locations were evaluated for possible utility conflicts. Utilities considered were: water, sewer, storm drain and irrigation.

PIMA506.

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*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
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*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
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XXXXXXX  XXXX     X        XXXXX   X
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X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

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

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1                                    HEC-1 INPUT                                    PAGE  1

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  3           ID   **                                                                        **
  4           ID   **                     Updated Granite Reef ADMP                          **
  5           ID   **                                                                        **
  6           ID   ****************************************************************************
  7           ID   ****************************************************************************
  8           ID   PROJECT:                Granite Reef Wash DMP Update
  9           ID   CLIENT:                 City of Scottsdale
 10           ID   PREPARED BY:            Psomas
 11           ID   PROJECT No:             COS                Psomas 06077-01
 12           ID   FILE NAME: PIMASD6.DAT                    CREATED DATE: Feb 26, 2007
 13           ID   MODIFIED: Jan 15, 2008 (RAK/JKK PSOMAS)
 14           ID        * ELEMENTS ADDED TO REPRESENT PIMA ROAD CONDUIT
 15           ID        * ORIGINAL CARDS STARRED-OUT
 16           ID        * COMMENT CARDS ADDED
 17           ID   STORM:                  100-year 6-hour Storm
 18           ID   DEVELOPMENT CONDITIONS: Future Conditions
 19           ID
 20           ID
 21           ID
 22           ID
 23           ID   DDM MCUHP1
              *
              *  ADDITIONAL 6FT STORM DRAIN IN INDIAN SCHOOL ROAD WAS ASSUMED
              *  TO BE CONSTRUCTED.
              *
              * ******************************************************************************
              *  ELEMENT LETTER DESIGNATION LOCATED BETWEEN:
              *     A. MCKELLIPS ROAD AND SALT RIVER
              *     B. MCDOWELL ROAD AND MCKELLIPS ROAD
              *     C. THOMAS ROAD AND MCDOWELL ROAD
              *     D. INDIAN SCHOOL ROAD AND THOMAS ROAD
              *     E. CHAPARRAL ROAD AND INDIAN SCHOOL ROAD
              *     F. MCDONALD DRIVE AND CHAPARRAL ROAD
              *     G. AZ CANAL AND MCDONALD DRIVE
              * ******************************************************************************
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 24           ID
 25           IT       5                    1000
 26           IO       5
              *
              *DIAGRAM
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 *              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *           VERSION 4.1                *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   22JAN08  TIME  18:01:18  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************

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

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
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DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

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   4          ID   **                    Updated Granite Reef ADMP                           **
   5          ID   **                                                                        **
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   8          ID   PROJECT:                Granite Reef Wash DMP Update
   9          ID   CLIENT:                 City of Scottsdale
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  20          ID
  21          ID
  22          ID
  23          ID   DDM MCUHP1
              *
              *  ADDITIONAL 6FT STORM DRAIN IN INDIAN SCHOOL ROAD WAS ASSUMED
              *  TO BE CONSTRUCTED.
              *
              * ****************************************************************************
              *  ELEMENT LETTER DESIGNATION LOCATED BETWEEN:
              *     A. MCKELLIPS ROAD AND SALT RIVER
              *     B. MCDOWELL ROAD AND MCKELLIPS ROAD
              *     C. THOMAS ROAD AND MCDOWELL ROAD
              *     D. INDIAN SCHOOL ROAD AND THOMAS ROAD
              *     E. CHAPARRAL ROAD AND INDIAN SCHOOL ROAD
              *     F. MCDONALD DRIVE AND CHAPARRAL ROAD
              *     G. AZ CANAL AND MCDONALD DRIVE
              * ****************************************************************************
              *
  24          ID
  25          IT       5                   1000
  26          IO       5
              *
              *DIAGRAM
```

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                *
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 28             JD    3.20    0.01
 29             PC   0.000   0.008   0.016   0.025   0.033   0.041   0.050   0.058   0.066   0.074
 30             PC   0.087   0.099   0.118   0.138   0.216   0.377   0.834   0.911   0.931   0.950
 31             PC   0.962   0.972   0.983   0.991   1.000
 32             JD   3.179    0.50
 33             JD   3.120    2.80
 34             PC   0.000   0.009   0.016   0.025   0.034   0.042   0.051   0.059   0.067   0.076
 35             PC   0.087   0.100   0.120   0.163   0.252   0.451   0.694   0.837   0.900   0.938
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 37             JD   2.950    16.0
1                                    HEC-1 INPUT                                                    PAGE  2

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

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 42             PC   0.000   0.021   0.035   0.051   0.071   0.087   0.105   0.125   0.143   0.160
 43             PC   0.179   0.201   0.232   0.281   0.364   0.500   0.658   0.773   0.841   0.888
 44             PC   0.927   0.945   0.964   0.982   1.000
 45             JD   1.824   500.0
 46             PC   0.000   0.024   0.043   0.059   0.078   0.098   0.119   0.141   0.162   0.186
 47             PC   0.212   0.239   0.271   0.321   0.408   0.515   0.627   0.735   0.814   0.864
 48             PC   0.907   0.930   0.954   0.977   1.000
                *
                *

 49             KK     G03   BASIN
 50             BA   0.093
 51             LG    0.23    0.25    5.60    0.26      55
 52             UC   0.367   0.275
 53             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 54             UA     100
                *
                *
                * *** DIVERSION DG03 ***********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

 55             KK    DG03
 56             DT   DG03I
 57             DI       0       7      22      43      70     101     124     180     217     264
 58             DQ       0     3.5      11      22      35      51      63      92     112     137
                *
                *
                * Route is a Minor Arterial Road with a median.
                *

 59             KK   RG03S
 60             RS       1    FLOW       0
 61             RC    .035   0.015    .035    1322  0.0024
 62             RX       0       1      40      41     105     106     146     147
 63             RY       8       2       1      .5      .5       1       2       8
                *

 64             KK     G01   BASIN
 65             BA   0.049
 66             LG    0.21    0.25    4.80    0.38      57
 67             UC   0.588   0.598
 68             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 69             UA     100
                *
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG03.
                * THE HARD-CODE VALUE IS 50% OF CG03'S CONTRIBUTING AREA.
                * SEE DIVERSION DG03.
                *
                * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                                    PAGE  3

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

 70             KK    CG01
```

```
 71          KM        MCDONALD DRIVE AND GRANITE REEF ROAD
 72          HC       2   0.096
             *
             *
             * *** DIVERSION DG01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

 73          KK    DG01
 74          DT   DG01I
 75          DI       0      10      29      57      92     134     144     194     233     278
 76          DQ       0       7      21      41      66      96     103     139     166     198
             *
             *
             * Route is a Minor Arterial Road.
             *

 77          KK   RG01S
 78          RS      16    FLOW       0
 79          RC   0.035   0.015   0.035    2625  0.0014
 80          RX       0       1      40      41     105     106     146     147
 81          RY       8       2       1      .5      .5       1       2       8
             *

 82          KK     F04   BASIN
 83          KM
 84          KM    This basin's original area was 0.073 sq mi.  The infield area is bermed
 85          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
 86          KM    from the subbasin calculations to account for the storage.
 87          KM
 88          BA   0.060
 89          LG    0.15    0.25    4.80    0.42      68
 90          UC   0.567   0.659
 91          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 92          UA     100
             *
             *

 93          KK     G04   BASIN
 94          KO       3
 95          BA   0.045
 96          LG    0.25    0.25    4.80    0.35      51
 97          UC   0.296   0.261
 98          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 99          UA     100
             *
             *
             * Route is a Subdivision Road.
             *
```



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

100          KK    RG04
101          RS       4    FLOW       0
102          RC    .035   0.015   0.035    1336  0.0033
103          RX       0       1      28      29      57      58      86      87
104          RY       8       2       1     0.5     0.5       1       2       8
             *

105          KK     G05   BASIN
106          BA   0.045
107          LG    0.24    0.15    7.00    0.14      53
108          UC   0.317   0.283
109          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
110          UA     100
             *
             *
             * Route is a Subdivision Road.
             *

111          KK    RG05
112          RS       7    FLOW       0
113          RC   0.035   0.015   0.035    1994  0.0026
114          RX       0       1      28      29      57      58      86      87
115          RY       8       2       1     0.5     0.5       1       2       8
             *
```

```
116          KK     G06   BASIN
117          KM         SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
118          BA   0.127
119          LG    0.10    0.35    2.65    1.70      80
120          UC   0.254   0.140
121          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
122          UA     100
             *
             *
             *
             * *** STORAGE ROUTING LG06 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****

123          KK    LG06
124          DT   LG06D     8.0
125          DI       0     100    1000   10000
126          DQ       0     100    1000   10000
             *
             * *** CG06 LOCATED AT MCDONALD DRIVE AND PIMA ROAD ****************************
             *
             * *** DIVERSION DG06 *****************************************************
             *
             * THIS DIVESION IS DUE TO THE DETENTION BASIN.
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                          PAGE  5

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


127          KK    DG06
128          DT   DG06I
129          DI       0      50     100     200     300     500     700     900    1000
130          DQ       0      25      49      75     132     195     230     259     287
             *
             *
             * *** STORAGE ROUTING LG06A ***********************************************
             * See the storage calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

131          KK   LG06A
132          DT  LG06AD    4.25
133          DI       0     100    1000   10000
134          DQ       0     100    1000   10000
             *
             *

135          KK     G02   BASIN
136          BA   0.075
137          LG    0.21    0.25    4.80    0.38      52
138          UC   0.592   0.517
139          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
140          UA     100
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DG06.
             * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
             * SEE DIVERSION DG06.
             *
             * DDM   ***** Preserved *****

141          KK    CG02
142          KM         MCDONALD DRIVE AND 86TH STREET
143          HC       4   0.229
             *
             *
             * Route is a Minor Arterial Road.
             *

144          KK    RG02
145          RS       4    FLOW       0
146          RC   0.035   0.015   0.035    1358  0.0018
147          RX       0       1      26      27      62      63      88      89
148          RY       8       2       1     0.5     0.5       1       2       8
             *
```

```
 149          KK     F06   BASIN
 150          BA   0.103
 151          LG    0.23    0.25    4.80    0.36      49
 152          UC   0.604   0.427
 153          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 154          UA     100
              *
              *
              * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE  6

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

 155          KK    CF06
 156          KM        MONTEBELLO AVENUE AND 86TH STREET
 157          HC       2
              *
              *
              * Route is a Minor Arterial Road.
              *

 158          KK    RF06
 159          RS       3    FLOW       0
 160          RC   0.035   0.015   0.035    1299   0.002
 161          RX       0       1      26      27      62      63      88      89
 162          RY       8       2       1     0.5     0.5       1       2       8
              *

 163          KK     F05   BASIN
 164          BA   0.088
 165          LG    0.24    0.25    4.80    0.36      52
 166          UC   0.554   0.401
 167          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 168          UA     100
              *
              * DDM   ***** Preserved *****

 169          KK    CF05
 170          KM        JACKRABBIT ROAD AND 86TH STREET
 171          HC       2
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
              * ALL EXCESS OVERLAND AMOUNT FLOWS SOUTH.
              *
              *
              * STORM DRAIN ANALYSIS SHOWS A CAPACITY OF 185 CFS, 1/3 IS INTERCEPTED AT
              * THIS LOCATION.(61 cfs) 20% Clogging Factor means 49 cfs here.
              * (61 x .8 = 49cfs)
              *
              * *** DIVERSION DF05 ***********************************************************
              *
              * See the diversion calculations in Appendix D of the Data Collection Notebook
              * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
              *
              * DDM   ***** Preserved *****

 172          KK    DF05
 173          DT   DF05I
 174          DI       0       1      50     100     200     300     400     500    1000    2000
 175          DQ       0      .9      10      51     151     251     351     451     951    1951
              *
              *
              * THE INFORMATION FOR THE STORM DRAIN WAS MEASURED IN THE FIELD.
              * THE PIPE IS A 66" RCP, SLOPE WAS ESTIMATED TO BE 0.004 FT/FT.
              *
1                                          HEC-1 INPUT                                          PAGE  7

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

 176          KK   RF05W
 177          RK    1302   0.004   0.013            CIRC     5.5
              *
              *
              * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05 & DG01.
              * THE HARD-CODE VALUE IS 80% OF CG01 AND 10% OF CF05'S CONTRIBUTING AREA.
              * SEE DIVERSION DG01 AND DF05.
              *
              * DDM   ***** Preserved *****
```

```
178          KK    CF04
179          KM        JACKRABBIT ROAD AND GRANITE REEF ROAD
180          HC       3    0.17
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT COLLECT.
             *
             *
             * *** DIVERSION DF04 ********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

181          KK    DF04
182          DT   DF04I
183          DI       0       9      30      57      93     136     150     198     336     400
184          DQ       0       5      16      30      50      73      82     105     170     200
             *
             *
             * DIVERSION RECOVER D05
             *

185          KK    F05R
186          DR   DF05I
             *
             * Route is a Minor Arterial Road.
             *

187          KK   RF05S
188          RS       4    FLOW       0
189          RC   0.035   0.015   0.035    2167  0.0032
190          RX       0       1      26      27      62      63      88      89
191          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             *

192          KK     F03   BASIN
193          BA   0.170
194          LG    0.21    0.25    4.80    0.37      58
195          UC   0.683   0.445
196          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
197          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF05.
             * THE HARD-CODE VALUE IS 90% OF CF05'S CONTRIBUTING AREA.
             * SEE DIVERSION DF05.
             *
             * DDM   ***** Preserved *****
```



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

198          KK    CF03
199          KM        ORANGE BLOSSOM LANE AND 86TH STREET
200          HC       2   0.556
             *
             *
             * Route is a Minor Arterial Road.
             * Normal Depth Routing did not work for this Route.
             *

201          KK    RF03
202          RD
203          RC   0.035   0.015   0.035     482  0.0035
204          RX       0       1      26      27      62      63      88      89
205          RY       8       3       2       0       0       2       3       8
             *
             *
             *
             * DIVERSION RECOVER G06
             *

206          KK    G06R
207          DR   DG06I
             *
             *
```

```
            * Route is a Minor Arterial Road along Pima Road.
            *
            *

 208        KK   RG06S
 209        RS      18    FLOW       0
 210        RC   0.035   0.015   0.035    5286  0.0028
 211        RX       0       1      26      27      62      63      88      89
 212        RY       8       3       2       0       0       2       3       8
            *

 213        KK     F07   BASIN
 214        KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
 215        BA   0.250
 216        LG    0.10    0.29    2.65    1.70      80
 217        UC   0.538   0.415
 218        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 219        UA     100
            *
            *
            * *** STORAGE ROUTING LF07 ***********************************************
            *
            * See the detention calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                    PAGE  9

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

 220        KK    LF07
 221        DT   LF07D    15.2
 222        DI       0     100    1000   10000
 223        DQ       0     100    1000   10000
            *
            *
            *
            * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DG06.
            * THE HARD-CODE VALUE IS 50% OF CG06'S CONTRIBUTING AREA.
            * SEE DIVERSION DG06.
            *
            * DDM   ***** Preserved *****

 224        KK    CF07
 225        KM        CHAPARRAL ROAD AND PIMA ROAD
 226        HC       2   0.314
            *
            * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
            * THE STORM DRAIN ANAYLSIS SHOWS THE MAXIMUM FLOW IN THE STORM DRAIN AT THIS
            * LOCATION IS 16 CFS.  20% clogging factor = 13 cfs (16cfs * .8 = 13 cfs).
            * ALL OVERLAND FLOW CONTINUES SOUTH.
            *
            *
            * *** DIVERSION DF07 *****************************************************
            *
            * See the diversion calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            *
            * DDM   ***** Preserved *****

 227        KK    DF07
 228        DT   DF07I
 229        DI       0       1      16     100     200     400     600     800    1000    2000
 230        DQ       0       0       0      87     187     387     587     787     987    1987
            *
            *
            * Route is a Storm Drain 36" RCP with a Slope of 0.001 ft/ft
            *
            *

 231        KK   RF07W
 232        RD    1315   0.001   0.013            CIRC       3
            *
            *

 233        KK     F02   BASIN
 234        BA   0.046
 235        LG    0.23    0.25    4.80    0.36      55
 236        UC   0.521   0.538
 237        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 238        UA     100
```

```
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF07.
                * THE HARD-CODE VALUE IS 10% OF CF07'S CONTRIBUTING AREA.
                * SEE DIVERSION DF07.
                *
                * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                    PAGE 10

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

 239            KK    CF02
 240            KM        CHAPARRAL ROAD AND 86TH STREET
 241            HC       3    .627
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THIS STORM DRAIN
                * AT THIS LOCATION IS 63 CFS AND 16 CFS IS IN THE STORMDRAIN FROM THE EAST.
                * 20% clogging factor means 50 cfs (63cfs * 0.8 = 50cfs).
                *
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DF02 ********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****

 242            KK    DF02
 243            DT   DF02I
 244            DI       0       1      50     100     200     300     400     500    1000    2000
 245            DQ       0       1      10      50     150     250     350     450     950    1950
                *
                *
                *
                * ROUTE IS A 5FT RCP STORM DRAIN WITH A SLOPE OF 0.001 FT/FT
                *

 246            KK   RF02W
 247            RK    1310   0.001    0.02            CIRC       5
                *
                *
                * DIVERSION RECOVER F04
                *

 248            KK    F04R
 249            DR   DF04I
                *
                *
                * Route is a Minor Arterial Road.
                *
                *

 250            KK   RF04S
 251            RS      11    FLOW       0
 252            RC   0.035   0.013   0.035    2652  0.0023
 253            RX       0       1      26      27      62      63      88      89
 254            RY       8       3       2       0       0       2       3       8
                *
                *
                * THE WEST SIDE OF THE ROAD IS DIVERTED WEST AND THE EAST SIDE OF THE ROAD
                * FLOWS SOUTH INTO CF01.  THE TOTAL FLOW DOES NOT EXCEED THE CROWN OF THE ROAD
                * SO THE SPLIT IS 50-50.
                *
                * *** DIVERSION DRF04 *******************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****
1                                   HEC-1 INPUT                                                    PAGE 11

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

 255            KK   DRF04
 256            DT  DRF04I
 257            DI       0       1      20      50     100     200     300
 258            DQ       0      .5      10      25      50     100     150
                *
```

```
259          KK     F01   BASIN
260          BA   0.030
261          LG    0.22    0.25    4.80    0.39      53
262          UC   0.467   0.490
263          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
264          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF04 & DF02.
             * THE HARD-CODE VALUE IS 25% OF CF04 AND 10% OF CF02'S CONTRIBUTING AREA.
             * SEE DIVERSION DF04 AND DF02.
             *
             * DDM   ***** Preserved *****

265          KK    CF01
266          KM        CHAPARRAL ROAD AND GRANITE REEF ROAD
267          HC       3    .101
             *
             *
             * THE DIVERSION AT THIS LOCATION IS SOUTH (SEE SPLITFLOW ANALYSIS)
             *
             *
             * *** DIVERSION DF01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

268          KK    DF01
269          DT   DF01I
270          DI       0       7      21      42      75     111     139     188     254     335
271          DQ       0       0       0       0       0       0       6      18      35      57
             *
             *
             * DIVERSION RECOVER DF02
             *

272          KK   DRF02
273          DR   DF02I
             *
             *
             * Route is a Minor Arterial Road.
             *
```



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

274          KK   RF02S
275          RS       3    FLOW       0
276          RC   0.035   0.015   0.035    1338  0.0022
277          RX       0       1      26      27      62      63      88      89
278          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

279          KK     E07   BASIN
280          BA   0.084
281          LG    0.25    0.25    4.80    0.36      49
282          UC   0.442   0.305
283          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
284          UA     100
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DF02.
             * THE HARD-CODE VALUE IS 90% OF CF02'S CONTRIBUTING AREA.
             * SEE DIVERSION DF02.
             *
             * DDM   ***** Preserved *****

285          KK    CE07
286          KM        HIGHLAND AVENUE AND 86TH STREET
287          HC       2    .661
             *
             *
             * Route is a Minor Arterial Road.
             *

288          KK    RE07
```

```
289          RS        1    FLOW        0
290          RC    0.035   0.015    0.035    1335  0.0025
291          RX        0       1       26      27      62      63      88      89
292          RY        8       2        1     0.5     0.5       1       2       8
             *

293          KK      E05   BASIN
294          KM
295          KM    This basin's original area was 0.060 sq mi.  The infield area is bermed
296          KM    so it is self-detained.  The infield area (0.013 sq mi) was subtracted
297          KM    from the subbasin calculations to account for the storage.
298          KM
299          BA    0.047
300          LG     0.21    0.25    4.80    0.37      57
301          UC    0.375   0.292
302          UA        0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
303          UA      100
             *
             * DDM   ***** Preserved *****
```



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

304          KK    CE05
305          KM        CAMELBACK ROAD AND 86TH STREET
306          HC        2
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 92 CFS.
             * THE TOTAL FLOW WAS DIVIDED BY E05, E04, AND THE BASIN WEST OF THE PROJECT
             * AREA, SO 31 CFS AT THIS LOCATION.
             * 20% clogging factor means 25cfs at this location (31cfs * 0.8 = 25cfs).
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             *
             * *** DIVERSION DE05 ********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

307          KK    DE05
308          DT   DE05I
309          DI        0       1      50     100     200     300     400     500    1000    2000
310          DQ        0       1      25      75     175     275     375     475     975    1975
             *
             *
             *
             * ROUTE IS A 5FT RCP WITH A SLOPE OF 0.0021 FT/FT.
             *

311          KK   RE05W
312          RK    1490  0.0021    0.02            CIRC       5
             *

313          KK      E04   BASIN
314          BA    0.038
315          LG     0.22    0.25    4.80    0.39      47
316          UC    0.621   0.655
317          UA        0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
318          UA      100
             *
             *
             *
             * *** STORAGE ROUTING LE04 ***********************************************
             *
             * DDM   ***** Preserved *****

319          KK    LE04
320          DT   LE04D     1.5
321          DI        0     100    1000   10000
322          DQ        0     100    1000   10000
             *
             * DIVERSION RECOVER DF01
             *
```



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

```
323          KK  DRF01I
324          DR   DF01I
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

325          KK   RF01S
326          RS      24    FLOW       0
327          RC   0.035   0.015   0.035    2619  0.0031
328          RX       0       1      26      27      62      63      88      89
329          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF01 & DE05.
             * THE HARD-CODE VALUE IS 5% OF CF01 AND 5% OF CE05'S CONTRIBUTING AREA.
             * SEE DIVERSION DF01 AND DE05.
             *
             * DDM   ***** Preserved *****

330          KK    CE04
331          KM        CAMELBACK ROAD AND GRANITE REEF ROAD
332          HC       3   0.071
             *
             *
             * THERE IS A DIVERSION SOUTH (SEE SPLITFLOW CALCULATIONS)
             *
             * *** DIVERSION DE04 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

333          KK    DE04
334          DT   DE04I
335          DI       0       3      31      59      91     126     151     184     222     267
336          DQ       0       0       0       0       0       0       3       9      18      30
             *
             *
             * DDM   ***** Preserved *****

337          KK   DUMMY
338          HC       3
             *

339          KK     E08   BASIN
340          BA   0.031
341          LG    0.24    0.25    4.80    0.35      51
342          UC   0.488   0.531
343          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
344          UA     100
             *
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *
```



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

345          KK    RE08
346          RS       5    FLOW       0
347          RC   0.035   0.015   0.035    1326  0.0029
348          RX       0       1      19      25      30      49      79      80
349          RY      10     1.5       0       0       0       0     1.5       8
             *

350          KK     E06   BASIN
351          BA   0.036
352          LG    0.24    0.25    4.80    0.36      53
353          UC   0.500   0.548
354          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
355          UA     100
             *
             * DDM   ***** Preserved *****

356          KK    CE06
```

```
357          KM        CAMELBACK ROAD AND PIMA FRONTAGE ROAD
358          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *

359          KK    RE06
360          RS      13    FLOW       0
361          RC   0.035   0.015   0.035    3333  0.0014
362          RX       0       1      19      25      30      49      79      80
363          RY      10     1.5       0       0       0       0     1.5       8
             *

364          KK     E03   BASIN
365          BA   0.070
366          LG    0.23    0.25    4.80    0.36      53
367          UC   0.917   1.373
368          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
369          UA     100
             *
             *
             * DIVERSION RECALL DF07
             *

370          KK   DRF07
371          DR   DF07I
             *
             * Route is a minor arterial along Pima Rd.
             *
```



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

372          KK   RF07S
373          RS       7    FLOW       0
374          RC   0.035   0.015   0.035    5280  0.0023
375          RX       0       1      40      41     104     105     145     146
376          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
             *
             *

377          KK     E09   BASIN
378          KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
379          BA   0.223
380          LG    0.10    0.29    2.65    1.70      80
381          UC   0.546   0.446
382          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
383          UA     100
             *
             *
             * *** STORAGE ROUTING LE09 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****

384          KK    LE09
385          DT   LE09D    13.6
386          DI       0     100    1000   10000
387          DQ       0     100    1000   10000
             *
             *
             * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSIONS DF07.
             * THE HARD-CODE VALUE IS 90% OF CF07'S CONTRIBUTING AREA.
             * SEE DIVERSION DF07.
             *
             * DDM   ***** Preserved *****

388          KK    CE09
389          KM        INDIAN SCHOOL ROAD AND PIMA ROAD
390          HC       2    .511
             *
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
```

```
* PROJECT AREA, WHICH IS 19 CFS AT THIS LOCATION.(MODIFIED TO 28 CFS BY PSOMAS)
*
* 20% clogging factor means 15cfs, (19cfs * 0.8 = 15cfs).(MODIFIED TO 22 CFS
* BY PSOMAS)
* THE PROPOSED ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
* THE FLOW WILL THEN BE DOUBLED TO 30cfs.(MODIFIED TO 45 CFS BY PSOMAS)
*
* ALL OVERLAND FLOW CONTINUES SOUTH AT THIS DIVERSION LOCATION.
*
* *** DIVERSION DE09 ********************************************************
*
* See the diversion calculations in Appendix D of the Data Collection Notebook
* Granite Reef Wash Drainage Master Plan (Entellus April 2002).
*
* DDM   ***** Preserved *****
```



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

 391          KK    DE09
 392          KM        MODIFIED (2/14/07 RAK)
 393          DT   DE09I
 394          DI       0       1      50     100     200     300     400     500    1000    2000
              * ***DQ     0       1      20      70     170     270     370     470     970
 395          DQ       0       1       5      55     155     255     355     455     955    1955
              *
              *
              *
              * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
              * PSOMAS BASED ON DIBBLE PLANS)
              * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
              *

 396          KK   RE09W
 397          KM        MODIFIED (2/14/07 RAK)
              * ***RK   779  0.0009   0.013            CIRC     8.5
 398          RK     779  0.0011   0.013            CIRC     8.5
              *
              *
              *
              * DIVERSION RECOVER DE05
              *

 399          KK  DRE05I
 400          DR   DE05I
              *
              *
              * Route is a Minor Arterial Road.
              *

 401          KK   RE05S
 402          RS       6    FLOW       0
 403          RC   0.035   0.015   0.035    3053  0.0021
 404          RX       0       1      26      27      62      63      88      89
 405          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE05 & DE09.
              * THE HARD-CODE VALUE IS 95% OF CE05 AND 10% OF CE09'S CONTRIBUTING AREA.
              * SEE DIVERSION DE05 AND DE09.
              *
              * DDM   ***** Preserved *****

 406          KK    CE03
 407          KM        INDIAN SCHOOL ROAD AND PIMA FRONTAGE ROAD
 408          HC       4    .858
              *
              *
              * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
              *
              * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
              * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
              * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
              * PROJECT AREA, WHICH IS 38cfs AT THIS LOCATION.(MODIFIED TO 56 CFS BY PSOMAS)
              *
              * 20% clogging factor means that 31cfs (38.4 cfs * 0.8 = 31cfs) (MODIFIED TO
              * 45 CFS BY PSOMAS)
              * THE ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
              * THE FLOW WILL THEN BE DOUBLED TO 62cfs.(MODIFIED TO 90 CFS BY PSOMAS)
              *
```

```
                * ALL OVERLAND FLOWS CONTINUE SOUTH.
                *
                * *** DIVERSION DE03 ***********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 18

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


 409            KK    DE03
 410            KM        MODIFIED (2/14/07 RAK)
 411            DT   DE03I
 412            DI       0       1      50     100     200     300     400     500    1000    2000
                * ***DQ     0       1       5      38     138     238     338     438     938
 413            DQ       0      .1       2      10     110     210     310     410     910    1910
                *
                *
                * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
                * PSOMAS BASED ON DIBBLE PLANS)
                * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
                *
                *

 414            KK   RE03W
 415            KM        MODIFIED (2/14/07 RAK)
                * ***RK  1504  0.0009    0.02            CIRC     8.5
 416            RK    1504  0.0011    0.02            CIRC     8.5                        5
                *

 417            KK     E02   BASIN
 418            BA   0.149
 419            LG    0.24    0.25    4.80    0.37      50
 420            UC   0.683   0.539
 421            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 422            UA     100
                *
                * THE CONTRIBUTING AREA IS HARD-CODED DUE TO DIVERSION DE03.
                * THE HARD-CODE VALUE IS 5% OF CE03'S CONTRIBUTING AREA.
                * SEE DIVERSION DE03.
                *
                * DDM   ***** Preserved *****

 423            KK    CE02
 424            KM        INDIAN SCHOOL ROAD AND 86TH STREET
 425            HC       2    .183
                *
                *
                * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
                *
                * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
                * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
                * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
                * PROJECT AREA, 58cfs AT THIS LOCATION.(MODIFIED TO 84 CFS BY PSOMAS)
                *
                * 20% clogging factor means 46cfs (58cfs * 0.8 = 46cfs).(MODIFIED TO 67 CFS
                * BY PSOMAS)
                * THE 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE
                * THIS DOUBLES THE FLOW TO 92cfs.(MODIFIED TO 134 CFS BY PSOMAS)
                *
                * ALL OVERLAND FLOW CONTINUES SOUTH.
                *
                * *** DIVERSION DE02 ***********************************************************
                *
                * See the diversion calculations in Appendix D of the Data Collection Notebook
                * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                *
                * DDM   ***** Preserved *****
1                                          HEC-1 INPUT                                          PAGE 19

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


 426            KK    DE02
 427            KM        MODIFIED (2/14/07 RAK)
 428            DT   DE02I
 429            DI       0       1      50     100     200     300     400     500    1000    2000
                * ***DQ     0      .1       2       8     108     208     308     408     908
```

```
430          DQ       0      .1       2       4      66     166     266     366     866    1866
             *
             *
             * ROUTE IS 2-6FT RCP WITH A SLOPE OF 0.0009 FT/FT.(MODIFIED TO 0.0011 FT/FT BY
             * PSOMAS BASED ON DIBBLE PLANS)
             * THIS ROUTE IS 2-72" STORM DRAINS, WHICH HAVE AN EQUIVALENT AREA OF 8.5 FT.
             *

431          KK   RE02W
432          KM        MODIFIED (2/14/07 RAK)
             * ***RD   355  0.0009    0.02            CIRC     8.5
433          RD     355  0.0011    0.02            CIRC     8.5
             *

434          KK     E01   BASIN
435          BA   0.058
436          LG    0.20    0.25    4.80    0.38      60
437          UC   0.492   0.494
438          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
439          UA     100
             *
             *
             * DIVERSION RECOVER DE04
             *

440          KK  DRE04I
441          DR   DE04I
             *
             *
             * Route is a Minor Arterial Road.
             *

442          KK   RE04S
443          RS       1    FLOW       0
444          RC   0.035   0.015   0.035    2636  0.0026
445          RX       0       1      26      27      62      63      88      89
446          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSIONS DE04 & DE02.
             * THE HARD-CODE VALUE IS 100% OF CE04 AND 25% OF CE02'S CONTRIBUTING AREA.
             * SEE DIVERSION DE04 AND DE02.
             *
             * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                          PAGE 20

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

447          KK    CE01
448          KM        INDIAN SCHOOL ROAD AND GRANITE REEF ROAD
449          HC       3   .1656
             *
             * THERE IS A DIVERSION SOUTH FOR WHATEVER THE STORM DRAIN DOES NOT INTERCEPT.
             *
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 96 CFS.
             * (MODIFIED TO 140 CFS BY PSOMAS ON 2/07 BASED ON DIBBLE PLANS) THIS AMOUNT IS
             * DIVIDED BETWEEN DIVERSIONS DE01, DE02, DE03, DE09, AND THE BASIN EAST OF THE
             * PROJECT AREA, 76.8 cfs AT THIS LOCATION.(MODIFIED TO 112 CFS BY PSOMAS)
             *
             * 20% clogging factor means 61cfs (76.8cfs * 0.8 = 61.4 cfs) (MODIFIED TO
             * 90 CFS BY PSOMAS)
             * THE ADDITIONAL 6FT STORM DRAIN WAS ASSUMED TO BE IN PLACE.
             * THE FLOW WILL THEN BE DOUBLED TO 123cfs.(MODIFIED TO 179 CFS BY PSOMAS)
             *
             * THIS DIVERSION IS STORMDRAIN ONLY, ALL OVERLAND FLOW IS SOUTH.
             *
             * *** DIVERSION DE01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****

450          KK    DE01
451          KM        MODIFIED (2/14/07 RAK)
452          DT   DE01I
453          DI       0       1      50     100     200     300     400     500    1000    2000
             * ***DQ     0      .1       2       4      77     177     277     377     877
454          DQ       0      .1       2       4      21     121     221     321     821    1821
             *
```

```
                 * DIVERSION RECALL E01
                 *

 455             KK   DRE01
 456             DR   DE01I
                 *
                 *
                 * Route is a Subdivision Road.
                 *

 457             KK   RE01S
 458             RS       9    FLOW       0
 459             RC   0.035   0.015   0.035    2567  0.0032
 460             RX       0       1      28      29      57      58      86      87
 461             RY       8       2       1     0.5     0.5       1       2       8
                 *
1                                          HEC-1 INPUT                                                    PAGE 21

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


 462             KK     D05   BASIN
 463             KM
 464             KM    This basin's original area was 0.168 sq mi.  The infield area is bermed
 465             KM    so it is self-detained.  The infield area (0.01 sq mi) was subtracted
 466             KM    from the subbasin calculations to account for the storage.
 467             KM
 468             BA   0.158
 469             LG    0.23    0.25    4.80    0.38      51
 470             UC   0.692   0.540
 471             UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 472             UA     100
                 *
                 *
                 * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE01.
                 * THE HARD-CODE VALUE IS 70% OF CE01'S CONTRIBUTING AREA.
                 * SEE DIVERSION DE01.
                 *
                 * DDM   ***** Preserved *****

 473             KK    CD05
 474             KM        OSBORN ROAD AND GRANITE REEF ROAD
 475             HC       2   0.284
                 *
                 * *** DIVERSION DD05 ***********************************************************
                 *
                 *  THIS DIVERSION IS AT GRANITE REEF ROAD AND OSBORN ROAD.
                 *  THE MAIN PATH IS SOUTH ON GRANITE REEF ROAD.
                 * See the diversion calculations in Appendix D of the Data Collection Notebook
                 * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
                 *
                 * DDM   ***** Preserved *****

 476             KK    DD05
 477             KM        MODIFIED (5/1/07 RAK) BASED ON FLOW SPLIT ANALYSIS
 478             DT   DD05I
                 * ***DI     0       5      16      50      93     112     174     217     270
 479             DI       0       6      21      34      52      73      99     130     166     231
                 * ***DQ     0       2       8      25      47      58      95     121     154
 480             DQ       0       0       1       3       7      13      19      28      38      57  osborn
                 *
                 *
                 * Route is a Minor Arterial Road.
                 *

 481             KK   RD05S
 482             KM        MODIFIED (5/7/07 RAK) TO REPRESENT FLOW FROM OSBORN RD TO EARLL DR
 483             KM        ALONG GRANITE REEF RD
                 * ***RS     8    FLOW       0
                 * ***RC 0.035   0.015   0.035    2669  0.0026
 484             RS       4    FLOW       0
 485             RC   0.035   0.015   0.035    1320  0.0026
 486             RX       0       1      26      27      62      63      88      89
 487             RY       8       2       1     0.5     0.5       1       2       8
                 *
1                                          HEC-1 INPUT                                                    PAGE 22

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


 488             KK     D13   BASIN
```

```
489          KM        CREATED (5/7/07 RAK) TO REPRESENT SUBBASIN FLOW TO CD13
490          BA   0.044
491          LG    0.24    0.25    4.80    0.35      46
492          UC   0.557   0.605
493          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
494          UA     100
             *

495          KK    CD13
496          KM        CREATED (5/7/07 RAK) TO REPRESENT THE CONCENTRATION POINT LOCATED AT
497          KM        EARLL DRIVE AND GRANITE REEF ROAD
498          HC       2   0.259
             *

499          KK    DD13
500          KM        CREATED (5/7/07 RAK) BASED ON FLOW SPLIT ANALYSIS
501          DT   DD13I
502          DI       0       2      13      37      83     150     240
503          DQ       0       0       7      23      48      85     134  EARLL
             *              2

504          KK   RD13S
505          KM        CREATED (5/7/07 RAK) TO REPRESENT FLOW FROM EARLL DR TO THOMAS RD
506          KM        ALONG GRANITE REEF RD
507          RS       4    FLOW       0
508          RC   0.035   0.015   0.035    1349  0.0026
509          RX       0       1      26      27      62      63      88      89
510          RY       8       2       1     0.5     0.5       1       2       8
             *

511          KK     D04   BASIN
512          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED 1' CONTOUR MAPPING
             * ***BA 0.060
             * ***LG  0.23    0.25    4.80    0.36      53
             * ***UC 0.638   0.762
513          BA   0.013
514          LG    0.24    0.25    4.80    0.35      46
515          UC   0.443   0.624
516          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
517          UA     100
             *
             * *** CD04 IS LOCATED AT THOMAS ROAD AND 82ND STREET **************************
             *
             * Route is a Major Arterial Road.
             *

518          KK    RD04
519          RS       2   FLOW       0
520          RC   0.035   0.015   0.035    1084  0.0018
521          RX       0       1      40      41     104     105     145     146
522          RY       8       3     1.5     .75    0.75     1.5       3       8
             *
```



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

523          KK     D01   BASIN
524          KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED 1' CONTOUR MAPPING AND ADDITIONAL
525          KM        CONCENTRATION POINT
             * ***BA 0.082
             * ***LG  0.24    0.25    4.80    0.36      53
             * ***UC 0.667   0.622
526          BA   0.081
527          LG    0.24    0.25    4.80    0.35      47
528          UC   0.728   0.911
529          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
530          UA     100
             *
             * DDM   ***** Preserved *****

531          KK    CD01
532          KM        THOMAS ROAD AND GRANITE REEF ROAD
533          HC       3   0.208
             *
             *
             *
             * *** DIVERSION DD01 ***********************************************************
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
```

```
                *
                * DDM   ***** Preserved *****

534             KK    DD01
535             KM        MODIFIED (5/7/07 RAK) BASED ON UPDATED ON FLOW SPLIT ANALYSIS
536             DT   DD01I
                * ***DI     0       9      28      89     168     259     392     475     568
                * ***DQ     0       4      13      41      73     104     152     182     217
537             DI       0      21      22      27      44      96     173     267
538             DQ       0       0       2       6      20      39      65      98
                *
                *
                *
                * Route is a Major Arterial Road.
                *

539             KK   RD01E
540             RS       1    FLOW       0
541             RC   0.035   0.015   0.035    1315  0.0024
542             RX       0       1      40      41     104     105     145     146
543             RY       8       3     1.5     .75    0.75     1.5       3       8
                *
                *
                * DIVERSION RECALL D05
                *
```



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

544             KK   DRD05
545             DR   DD05I
                *
                *
                * Route is a Minor Arterial Road.
                *
                *

546             KK   RD05E
547             RS       2    FLOW       0
548             RC   0.035   0.015   0.035     560  0.0018
549             RX       0       1      26      27      62      63      88      89
550             RY       8       3       2       0       0       2       3       8
                *
                * *** DIVERSION DD052   ******************************************************
                *
                *  THIS DIVERSION IS AT GRANITE REEF ROAD AND MULBERRY.
                *  THE MAIN PATH IS SOUTH ON MULBERRY.
                *  SEE APPENDIX D FOR DIVERSION CALCULATIONS.
                *
                * DDM   ***** Preserved *****

551             KK   DD052
552             KM        MODIFIED (5/1/07 RAK) BASED ON FLOW SPLIT ANALYSIS
553             DT  DD052I
                * ***DI     0      37      44      59      80     110     147     178     222
554             DI       0       5       8      13      26      44      68      97     132     173
                * ***DQ     0      37      40      47      58      74      95     122     155
555             DQ       0       5       8      10      20      33      50      69      93     120
                *
                *
                * Route is a Subdivision Road. (MULBERRY)
                *
                * ***KKRD05S2
                * ***RS     1    FLOW       0
                * ***RC 0.035   0.015   0.035    3035  0.0030
                * ***RX     0       1      28      29      57      58      86      87
                * ***RY     8       2       1     0.5     0.5       1       2       8
                *

556             KK  RD05S2
557             KM        MODIFIED (2/14/07 RAK) TO ROUTE TO EARLL DR & 86TH ST
558             RS       2    FLOW       0
559             RC   0.035   0.015   0.035    1705  0.0032
560             RX       0       1      28      29      57      58      86      87
561             RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                * ***KK   D02   BASIN
                * ***BA 0.139
                * ***LG  0.23    0.25    4.80    0.36      51
```

```
* ***UC 0.592   0.457
* ***UA     0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0
* ***UA   100
*
*
* ***THE CONTRIBUTING AREA WAS HARD-CODED BECAUSE OF DIVERSION DD01 & DD052.
* ***THE HARD-CODE VALUE IS 60% OF CD01 AND 40% OF DD052'S CONTRIBUTING AREA.
* ***SEE DIVERSION DD01 AND DD052.
*
* ***DDM   ***** Preserved *****
* ***KK  CD02
* ***HC     3   0.361
*
*
* ***Route is a Major Arterial Road.
*
* ***KK  RD02
* ***RS     2    FLOW       0
* ***RC 0.035   0.015   0.035    1063  0.0045
* ***RX     0       1      40      41     104     105     145     146
* ***RY     8       3     1.5     .75    0.75     1.5       3       8
*
*
* DIVERSION RECALL E02
*
```



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

 562          KK   DRE02
 563          DR   DE02I
              *
              *
              * Route is a Subdivision Road.
              *

 564          KK   RE02S
 565          RS       6    FLOW       0
 566          RC   0.035   0.015   0.035    2617  0.0028
 567          RX       0       1      28      29      57      58      86      87
 568          RY       8       2       1     0.5     0.5       1       2       8
              *
              *
              * DIVERSION RECALL D052
              *

 569          KK  DRD052
 570          DR  DD052I
              *
              *
              * Route is a Minor Arterial Road.
              *
              *

 571          KK  RD05E2
 572          RS       1    FLOW       0
 573          RC   0.035   0.015   0.035     767  0.0013
 574          RX       0       1      26      27      62      63      88      89
 575          RY       8       3       2       0       0       2       3       8
              *
              *

 576          KK     D06   BASIN
 577          BA   0.109
 578          LG    0.24    0.25    4.80    0.35      52
 579          UC   0.671   0.602
 580          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 581          UA     100
              *
              * THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE02 & DD052.
              * THE HARD-CODE VALUE IS 80% OF CE02 AND 60% OF DD052'S CONTRIBUTING AREA.
              * SEE DIVERSION DE02 AND DD052.
              *
              * DDM   ***** Preserved *****

 582          KK    CD06
 583          KM        OSBORN ROAD AND 86TH STREET
 584          HC       3   0.254
              *
```

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

 585          KK    INT3
 586          KM        CREATED (9/11/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
 587          KM        STROM DRAIN
 588          DT   INT3I
 589          DI       0     306     500
 590          DQ       0     279     473
              *

 591          KK    DD06
 592          KM        CREATED (4/17/07 RAK) TO REPRESENT THE FLOW SPLIT AT OSBORN RD & THE
 593          KM        86TH ST ALLEY
 594          DT   DD06I
 595          DI       0     1.4    12.3    44.8    98.6   169.5   255.6   356.7   432.3
 596          DQ       0    0.75     2.3     9.8    26.6    50.4    81.7   121.1   152.2   OSBORN
              *
              * ***Route is a Minor Arterial Road.
              *
              *
              * ***KK  RD06
              * ***RS     1    FLOW       0
              * ***RC 0.035   0.015   0.035     609  0.0033
              * ***RX     0       1      26      27      62      63      88      89
              * ***RY     8       3       2       0       0       2       3       8
              *

 597          KK   RD06S
 598          KM        * MODIFIED (2/14/07 RAK) TO REROUTE TO EARLL DR & 86TH ST PER FIELD
 599          KM        * VISIT, MAPPING & CONVERSATION WITH LOCAL RESIDENTS
 600          KM        MODIFIED (4/17/07 RAK) TO BE THE SOUTHERN ROUTE OF THE FLOW SPLIT
 601          RS       1    FLOW       0
 602          RC   0.035   0.015   0.035    1310  0.0030
 603          RX       0       1      26      27      45      46      71      72
 604          RY       8       3       2     0.5     0.5       2       3       8
              *

 605          KK   DRD13
 606          DR   DD13I
              *

 607          KK   RD13E
 608          KM        CREATED (5/7/07 RAK) TO REPRESENT FLOW FROM GRANITE REEF RD TO 86TH ST
 609          KM        ALONG EARLL DR
 610          RS       4    FLOW       0
 611          RC   0.035   0.015   0.035    1310  0.0024
 612          RX       0       1      26      27      62      63      88      89
 613          RY       8       2       1     0.5     0.5       1       2       8
              *

 614          KK    D02A   BASIN
 615          KM        CREATED (2/14/07 RAK) USING DDMS-W TO REPRESENT PORTION OF SUBBASIN D02
 616          KM        NORTH OF EARLL DR
 617          BA    0.07
 618          LG    0.23    0.25    4.80    0.36      51
 619          UC   0.471   0.379
1                                        HEC-1 INPUT                                          PAGE 27

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

 620          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 621          UA     100
              *

 622          KK    CD10
 623          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DRIVE AND 86TH STREET
 624          HC       4   0.258
              *

 625          KK    INT6
 626          KM        CREATED (5/16/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
 627          KM        STORM DRAIN
 628          DT   INT6I
 629          DI       0     235     300
 630          DQ       0     203     268
              *

 631          KK    DD10
 632          KM        CREATED (2/14/07 RAK) TO REPRESENT THE FLOW SPLIT AT EARLL DR & 86TH ST
```

```
633          KM        1/3 TO THE SOUTH AND 2/3 TO THE EAST
634          KM        MODIFIED (4/17/07 RAK) BASED ON FLOW SPLIT ANALYSIS
635          DT   DD10I
             * ***DI     0      15      30      60     120     240     480     960
636          DI       0     1.6     9.2    34.4   115.4   208.7   349.6   542.5
             * ***DQ     0      10      20      40      80     160     320     640
637          DQ       0     1.6     5.9    12.5    52.0    84.3   142.6   229.1
             *

638          KK   RD10S
639          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW SOUTH ALONG 86TH ST
640          RS       2    FLOW       0
641          RC   0.035   0.015   0.035    1320  0.0030
642          RX       0       1      28      29      57      58      86      87
643          RY       8       2       1     0.5     0.5       1       2       8
             *

644          KK    DO2B   BASIN
645          KM        CREATED (2/14/07 RAK) USING DDMS-W TO REPRESENT PORTION OF SUBBASIN D02
646          KM        SOUTH OF EARLL DR
647          BA    0.07
648          LG    0.23    0.25    4.80    0.36      51
649          UC   0.504   0.452
650          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
651          UA     100
             *

652          KK    CD02
653          KM        THOMAS ROAD AND 86TH STREET
654          HC       3   0.351
             *
```

EARLL


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

655          KK    DD02
656          KM        CREATED (5/8/07 RAK) BASED ON UPDATED ON FLOW SPLIT ANALYSIS
657          DT   DD02I
658          DI       0      46      55      70     101     153     260     391     492
659          DQ       0       0       1       3      11      25      46      73      96
             *

660          KK   RD02E
661          RS       2    FLOW       0
662          RC   0.035   0.015   0.035    1063  0.0045
663          RX       0       1      40      41     104     105     145     146
664          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

665          KK     D07   BASIN
666          KO       3
667          BA   0.049
668          LG    0.25    0.25    4.80    0.35      51
669          UC   0.508   0.576
670          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
671          UA     100
             *

672          KK   DRD06
673          KM        CREATED (4/17/07 RAK)
674          DR   DD06I
             *

675          KK   RD06E
676          KM        CREATED (4/17/07 RAK) TO REPRESENT FLOW EAST ALONG OSBORN RD
677          RS       1    FLOW       0
678          RC   0.035   0.015   0.035     609  0.0033
679          RX       0       1      26      27      62      63      88      89
680          RY       8       3       2       0       0       2       3       8
             *
             * DDM   ***** Preserved *****

681          KK    CD07
682          KM        OSBORN ROAD AND 87TH STREET
683          HC       2   0.133
             *

684          KK    INT4
685          KM        CREATED (9/11/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
686          KM        STORM DRAIN
```

```
 687          DT   INT4I
 688          DI       0      66     100
 689          DQ       0    56.5    90.5
              *
              * Route is a Minor Arterial Road.
              *
```



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

 690          KK    RD07
 691          RS       2    FLOW       0
 692          RC   0.035   0.015   0.035    1330  0.0025
 693          RX       0       1      26      27      62      63      88      89
 694          RY       8       2       1     0.5     0.5       1       2       8
              *

 695          KK   DRD10
 696          KM        CREATED (2/14/07 RAK)
 697          DR   DD10I
              *

 698          KK   RD10E
 699          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW EAST IN RESIDENTIAL CHANNEL
 700          KM        ALONG EARLL DR
 701          RS       1    FLOW       0
 702          RC   0.035   0.015   0.035     420  0.0048
 703          RX       0       1      26      46      52      60      85      86
 704          RY       8       3       2       2       0       3       4       8
              *

 705          KK    CD11
 706          KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DR AND 87TH ST
 707          HC       2   0.240
              *

 708          KK    INT7
 709          KM        CREATED (6/25/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
 710          KM        STORM DRAIN
 711          DT   INT7I
 712          DI       0     100    1000   10000
 713          DQ       0     100    1000   10000
              *
              * ***KK  RD11
              * ***KM      CREATED (2/14/07 RAK) TO REPRESENT FLOW EAST IN THE ALLEY (EARLL DR
              * ***RS     1    FLOW       0
              * ***RC 0.035   0.015   0.035     835  0.0048
              * ***RX     0       1      26      46      52      60      85      86
              * ***RY     8       3       2       2       0       3       4       8
              *
              * DIVERSION RECALL DE03
              *

 714          KK   DRE03
 715          DR   DE03I
              *

 716          KK    INT1
 717          KM        CREATED (1/9/08 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
 718          KM        STORM DRAIN
 719          DT   INT1I
 720          DI       0     817    1000
 721          DQ       0     200     245
              *
              *
              * Route is a Subdivision Road.
              *
              * ***KK RE03S
              * ***RS     6    FLOW       0
              * ***RC 0.035   0.015   0.035    3444  0.0032
              * ***RX     0       1      28      29      57      58      86      87
              * ***RY     8       2       1     0.5     0.5       1       2       8
              *
```



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

 722          KK  RE03SA
 723          KM        CREATED (1/9/08 RAK) TO REPRESENT THE FIRST HALF OF THE DISTANCE FROM
```

```
KM        CE03 TO CD08
RS       2    FLOW       0
RC   0.035   0.015   0.035    1722  0.0032
RX       0       1      28      29      57      58      86      87
RY       8       2       1     0.5     0.5       1       2       8
*

KK    INT2
KM        CREATED (1/9/08 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
KM        STORM DRAIN
DT   INT2I
DI       0     621    1000
DQ       0     200     340
*

KK  RE03SB
KM        CREATED (1/9/08 RAK) TO REPRESENT THE SECOND HALF OF THE DISTANCE FROM
KM        CE03 TO CD08
RS       1    FLOW       0
RC   0.035   0.015   0.035    1722  0.0032
RX       0       1      28      29      57      58      86      87
RY       8       2       1     0.5     0.5       1       2       8
*

KK     D08   BASIN
BA   0.054
LG    0.24    0.25    4.80    0.36      53
UC   0.658   0.955
UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
UA     100
*
*
* THE CUMMALATIVE AREA WAS HARD-CODED TO ACCOUNT FOR DIVERSION DE03.
* THE HARD-CODE VALUE IS 95% OF CE03'S CONTRIBUTING AREA.
* SEE DIVERSION DE03.
*
* DDM   ***** Preserved *****

KK    CD08
KM        OSBORN ROAD AND PIMA FRONTAGE ROAD
HC       2   0.877
*

KK    INT5
KM        CREATED (1/11/08 RAK) TO REPRESENT INTERCEPTED FLOW INTO THE PIMA ROAD
KM        STORM DRAIN
DT   INT5I
DI       0     437    1000
DQ       0     200     460
*
* Route is a Minor Arterial Road with a wall on the west side.
*
```



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

KK    RD08
RS       1    FLOW       0
RC   0.035   0.015   0.035    1290  0.0039
RX       0       1      19      25      30      49      79      80
RY      10     1.5       0       0       0       0     1.5       8
*

KK    D03A
KM        CREATED (2/14/07 RAK) TO REPRESENT SUB BASIN D03 NORTH OF EARLL DR
BA   0.052
LG    0.20    0.25    4.50    0.45      52
UC   0.471   0.497
UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
UA     100
*

KK    CD12
KM        CREATED (2/14/07 RAK) TO REPRESENT EARLL DR AND PIMA FRONTAGE RD
HC       3
*

KK    INT8
KM        CREATED (5/16/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
KM        STORM DRAIN
```

```
775          DT   INT8I
776          DI       0     100    1000   10000
777          DQ       0     100    1000   10000
             *

778          KK    RD12
779          KM        CREATED (2/14/07 RAK) TO REPRESENT FLOW SOUTH ALONG TRAIL (PIMA RD)
780          RS       2    FLOW       0
781          RC   0.035   0.015   0.035    1500  0.0027
782          RX       0       1      19      25      30      49      79      80
783          RY      10     1.5       0       0       0       0     1.5       8
             *
             *
             * ***KK   D03   BASIN
             * ***BA 0.103
             * ***LG  0.20    0.25    4.50    0.45      52
             * ***UC 0.613   0.608
             * ***UA     0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0
             * ***UA   100
             *
             *
             *
             *
             * DIVERSION RECOVER DE09
             *
```



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

784          KK  DRE09I
785          DR   DE09I
             *
             *
             * Route is a Minor Arterial Road along Pima Rd.
             *

786          KK   RE09S
787          RS       7    FLOW       0
788          RC   0.035   0.015   0.035    5501  0.0037
789          RX       0       1      26      27      62      63      88      89
790          RY       8       2       1     0.5     0.5       1       2       8
             *
             *

791          KK     D09   BASIN
792          KM        SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
793          BA   0.216
794          LG    0.10    0.29    2.65    1.70      80
795          UC   0.463   0.379
796          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
797          UA     100
             *
             *
             * *** STORAGE ROUTING LD09 ************************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****
             * ***KK  LD09
             * ***DT LD09D    13.6
             * ***DI     0     100    1000   10000
             * ***DQ     0     100    1000   10000
             *
             *
             * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION DE09.
             * THE HARD-CODE VALUE IS 90% OF CE09'S CONTRIBUTING AREA.
             * SEE DIVERSION DE09.
             *
             * DDM   ***** Preserved *****

798          KK    CD09
799          KM        THOMAS ROAD AND PIMA ROAD
800          HC       2   0.686
             *

801          KK   INT10
802          KM        CREATED (5/16/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
803          KM        STORM DRAIN
804          DT   IN10I
805          DI       0     100    1000   10000
```

```
806          DQ       0     100    1000   10000
             *
1                                   HEC-1 INPUT                                                    PAGE 33

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


807          KK    D03B
808          KM        CREATED (2/14/07 RAK) TO REPRESENT SUB BASIN D03 SOUTH OF EARLL DR
809          BA   0.052
810          LG    0.20    0.25    4.50    0.45      52
811          UC   0.500   0.514
812          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
813          UA     100
             *
             *
             * DDM   ***** Preserved *****

814          KK    CD03
815          KM        THOMAS ROAD AND 87TH STREET
816          HC       4   2.191
             *

817          KK    INT9
818          KM        CREATED (5/16/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
819          KM        STORM DRAIN
820          DT   INT9I
821          DI       0     100    1000   10000
822          DQ       0     100    1000   10000
             *
             *
             * Route is a Minor Arterial Road.
             *
             * ***KK  RD03
             * ***RS     1    FLOW       0
             * ***RC 0.035   0.015   0.035    1307   0.004
             * ***RX     0       1      26      27      62      63      88      89
             * ***RY     8       2       1     0.5     0.5       1       2       8
             *

823          KK     C11   BASIN
824          BA   0.050
825          LG    0.25    0.25    4.40    0.45      49
826          UC   0.358   0.322
827          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
828          UA     100
             *

829          KK     C10   BASIN
830          BA   0.054
831          LG    0.25    0.25    4.65    0.38      50
832          UC   0.433   0.409
833          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
834          UA     100
             *
1                                   HEC-1 INPUT                                                    PAGE 34

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


835          KK   DRD02
836          DR   DD02I
             *

837          KK   RD02S
838          KM        CREATED (5/8/07 RAK) TO REPRESENT FLOW FROM GRANITE REEF RD TO 86TH ST
839          KM        ALONG EARLL DR
840          RS       4    FLOW       0
841          RC   0.035   0.015   0.035    1329  0.0036
842          RX       0       1      26      27      62      63      88      89
843          RY       8       2       1     0.5     0.5       1       2       8
             *

844          KK    CC10
845          KM        CREATED (5/8/07 RAK) TO REPRESENT VIRGINIA AVE AND 86TH ST
846          HC       2   0.121
             *
             * Route is a Minor Arterial Road.
             *

847          KK    RC10
```

```
848          RS       1    FLOW       0
849          RC   0.035   0.015   0.035     688   0.009
850          RX       0       1      26      27      62      63      88      89
851          RY       8       2       1     0.5     0.5       1       2       8
             *
             *
             * DDM   ***** Preserved *****

852          KK    CC11
853          KM        VIRGINIA AVENUE AND 87TH STREET
854          HC       2
             *
             *
             * Route is a Minor Arterial Road.
             *
             *

855          KK    RC11
856          RS       1    FLOW       0
857          RC   0.035   0.015   0.035    1334  0.0015
858          RX       0       1      26      27      62      63      88      89
859          RY       8       2       1     0.5     0.5       1       2       8
             *

860          KK     C08   BASIN
861          BA   0.118
862          LG    0.25    0.25    4.40    0.45      51
863          UC   0.588   0.434
864          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
865          UA     100
             *
             * DDM   ***** Preserved *****
```



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

866          KK    CC08
867          KM        OAK STREET AND 87TH STREET
868          HC       2
             *
             *
             *
             * Route is a Minor Arterial Road.
             *

869          KK    RC08
870          RS       4    FLOW       0
871          RC   0.035   0.015   0.035    2205  0.0026
872          RX       0       1      26      27      62      63      88      89
873          RY       8       2       1     0.5     0.5       1       2       8
             *

874          KK     C06   BASIN
875          KM
876          KM    This basin's original area was 0.162 sq mi.  The infield area is bermed
877          KM    so it is self-detained.  The infield area (0.0095 sq mi) was subtracted
878          KM    from the subbasin calculations to account for the storage.
879          KM
880          BA   0.153
881          LG    0.23    0.25    4.30    0.49      52
882          UC   0.554   0.435
883          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
884          UA     100
             *
             * DDM   ***** Preserved *****

885          KK    CC06
886          KM        CORONADO ROAD AND 87TH STREET
887          HC       2
             *

888          KK   INT11
889          KM        CREATED (7/25/07 RAK) TO REPRESENT INTERCEPTED FLOW FROM THE
890          KM        INTERTSECTION OF CORONADO RD AND 87TH ST
891          DT   IN11I
892          DI       0     100    1000
893          DQ       0     100    1000
             *
             *
             * This is a channel.
```

```
                *
 894            KK    RC06
 895            RS       1    FLOW       0
 896            RC    0.04   0.035    0.04    1271  0.0056
 897            RX       0       1      30      40      70      80     110     111
 898            RY      20      10       8       0       0       8      10      20
                *
                *
                * DIVERSION RECALL D01
                *
1                                          HEC-1 INPUT                                                    PAGE 36

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

 899            KK   DRDO1
 900            DR   DD01I
                *
                *
                * Route is a Minor Arterial Road.
                *
 901            KK   RD01S
 902            RS       8    FLOW       0
 903            RC   0.035   0.015   0.035    2611  0.0023
 904            RX       0       1      26      27      62      63      88      89
 905            RY       8       2       1     0.5     0.5       1       2       8
                *
                *
                *
 906            KK     C07   BASIN
 907            KO       3
 908            BA   0.072
 909            LG    0.25    0.25    4.80    0.35      50
 910            UC   0.667   0.699
 911            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 912            UA     100
                *
                *
                * THE CONTRIBUTING AREA WAS HARD-CODED TO ACCOUNT FOR THE DIVERSION DD01.
                * THE HARD-CODE VALUE IS 40% OF CD01'S CONTRIBUTING AREA.
                * SEE DIVERSION DD01.
                *
                * DDM   ***** Preserved *****

 913            KK    CC07
 914            KM        OAK STREET AND GRANITE REEF ROAD
 915            HC       2    0.15
                *
                *
                *
                * Route is a Minor Arterial Road.
                *
 916            KK    RC07
 917            RS       6    FLOW       0
 918            RC   0.035   0.015   0.035    2638   0.003
 919            RX       0       1      26      27      62      63      88      89
 920            RY       8       2       1     0.5     0.5       1       2       8
                *
                *
 921            KK     C09   BASIN
 922            BA   0.057
 923            LG    0.25    0.25    4.80    0.36      50
 924            UC   0.596   0.646
 925            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
 926            UA     100
                *
                * *** CC09 IS LOCATED AT OAK STREET AND 82ND STREET ****************************
                *
                * Route is a Minor Arterial Road.
                *
1                                          HEC-1 INPUT                                                    PAGE 37

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

 927            KK    RC09
```

```
928          RS       1    FLOW       0
929          RC   0.035   0.015   0.035    3368   0.003
930          RX       0       1      26      27      62      63      88      89
931          RY       8       2       1       0       0       1       2       8
             *

932          KK     C05   BASIN
933          BA   0.137
934          LG    0.23    0.25    4.70    0.37      54
935          UC   0.754   0.675
936          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
937          UA     100
             *

938          KK     C01   BASIN
939          BA   0.032
940          LG    0.22    0.25    4.80    0.37      57
941          UC   0.546   0.711
942          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
943          UA     100
             *
             * *** CC01 LOCATED AT MCDOWELL ROAD AND 82ND PLACE ****************************
             *
             * Route is a Major Arterial Road.
             *

944          KK    RC01
945          RS       8    FLOW       0
946          RC   0.035   0.015   0.035    1217  0.0013
947          RX       0       1      40      41     104     105     145     146
948          RY       8       3     1.5     .75    0.75     1.5       3       8
             *

949          KK     C02   BASIN
950          BA   0.036
951          LG    0.15    0.25    4.80    0.40      70
952          UC   0.554   0.780
953          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
954          UA     100
             *
             * DDM   ***** Preserved *****

955          KK    CC02
956          KM        MCDOWELL ROAD AND GRANITE REEF ROAD
957          HC       5    .436
             *

958          KK    DC02
959          KM        CREATED (2/26/07) TO REPRESENT THE FLOW SPLIT AT MCDOWELL ROAD AND
960          KM        GRANITE REEF ROAD
961          DT   DC02I
962          DI       0     160     186     221     268     323     384     446
963          DQ       0     0.3     4.5    11.9    24.7    40.7    59.3    78.1
             *
             *
             * Route is a Major Arterial Road.
             *
             *
             * ***KK  RC02
```



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

964          KK   RC02E
965          KM        MODIFIED (2/26/07)
966          RS       1    FLOW       0
967          RC   0.035   0.015   0.035     632  0.0063
968          RX       0       1      40      45     100     105     145     146
969          RY       8       3       2       0       0       2       3       8
             *

970          KK     C03   BASIN
971          BA   0.040
972          LG    0.18    0.25    4.10    0.61      62
973          UC   0.333   0.388
974          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
975          UA     100
             *
             *
```

```
976          KK     C12   BASIN
977          BA   0.010
978          LG    0.19    0.25    4.10    0.58      64
979          UC   1.500   4.505
980          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
981          UA     100
             *
             * *** CC12 LOCATED AT OAK STREET AND PIMA ROAD (WEST SIDE OF WALL) *************
             *
             * Route is a Minor Arterial Road with a wall on the west side.
             *

982          KK    RC12
983          RS      22    FLOW       0
984          RC   0.035   0.015   0.035    2693  0.0007
985          RX       0       1      19      25      30      49      79      80
986          RY      10     1.5       0       0       0       0     1.5       8
             *
             *

987          KK     C13   BASIN
988          KM         SRPMIC LANDS BETWEEN PIMA ROAD & PIMA FRWY (SR 101L)
989          BA   0.176
990          LG    0.10    0.35    2.65    1.70      80
991          UC   0.546   0.508
992          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
993          UA     100
             *
             * *** STORAGE ROUTING LC13 ***********************************************
             *
             * See the detention calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             * DDM   ***** Preserved *****
             * ***KK  LC13
             * ***DT LC13D    11.2
             * ***DI     0     100    1000   10000
             * ***DQ     0     100    1000   10000
             *
             *
             * DDM   ***** Preserved *****
```



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

994          KK    CC13
995          KM         MCDOWELL ROAD AND PIMA ROAD
996          HC       2   0.186
             *

997          KK   INT12
998          KM         CREATED (5/16/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
999          KM         STORM DRAIN
1000         DT   IN12I
1001         DI       0     100    1000   10000
1002         DQ       0     100    1000   10000
             *
             * *** DIVERSION DC13 *****************************************************
             * THE STORM DRAIN ANALYSIS SHOWS THAT THE MAXIMUM FLOW IN THE DRAIN IS 51 CFS.
             * ALL OVERLAND FLOW CONTINUES SOUTH.
             * 20% clogging factor means 41cfs, (51cfs * 0.8 = 41cfs).
             *
             * See the diversion calculations in Appendix D of the Data Collection Notebook
             * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
             *
             * DDM   ***** Preserved *****
             * ***KK  DC13
             * ***DT DC13I
             * ***DI     0      10      50     100     200     300     400     500
             * ***DQ     0       4      30      59     159     259     359     459
             *
             * ROUTE IS A 42" RCP WITH A SLOPE OF 0.0044 FT/FT.
             *
             * ***KK RC13W
             * ***RS     5    FLOW      -1
             * ***RD  2052   0.005   0.012            CIRC     3.5
             *

1003         KK     C04   BASIN
1004         BA   0.044
1005         LG    0.18    0.28    4.20    0.51      44
```

```
1006          UC   0.650   0.830
1007          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1008          UA     100
              *
              *
              *
              * Route is a Major Arterial Road.
              *

1009          KK    RC04
1010          RS       5    FLOW       0
1011          RC   0.035   0.015   0.035    1563  0.0106
1012          RX       0       1      40      41     104     105     145     146
1013          RY       8       3     1.5       0       0     1.5       3       8
              *
              *
              * THE CONTRIBUTING AREA IS HARD-CODED TO ACCOUNT FOR DIVERSION D13.
              * THE HARD-CODE VALUE IS 20% OF CC13'S CONTRIBUTING AREA.
              * SEE DIVERSION D13.
              *
              * DDM   ***** Preserved *****
```



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

1014          KK    CC03
1015          KM        MCDOWELL ROAD AND GRANITE REEF WASH
1016          HC       5    3.37
              *
              *
              *
              * This route is a channel.
              *

1017          KK    RC03
1018          RS       2    FLOW       0
1019          RC    0.04    0.03    0.04    1097  0.0009
1020          RX       0       1      30      40      70      80     110     111
1021          RY      20      10       8       0       0       8      10      20
              *

1022          KK     B07   BASIN
1023          BA   0.016
1024          LG    0.13    0.28    4.35    0.51      49
1025          UC   0.192   0.234
1026          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1027          UA     100
              *
              * DDM   ***** Preserved *****

1028          KK    CB07
1029          KM        84TH PLACE AND GRANITE REEF WASH
1030          HC       2
              *
              *
              *
              * Route is a Minor Arterial Road.
              *

1031          KK    RB07
1032          RS       2    FLOW       0
1033          RC   0.035   0.015   0.035    1525  0.0026
1034          RX       0       1      40      41     104     105     145     146
1035          RY       8       3     1.5     .75    0.75     1.5       3       8
              *

1036          KK     B05   BASIN
1037          BA   0.088
1038          LG    0.22    0.26    4.15    0.58      44
1039          UC   0.583   0.685
1040          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1041          UA     100
              *
              * *** STORAGE ROUTING LB05 ***********************************************
              *
              * DDM   ***** Preserved *****
```



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

```
1042          KK    LB05
1043          DT   LB05D    0.16
1044          DI       0     100    1000   10000
1045          DQ       0     100    1000   10000
              *

1046          KK   DRC02
1047          KM        CREATED (2/26/07)
1048          DR   DC02I
              *

1049          KK   RC02S
1050          KM        CREATED (2/26/07) TO REPRESENT FLOW SOUTH ALONG GRANITE REEF ROAD
1051          RS       2    FLOW       0
1052          RC   0.035   0.015   0.035    2385  0.0063
1053          RX       0       1      26      27      62      63      88      89
1054          RY       8       2       1     0.5     0.5       1       2       8
              *

1055          KK     B06   BASIN
1056          BA   0.015
1057          LG    0.13    0.26    4.00    0.64      60
1058          UC   0.304   0.589
1059          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1060          UA     100
              *
              *
              * DDM   ***** Preserved *****

1061          KK    CB05
1062          KM        84TH PLACE AND GRANITE REEF ROAD
1063          HC       4
              *
              *
              *
              * Route is a Minor Arterial Road.
              * Normal Depth Routing did not work for this Route.

1064          KK    RB05
1065          RD
1066          RC   0.035    0.02   0.035     500  0.0052
1067          RX       0       1      40      51      94     105     145     146
1068          RY       8       3       2       0       0       2       3       8
              *

1069          KK     B04   BASIN
1070          BA   0.077
1071          LG    0.15    0.25    4.45    0.50      71
1072          UC   0.271   0.232
1073          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1074          UA     100
              *
              *
              * *** STORAGE ROUTING LB04 ***********************************************
              *
              * MOTOROLA DETENTION BASINS (SEE CALCULATIONS)
              *
              * DDM   ***** Preserved *****
1                                        HEC-1 INPUT                                          PAGE 42

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

1075          KK    LB04
1076          DT   LB04D   12.95
1077          DI       0     100    1000   10000
1078          DQ       0     100    1000   10000
              *

1079          KK     B02   BASIN
1080          BA   0.101
1081          LG    0.15    0.25    4.70    0.41      68
1082          UC   0.363   0.335
1083          UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1084          UA     100
              *
              * *** CB02 IS LOCATED AT ROOSEVELT STREET WEST OF GRANITE REEF ROAD ************
              *
              * *** STORAGE ROUTING LB02 ***********************************************
              *
```

```
                * DDM   ***** Preserved *****

1085            KK    LB02
1086            DT   LB02D    2.64
1087            DI       0     100    1000   10000
1088            DQ       0     100    1000   10000
                *
                *
                *
                * Route is a Minor Arterial Road.
                * Normal Depth Routing did not work for this Route.

1089            KK    RB02
1090            RD
1091            RC   0.035   0.015   0.035     548  0.0186
1092            RX       0       1      40      41     104     105     145     146
1093            RY       8       3     1.5     .75    0.75     1.5       3       8
                *

1094            KK     B03   BASIN
1095            BA   0.007
1096            LG    0.25    0.35    4.65    0.41      47
1097            UC   0.271   0.474
1098            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1099            UA     100
                *
                *
                * DDM   ***** Preserved *****

1100            KK    CB03
1101            KM        ROOSEVELT STREET AND GRANITE REEF ROAD
1102            HC       4    3.66
                *
                *
                *
                * Route is a Minor Arterial Road.
                *
```



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

1103            KK    RB03
1104            RS       2    FLOW       0
1105            RC   0.035   0.015   0.035    1348   0.003
1106            RX       0       1      40      41     104     105     145     146
1107            RY       8       3     1.5     .75    0.75     1.5       3       8
                *

1108            KK     B01   BASIN
1109            BA   0.071
1110            LG    0.25    0.25    4.30    0.54      44
1111            UC   0.267   0.188
1112            UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1113            UA     100
                *
                *
                * *** STORAGE ROUTING LB01 ***********************************************
                *
                * DDM   ***** Preserved *****

1114            KK    LB01
1115            DT   LB01D    1.15
1116            DI       0     100    1000   10000
1117            DQ       0     100    1000   10000
                *
                *
                *
                * DDM   ***** Preserved *****

1118            KK    CB01
1119            KM        GRANITE REEF ROAD AND GRANITE REEF WASH
1120            HC       2
                *
                *
                * Route is a channel.
                *

1121            KK    RB01
1122            RS       1    FLOW       0
1123            RC   0.035   0.015   0.035    1320  0.0019
```

```
1124        RX       0       1      34      40      50      56      80      81
1125        RY      12       6       4       0       0       4       6      12
            *

1126        KK     B12   BASIN
1127        KM        SRPMIC LANDS WEST OF THE PIMA RD ALIGNMENT AND NORTH OF MCKELLIPS RD
1128        BA   0.119
1129        LG    0.25    0.25    4.80    0.38      39
1130        UC   0.442   0.233
1131        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1132        UA     100
            *
1                                          HEC-1 INPUT                                          PAGE 44

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


1133        KK     B11   BASIN
1134        BA   0.060
1135        LG    0.24    0.34    4.80    0.39      37
1136        UC   0.400   0.277
1137        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1138        UA     100
            *
            * *** STORAGE ROUTING LB11 ************************************************
            * Pond was assumed to have 1 foot of freeboard.
            * DDM   ***** Preserved *****

1139        KK    LB11
1140        DT   LB11D    2.87
1141        DI       0     100    1000   10000
1142        DQ       0     100    1000   10000
            *
            *
            * DIVERSION RECALL DC13I
            *
            * ***KKDRDC13
            * ***DR DC13I
            *
            *
            * ***Route is overland flow. (SLOPE ESTIMATED.)
            *
            * ***KK RC13S
            * ***RS    33    FLOW       0
            * ***RC 0.035   0.035   0.035    5197   .0058
            * ***RX     0     200     300     400     500     600     700     900
            * ***RY     5       4       3       0       0       3       4       5
            *

1143        KK     B13   BASIN
1144        BA   0.222
1145        LG    0.22    0.26    4.55    0.42      44
1146        UC   0.375   0.232
1147        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1148        UA     100
            *
            * *** STORAGE ROUTING LB13 ************************************************
            *
            * DDM   ***** Preserved *****

1149        KK    LB13
1150        DT   LB13D    18.4
1151        DI       0     100    1000   10000
1152        DQ       0     100    1000   10000
            *
            *
            * Route is shallow flow. (SLOPE WAS ESTIMATED.)
            *
1                                          HEC-1 INPUT                                          PAGE 45

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


1153        KK    RB13
1154        RS       7    FLOW       0
1155        RC   0.035   0.035   0.035    1269   0.004
1156        RX       0     200     300     400     500     600     700     900
1157        RY       5       4       3       0       0       3       4       5
            *

1158        KK     B14   BASIN
```

```
1159        KM        SRPMIC LANDS BETWEEN THE ALIGNMENT OF PIMA ROAD & PIMA FRWY (SR 101L)
1160        BA   0.149
1161        LG    0.10    0.25    4.60    0.48      80
1162        UC   0.608   0.628
1163        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1164        UA     100
            *
            * *** STORAGE ROUTING LB14 ***********************************************
            *
            * See the detention calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            * DDM   ***** Preserved *****
            * ***KK  LB14
            * ***DT LB14D    10.4
            * ***DI     0     100    1000   10000
            * ***DQ     0     100    1000   10000
            *
            * DDM   ***** Preserved *****

1165        KK    CB14
1166        KM        MCKELLIPS ROAD AND PIMA ROAD
1167        HC       2   0.371
            *

1168        KK   INT13
1169        KM        CREATED (5/16/07 RAK) TO REPRESENT INTERCEPTED FLOW TO THE PIMA ROAD
1170        KM        STORM DRAIN
1171        DT   IN13I
1172        DI       0     100    1000   10000
1173        DQ       0     100    1000   10000
            *
            * Route is a MAJOR ARTERIAL. (SLOPE WAS ESTIMATED.)
            *
            * ***KK  RB14
            * ***RS     4    FLOW       0
            * ***RC 0.035   0.015   0.035    2746   0.004
            * ***RX     0       1      30      40     100     110     145     300
            * ***RY     8       4       3       0       0       3       4       5
            *
            *
            * DDM   ***** Preserved *****
1                                    HEC-1 INPUT                                          PAGE 46

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

1174        KK    CB12
1175        KM        MCKELLIPS ROAD AND GRANITE REEF WASH
1176        HC       4
            *
            *
            * Route is a channel. (SLOPE ESTIMATED FROM UPSTREAM CHANNEL'S SLOPE.)
            *

1177        KK    RB12
1178        RS       6    FLOW       0
1179        RC   0.035    .035   0.035    4395  0.0019
1180        RX       0     200     330     340     370     380     410     600
1181        RY       9       8       6       0       0       6       8       9
            *

1182        KK     A01   BASIN
1183        KM        SRPMIC LANDS SOUTH OF MCKELLIPS ROAD
1184        BA   0.507
1185        LG    0.10    0.25    5.40    0.32      80
1186        UC   0.542   0.238
1187        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1188        UA     100
            *
            * *** STORAGE ROUTING LA01 ***********************************************
            *
            * See the detention calculations in Appendix D of the Data Collection Notebook
            * Granite Reef Wash Drainage Master Plan (Entellus April 2002).
            * DDM   ***** Preserved *****

1189        KK    LA01
1190        DT   LA01D    35.2
1191        DI       0     100    1000   10000
1192        DQ       0     100    1000   10000
            *
            * DDM   ***** Preserved *****
```

```
1193        KK    CA01
1194        KM        OUTFALL TO SALT RIVER
1195        HC       2
            *

1196        KK     B10   BASIN
1197        BA   0.110
1198        LG    0.21    0.25    4.60    0.49      28
1199        UC   0.742   0.765
1200        UA       0     5.0    16.0    30.0    65.0    77.0    84.0    90.0    94.0    97.0
1201        UA     100
            *
            * *** STORAGE ROUTING LB10 ***********************************************
            *
            * DDM   ***** Preserved *****
```



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

1202        KK    LB10
1203        DT   LB10D    10.5
1204        DI       0     100    1000   10000
1205        DQ       0     100    1000   10000
            *
            * THE FOLLOWING CARDS REFER TO THE PIMA ROAD CONDUIT ALTERNATIVE
            *

1206        KK  DRINT1
1207        DR   INT1I
            *

1208        KK  RE3ASD
1209        KM        CREATED (1/11/08 RAK) TO REPRESENT CONDUIT FLOW FROM INDIAN SCHOOL RD
1210        KM        TO OLIVE AVE ALONG THE PIMA FRONTAGE ROAD
1211        RK    1320    .005    .014            CIRC       6
            *

1212        KK  DRINT2
1213        DR   INT2I
            *

1214        KK  CE3BSD
1215        KM        CREATED (1/11/08 RAK) TO REPRESENT THE CONDUIT JUNCTION AT OLIVE AVE
1216        KM        AND THE PIMA FRONTAGE ROAD
1217        HC       2    .858
            *

1218        KK  RE3BSD
1219        KM        CREATED (1/11/08 RAK) TO REPRESENT CONDUIT FLOW FROM OLIVE AVE TO
1220        KM        OSBORN RD ALONG THE PIMA FRONTAGE ROAD
1221        RK    1320    .005    .014            CIRC       8
            *

1222        KK  DRINT3
1223        DR   INT3I
            *

1224        KK  RD06SD
1225        KO       3
1226        KM        CREATED (9/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM 86TH ST TO 87TH ST
1227        KM        ALONG OSBORN RD
1228        RK     540   .0065    .013            TRAP      10       0
            *

1229        KK  DRINT4
1230        DR   INT4I
            *
```



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

1231        KK  CD07SD
1232        KM        CREATED (9/12/07 RAK) TO REPRESENT THE CONDUIT JUNCTION AT OSBORN RD
1233        KM        AND 87TH ST
1234        HC       2    .387
            *

1235        KK  RD07SD
```

```
1236          KO       3
1237          KM        CREATED (9/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM OSBORN RD AND
1238          KM        87TH ST TO EARLL DR AND PIMA RD
1239          RK     700   .0065    .013            TRAP      10       0              10
              *

1240          KK  DRINT5
1241          DR   INT5I
              *

1242          KK  CD08SD
1243          KM        CREATED (1/11/08 RAK) TO REPRESENT THE CONDUIT JUNCTION AT OSBORN RD
1244          KM        AND THE PIMA FRONTAGE ROAD
1245          HC       3   1.264
              *

1246          KK  RD08SD
1247          KM        CREATED (1/11/08 RAK) TO REPRESENT CONDUIT FLOW FROM OSBORN RD TO
1248          KM        EARLL DR ALONG THE PIMA FRONTAGE ROAD
1249          RK    1247   .0044    .014            CIRC      10
              *

1250          KK  DRINT6
1251          DR   INT6I
              *

1252          KK  RD10SD
1253          KO       3
1254          KM        CREATED (6/25/07 RAK) TO REPRESENT CONDUIT FLOW FROM 86TH ST TO 87TH ST
1255          KM        ALONG EARLL DR
1256          RK     565   .0046    .013            TRAP       6       0               5
              *

1257          KK  DRINT7
1258          DR   INT7I
              *

1259          KK  CD11SD
1260          KM        CREATED (6/25/07 RAK) TO REPRESENT THE CONDUIT JUNCTION AT EARLL DR AND
1261          KM        87TH ST
1262          HC       2    .498
              *
```



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

1263          KK  RD11SD
1264          KO       3
1265          KM        CREATED (6/25/07 RAK) TO REPRESENT CONDUIT FLOW FROM 87TH ST TO PIMA RD
1266          KM        ALONG EARLL DR
1267          RK     595   .0046    .013            TRAP       6       0               5
              *

1268          KK  DRINT8
1269          DR   INT8I
              *

1270          KK  CD12SD
1271          KM        CREATED (6/12/07 RAK) TO REPRESENT THE CONDUIT JUNCTION AT EARLL DR AND
1272          KM        PIMA RD
1273          HC       3    1.43
              *

1274          KK  RD12SD
1275          KM        CREATED (6/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM EARLL DR TO
1276          KM        THOMAS RD
1277          RK    1309   .0046    .014            CIRC      14
              *

1278          KK  DRINT9
1279          DR   INT9I
              *

1280          KK  RD03SD
1281          KM        CREATED (6/26/07 RAK) TO REPRESENT CONDUIT FLOW FROM 87TH ST TO PIMA RD
1282          RK     256   .0067    .013            CIRC    6.36
              *

1283          KK  DRIN10
1284          DR   IN10I
```

```
                    *
1285                KK  CD09SD
1286                KM        CREATED (6/12/07 RAK) TO REPRESENT THE CONDUIT JUNCTION AT THOMAS RD
1287                KM        AND PIMA RD
1288                HC       3   2.877
                    *

1289                KK  RD09SD
1290                KM        CREATED (6/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM THOMAS RD TO
1291                KM        MCDOWELL RD
1292                RK    5278   .0031    .014            CIRC      14
                    *

1293                KK  DRIN12
1294                DR   IN12I
                    *
1                                          HEC-1 INPUT                                          PAGE 50

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


1295                KK  DRIN11
1296                DR   IN11I
                    *

1297                KK  RC06SD
1298                KO       3
1299                KM        CREATED (6/13/07 RAK) TO REPRESENT FLOW FROM THE MCDOWELL RD BOX CULVERT
1300                KM        TO THE PIMA ROAD CONDUIT
1301                RK    1744    .004    .014            CIRC       8
                    *

1302                KK  CC13SD
1303                KM        CREATED (6/13/07 RAK) TO REPRESENT CONDUIT FLOW AT MCDOWELL AND PIMA
1304                HC       3   3.583
                    *

1305                KK  RC13SD
1306                KM        CREATED (6/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM MCDOWELL RD TO
1307                KM        MCKELLIPS RD
1308                RK    5368    .004    .014            CIRC      14
                    *

1309                KK  DRIN13
1310                DR   IN13I
                    *

1311                KK  CB14SD
1312                KM        CREATED (7/25/07 RAK) TO REPRESENT CONDUIT FLOW AT MCKELLIPS AND PIMA
1313                HC       2   3.954
                    *

1314                KK  RB14SD
1315                KM        CREATED (6/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM THOMAS RD TO
1316                KM        MCDOWELL RD
1317                RK    4465    .002    .014            TRAP      16       0
                    *
1318                ZZ
1
          SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

   49        G03
              .
              .
   56         .------->   DG03I
   55      DG03
              V
              V
   59     RG03S
              .
              .
   64         .         G01
              .           .
              .           .
   70      CG01............
              .
```

```
 74          .------->   DG01I
 73       DG01
             V
             V
 77       RG01S
             .
             .
 82          .         F04
             .           .
             .           .
 93          .           .         G04
             .           .           V
             .           .           V
100          .           .        RG04
             .           .           .
             .           .           .
105          .           .           .         G05
             .           .           .           V
             .           .           .           V
111          .           .           .        RG05
             .           .           .           .
             .           .           .           .
116          .           .           .           .         G06
             .           .           .           .           .
             .           .           .           .           .
124          .           .           .           .           .------->   LG06D
123          .           .           .           .       LG06
             .           .           .           .           .
             .           .           .           .           .
128          .           .           .           .           .------->   DG06I
127          .           .           .           .       DG06
             .           .           .           .           .
             .           .           .           .           .
132          .           .           .           .           .------->  LG06AD
131          .           .           .           .      LG06A
             .           .           .           .           .
             .           .           .           .           .
135          .           .           .           .           .         G02
             .           .           .           .           .           .
             .           .           .           .           .           .
141          .           .        CG02.......................................
             .           .           V
             .           .           V
144          .           .        RG02
             .           .           .
             .           .           .
149          .           .           .         F06
             .           .           .           .
             .           .           .           .
155          .           .        CF06............
             .           .           V
             .           .           V
158          .           .        RF06
             .           .           .
             .           .           .
163          .           .           .         F05
             .           .           .           .
             .           .           .           .
169          .           .        CF05............
             .           .           .
             .           .           .
173          .           .           .-------->   DF05I
172          .           .        DF05
             .           .           V
             .           .           V
176          .           .       RF05W
             .           .           .
             .           .           .
178       CF04........................
             .
             .
182          .-------->   DF04I
181       DF04
             .
             .
186          .           .<--------   DF05I
185          .         F05R
             .           V
             .           V
187          .        RF05S
```

```
                .
                .
192             .        F03
                .         .
                .         .
198             .    CF03............
                .       V
                .       V
201             .    RF03
                .       .
                .       .
207             .       .        .<-------   DG06I
206             .       .     G06R
                .       .        V
                .       .        V
208             .       .    RG06S
                .       .        .
                .       .        .
213             .       .        .        F07
                .       .        .         .
                .       .        .         .
221             .       .        .         .-------->   LF07D
220             .       .        .      LF07
                .       .        .         .
                .       .        .         .
224             .       .     CF07............
                .       .        .
                .       .        .
228             .       .        .-------->   DF07I
227             .       .     DF07
                .       .        V
                .       .        V
231             .       .    RF07W
                .       .        .
                .       .        .
233             .       .        .        F02
                .       .        .         .
                .       .        .         .
239             .    CF02........................
                .       .
                .       .
243             .       .-------->   DF02I
242             .    DF02
                .       V
                .       V
246             .    RF02W
                .       .
                .       .
249             .       .        .<-------   DF04I
248             .       .     F04R
                .       .        V
                .       .        V
250             .       .    RF04S
                .       .        .
                .       .        .
256             .       .        .-------->  DRF04I
255             .       .    DRF04
                .       .        .
                .       .        .
259             .       .        .        F01
                .       .        .         .
                .       .        .         .
265             .    CF01........................
                .       .
                .       .
269             .       .-------->   DF01I
268             .    DF01
                .       .
                .       .
273             .       .        .<-------   DF02I
272             .       .    DRF02
                .       .        V
                .       .        V
274             .       .    RF02S
                .       .        .
                .       .        .
279             .       .        .        E07
                .       .        .         .
                .       .        .         .
285             .       .     CE07............
                .       .        V
```

```
                .          .          V
288             .          .       RE07
                .          .          .
                .          .          .
293             .          .          .        E05
                .          .          .          .
                .          .          .          .
304             .          .       CE05............
                .          .          .
                .          .          .
308             .          .          .-------->   DE05I
307             .          .       DE05
                .          .          V
                .          .          V
311             .          .      RE05W
                .          .          .
                .          .          .
313             .          .          .        E04
                .          .          .          .
                .          .          .          .
320             .          .          .          .-------->   LE04D
319             .          .          .       LE04
                .          .          .          .
                .          .          .          .
324             .          .          .          .          .<-------   DF01I
323             .          .          .          .      DRF01I
                .          .          .          .          V
                .          .          .          .          V
325             .          .          .          .       RF01S
                .          .          .          .          .
                .          .          .          .          .
330             .          .       CE04........................
                .          .          .
                .          .          .
334             .          .          .-------->   DE04I
333             .          .       DE04
                .          .          .
                .          .          .
337       DUMMY.......................
                .
                .
339             .        E08
                .          V
                .          V
345             .       RE08
                .          .
                .          .
350             .          .        E06
                .          .          .
                .          .          .
356             .       CE06............
                .          V
                .          V
359             .       RE06
                .          .
                .          .
364             .          .        E03
                .          .          .
                .          .          .
371             .          .          .          .<-------   DF07I
370             .          .          .       DRF07
                .          .          .          V
                .          .          .          V
372             .          .          .       RF07S
                .          .          .          .
                .          .          .          .
377             .          .          .          .        E09
                .          .          .          .          .
                .          .          .          .          .
385             .          .          .          .          .-------->   LE09D
384             .          .          .          .       LE09
                .          .          .          .          .
                .          .          .          .          .
388             .          .          .       CE09............
                .          .          .          .
                .          .          .          .
393             .          .          .          .-------->   DE09I
391             .          .          .       DE09
                .          .          .          V
                .          .          .          V
396             .          .          .      RE09W
```

```
                .          .          .
                .          .          .
400             .          .          .          .<-------   DE05I
399             .          .          .      DRE05I
                .          .          .          V
                .          .          .          V
401             .          .          .       RE05S
                .          .          .          .
                .          .          .          .
406             .       CE03.................................
                .          .
                .          .
411             .          .------->   DE03I
409             .       DE03
                .          V
                .          V
414             .      RE03W
                .          .
                .          .
417             .          .        E02
                .          .          .
                .          .          .
423             .       CE02...........
                .          .
                .          .
428             .          .------->   DE02I
426             .       DE02
                .          V
                .          V
431             .      RE02W
                .          .
                .          .
434             .          .        E01
                .          .          .
                .          .          .
441             .          .          .          .<-------   DE04I
440             .          .          .      DRE04I
                .          .          .          V
                .          .          .          V
442             .          .          .       RE04S
                .          .          .          .
                .          .          .          .
447             .       CE01......................
                .          .
                .          .
452             .          .------->   DE01I
450             .       DE01
                .          .
                .          .
456             .          .          .<-------   DE01I
455             .          .      DRE01
                .          .          V
                .          .          V
457             .          .      RE01S
                .          .          .
                .          .          .
462             .          .          .        D05
                .          .          .          .
                .          .          .          .
473             .          .       CD05...........
                .          .          .
                .          .          .
478             .          .          .------->   DD05I
476             .          .       DD05
                .          .          V
                .          .          V
481             .          .      RD05S
                .          .          .
                .          .          .
488             .          .          .        D13
                .          .          .          .
                .          .          .          .
495             .          .       CD13...........
                .          .          .
                .          .          .
501             .          .          .------->   DD13I
499             .          .       DD13
                .          .          V
                .          .          V
504             .          .      RD13S
                .          .          .
```

```
511          .          .          .
             .          .          .        D04
             .          .          .         V
             .          .          .         V
518          .          .          .       RD04
             .          .          .         .
             .          .          .         .
523          .          .          .         .        D01
             .          .          .         .         .
             .          .          .         .         .
531          .          .       CD01.......................
             .          .          .
             .          .          .
536          .          .          .-------->   DD01I
534          .          .       DD01
             .          .         V
             .          .         V
539          .          .      RD01E
             .          .          .
             .          .          .
545          .          .          .         .<-------   DD05I
544          .          .          .      DRD05
             .          .          .         V
             .          .          .         V
546          .          .          .      RD05E
             .          .          .         .
             .          .          .         .
553          .          .          .         .-------->  DD052I
551          .          .          .      DD052
             .          .          .         V
             .          .          .         V
556          .          .          .     RD05S2
             .          .          .         .
             .          .          .         .
563          .          .          .         .          .<-------   DE02I
562          .          .          .         .       DRE02
             .          .          .         .          V
             .          .          .         .          V
564          .          .          .         .       RE02S
             .          .          .         .          .
             .          .          .         .          .
570          .          .          .         .          .          .<-------  DD052I
569          .          .          .         .          .     DRD052
             .          .          .         .          .          V
             .          .          .         .          .          V
571          .          .          .         .          .     RD05E2
             .          .          .         .          .          .
             .          .          .         .          .          .
576          .          .          .         .          .          .        D06
             .          .          .         .          .          .         .
             .          .          .         .          .          .         .
582          .          .          .         .       CD06.......................
             .          .          .         .          .
             .          .          .         .          .
588          .          .          .         .          .-------->   INT3I
585          .          .          .         .       INT3
             .          .          .         .          .
             .          .          .         .          .
594          .          .          .         .          .-------->   DD06I
591          .          .          .         .       DD06
             .          .          .         .          V
             .          .          .         .          V
597          .          .          .         .      RD06S
             .          .          .         .          .
             .          .          .         .          .
606          .          .          .         .          .          .<-------   DD13I
605          .          .          .         .          .      DRD13
             .          .          .         .          .          V
             .          .          .         .          .          V
607          .          .          .         .          .      RD13E
             .          .          .         .          .          .
             .          .          .         .          .          .
614          .          .          .         .          .          .        D02A
             .          .          .         .          .          .         .
             .          .          .         .          .          .         .
622          .          .          .      CD10.....................................
             .          .          .         .
             .          .          .         .
628          .          .          .         .-------->   INT6I
625          .          .          .      INT6
             .          .          .         .
```

```
635          .          .          .          .-------->  DD10I
631          .          .          .       DD10
             .          .          .         V
             .          .          .         V
638          .          .          .      RD10S
             .          .          .          .
             .          .          .          .
644          .          .          .          .       DO2B
             .          .          .          .          .
             .          .          .          .          .
652          .          .       CD02.......................
             .          .          .
             .          .          .
657          .          .          .-------->  DD02I
655          .          .       DD02
             .          .          V
             .          .          V
660          .          .      RD02E
             .          .          .
             .          .          .
665          .          .          .       D07
             .          .          .          .
             .          .          .          .
674          .          .          .          .          .<-------  DD06I
672          .          .          .          .      DRD06
             .          .          .          .          V
             .          .          .          .          V
675          .          .          .          .      RD06E
             .          .          .          .          .
             .          .          .          .          .
681          .          .          .       CD07............
             .          .          .          .
             .          .          .          .
687          .          .          .          .-------->  INT4I
684          .          .          .       INT4
             .          .          .         V
             .          .          .         V
690          .          .          .       RD07
             .          .          .          .
             .          .          .          .
697          .          .          .          .          .<-------  DD10I
695          .          .          .          .      DRD10
             .          .          .          .          V
             .          .          .          .          V
698          .          .          .          .      RD10E
             .          .          .          .          .
             .          .          .          .          .
705          .          .          .       CD11............
             .          .          .          .
             .          .          .          .
711          .          .          .          .-------->  INT7I
708          .          .          .       INT7
             .          .          .          .
             .          .          .          .
715          .          .          .          .          .<-------  DE03I
714          .          .          .          .      DRE03
             .          .          .          .          .
             .          .          .          .          .
719          .          .          .          .          .-------->  INT1I
716          .          .          .          .       INT1
             .          .          .          .          V
             .          .          .          .          V
722          .          .          .          .     RE03SA
             .          .          .          .          .
             .          .          .          .          .
732          .          .          .          .          .-------->  INT2I
729          .          .          .          .       INT2
             .          .          .          .          V
             .          .          .          .          V
735          .          .          .          .     RE03SB
             .          .          .          .          .
             .          .          .          .          .
742          .          .          .          .          .         D08
             .          .          .          .          .          .
             .          .          .          .          .          .
748          .          .          .          .       CD08............
             .          .          .          .          .
             .          .          .          .          .
754          .          .          .          .          .-------->  INT5I
751          .          .          .          .       INT5
```

```
                                                  V
                                                  V
757                                            RD08
                                                  .
                                                  .
762                                                .        D03A
                                                  .           .
                                                  .           .
769                                        CD12.......................
                                                  .
                                                  .
775                                                .-------> INT8I
772                                        INT8
                                                  V
                                                  V
778                                        RD12
                                                  .
                                                  .
785                                                .<-------   DE09I
784                                                .     DRE09I
                                                  .         V
                                                  .         V
786                                                .      RE09S
                                                  .         .
                                                  .         .
791                                                .         .        D09
                                                  .         .           .
                                                  .         .           .
798                                                .       CD09............
                                                  .         .
                                                  .         .
804                                                .         .-------> IN10I
801                                                .      INT10
                                                  .         .
                                                  .         .
807                                                .         .        D03B
                                                  .         .           .
                                                  .         .           .
814                                     CD03.................................
                                                  .
                                                  .
820                                                .-------> INT9I
817                                     INT9
                                                  .
                                                  .
823                                                .       C11
                                                  .         .
                                                  .         .
829                                                .         .       C10
                                                  .         .         .
                                                  .         .         .
836                                                .         .         .<-------   DD02I
835                                                .         .      DRD02
                                                  .         .         V
                                                  .         .         V
837                                                .         .      RD02S
                                                  .         .         .
                                                  .         .         .
844                                                .         .      CC10............
                                                  .         .         V
                                                  .         .         V
847                                                .         .      RC10
                                                  .         .         .
                                                  .         .         .
852                                                .       CC11............
                                                  .         V
                                                  .         V
855                                                .       RC11
                                                  .         .
                                                  .         .
860                                                .         .       C08
                                                  .         .         .
                                                  .         .         .
866                                                .       CC08............
                                                  .         V
                                                  .         V
869                                                .       RC08
                                                  .         .
                                                  .         .
874                                                .         .       C06
                                                  .         .         .
```

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885                 CC06............
                      .
891                   .-------> IN11I
888               INT11
                     V
                     V
894               RC06
                      .
900                   .        .<-------  DD01I
899                   .     DRD01
                      .        V
                      .        V
901                   .     RD01S
                      .        .
                      .        .
906                   .        .       C07
                      .        .         .
                      .        .         .
913                   .    CC07............
                      .        V
                      .        V
916                   .    RC07
                      .        .
                      .        .
921                   .        .       C09
                      .        .         V
                      .        .         V
927                   .        .      RC09
                      .        .         .
                      .        .         .
932                   .        .         .       C05
                      .        .         .         .
                      .        .         .         .
938                   .        .         .         .       C01
                      .        .         .         .         V
                      .        .         .         .         V
944                   .        .         .         .      RC01
                      .        .         .         .         .
                      .        .         .         .         .
949                   .        .         .         .         .         C02
                      .        .         .         .         .           .
                      .        .         .         .         .           .
955                   .    CC02.......................................................
                      .        .
                      .        .
961                   .        .-------> DC02I
958                   .    DC02
                      .        V
                      .        V
964                   .    RC02E
                      .        .
                      .        .
970                   .        .       C03
                      .        .         .
                      .        .         .
976                   .        .         .       C12
                      .        .         .         V
                      .        .         .         V
982                   .        .         .      RC12
                      .        .         .         .
                      .        .         .         .
987                   .        .         .         .       C13
                      .        .         .         .         .
                      .        .         .         .         .
994                   .        .         .      CC13............
                      .        .         .         .
                      .        .         .         .
1000                  .        .         .         .-------> IN12I
997                   .        .         .     INT12
                      .        .         .         .
                      .        .         .         .
1003                  .        .         .         .       C04
                      .        .         .         .         V
                      .        .         .         .         V
1009                  .        .         .         .      RC04
                      .        .         .         .         .
                      .        .         .         .         .
1014              CC03.......................................................
```

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                 .         .         .         V
                 .         .         .         V
1017             .         .         .      RC03
                 .         .         .         .
                 .         .         .         .
1022             .         .         .         .        B07
                 .         .         .         .         .
                 .         .         .         .         .
1028             .         .         .      CB07............
                 .         .         .         V
                 .         .         .         V
1031             .         .         .      RB07
                 .         .         .         .
                 .         .         .         .
1036             .         .         .         .        B05
                 .         .         .         .         .
                 .         .         .         .         .
1043             .         .         .         .         .-------->   LB05D
1042             .         .         .         .      LB05
                 .         .         .         .         .
                 .         .         .         .         .
1048             .         .         .         .         .           .<-------   DC02I
1046             .         .         .         .         .       DRC02
                 .         .         .         .         .          V
                 .         .         .         .         .          V
1049             .         .         .         .         .       RC02S
                 .         .         .         .         .          .
                 .         .         .         .         .          .
1055             .         .         .         .         .          .         B06
                 .         .         .         .         .          .          .
                 .         .         .         .         .          .          .
1061             .         .         .      CB05.................................
                 .         .         .         V
                 .         .         .         V
1064             .         .         .      RB05
                 .         .         .         .
                 .         .         .         .
1069             .         .         .         .        B04
                 .         .         .         .         .
                 .         .         .         .         .
1076             .         .         .         .         .-------->   LB04D
1075             .         .         .         .      LB04
                 .         .         .         .         .
                 .         .         .         .         .
1079             .         .         .         .         .         B02
                 .         .         .         .         .          .
                 .         .         .         .         .          .
1086             .         .         .         .         .          .-------->   LB02D
1085             .         .         .         .         .       LB02
                 .         .         .         .         .          V
                 .         .         .         .         .          V
1089             .         .         .         .         .       RB02
                 .         .         .         .         .          .
                 .         .         .         .         .          .
1094             .         .         .         .         .          .         B03
                 .         .         .         .         .          .          .
                 .         .         .         .         .          .          .
1100             .         .         .      CB03.................................
                 .         .         .         V
                 .         .         .         V
1103             .         .         .      RB03
                 .         .         .         .
                 .         .         .         .
1108             .         .         .         .        B01
                 .         .         .         .         .
                 .         .         .         .         .
1115             .         .         .         .         .-------->   LB01D
1114             .         .         .         .      LB01
                 .         .         .         .         .
                 .         .         .         .         .
1118             .         .         .      CB01............
                 .         .         .         V
                 .         .         .         V
1121             .         .         .      RB01
                 .         .         .         .
                 .         .         .         .
1126             .         .         .         .        B12
                 .         .         .         .         .
                 .         .         .         .         .
1133             .         .         .         .         .         B11
                 .         .         .         .         .          .
```

```
1140                                                  .------->  LB11D
1139                                            LB11
                                                  .
                                                  .
1143                                                  .        B13
                                                  .          .
                                                  .          .
1150                                                  .        .------->  LB13D
1149                                                  .      LB13
                                                  .          V
                                                  .          V
1153                                                  .      RB13
                                                  .          .
                                                  .          .
1158                                                  .        .        B14
                                                  .          .          .
                                                  .          .          .
1165                                                  .      CB14............
                                                  .          .
                                                  .          .
1171                                                  .        .------->  IN13I
1168                                                  .    INT13
                                                  .          .
                                                  .          .
1174                                      CB12.................................
                                             V
                                             V
1177                                      RB12
                                                 .
                                                 .
1182                                                 .    A01
                                                 .        .
                                                 .        .
1190                                                 .    .------->  LA01D
1189                                                 .  LA01
                                                 .        .
                                                 .        .
1193                                      CA01............
                                                 .
                                                 .
1196                                                 .    B10
                                                 .        .
                                                 .        .
1203                                                 .    .------->  LB10D
1202                                                 .  LB10
                                                 .        .
                                                 .        .
1207                                                 .        .<-------  INT1I
1206                                                 .  DRINT1
                                                 .        V
                                                 .        V
1208                                                 .  RE3ASD
                                                 .        .
                                                 .        .
1213                                                 .        .        .<-------  INT2I
1212                                                 .        .    DRINT2
                                                 .        .        .
                                                 .        .        .
1214                                                 .  CE3BSD............
                                                 .        V
                                                 .        V
1218                                                 .  RE3BSD
                                                 .        .
                                                 .        .
1223                                                 .        .        .<-------  INT3I
1222                                                 .        .    DRINT3
                                                 .        .        V
                                                 .        .        V
1224                                                 .        .    RD06SD
                                                 .        .        .
                                                 .        .        .
1230                                                 .        .        .          .<-------  INT4I
1229                                                 .        .        .      DRINT4
                                                 .        .        .          .
                                                 .        .        .          .
1231                                                 .        .    CD07SD............
                                                 .        .        V
                                                 .        .        V
1235                                                 .        .    RD07SD
                                                 .        .        .
```

```
1241                                                                  .<-------   INT5I
1240                                                            DRINT5
                                                                     .
                                                                     .
1242                                                      CD08SD.......................
                                                              V
                                                              V
1246                                                      RD08SD
                                                                 .
                                                                 .
1251                                                                 .<-------   INT6I
1250                                                            DRINT6
                                                                     V
                                                                     V
1252                                                            RD10SD
                                                                     .
                                                                     .
1258                                                                 .           .<-------   INT7I
1257                                                                 .      DRINT7
                                                                     .           .
                                                                     .           .
1259                                                            CD11SD............
                                                                     V
                                                                     V
1263                                                            RD11SD
                                                                     .
                                                                     .
1269                                                                 .           .<-------   INT8I
1268                                                                 .      DRINT8
                                                                     .           .
                                                                     .           .
1270                                                      CD12SD.......................
                                                              V
                                                              V
1274                                                      RD12SD
                                                                 .
                                                                 .
1279                                                                 .<-------   INT9I
1278                                                            DRINT9
                                                                     V
                                                                     V
1280                                                            RD03SD
                                                                     .
                                                                     .
1284                                                                 .           .<-------   IN10I
1283                                                                 .      DRIN10
                                                                     .           .
                                                                     .           .
1285                                                      CD09SD.......................
                                                              V
                                                              V
1289                                                      RD09SD
                                                                 .
                                                                 .
1294                                                                 .<-------   IN12I
1293                                                            DRIN12
                                                                     .
                                                                     .
1296                                                                 .           .<-------   IN11I
1295                                                                 .      DRIN11
                                                                     .           V
                                                                     .           V
1297                                                                 .      RC06SD
                                                                     .           .
                                                                     .           .
1302                                                      CC13SD.......................
                                                              V
                                                              V
1305                                                      RC13SD
                                                                 .
                                                                 .
1310                                                                 .<-------   IN13I
1309                                                            DRIN13
                                                                     .
                                                                     .
1311                                                      CB14SD............
                                                              V
                                                              V
1314                                                      RB14SD
```

```
(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
*                                      *                                    *                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
*              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
*            VERSION 4.1               *                                    *          609 SECOND STREET           *
*                                      *                                    *       DAVIS, CALIFORNIA 95616        *
*  RUN DATE   22JAN08  TIME  18:01:18  *                                    *           (916) 756-1104             *
*                                      *                                    *                                      *
****************************************                                    ****************************************


                    Project ID: SCOTTSDALE - Major Basin: 01 - Return Period: 100
                    ****************************************************************************
                    **                                                                        **
                    **                    Updated Granite Reef ADMP                           **
                    **                                                                        **
                    ****************************************************************************
                    ****************************************************************************
                    PROJECT:                Granite Reef Wash DMP Update
                    CLIENT:                 City of Scottsdale
                    PREPARED BY:            Psomas
                    PROJECT No:             COS              Psomas 06077-01
                    FILE NAME: PIMASD6.DAT                  CREATED DATE: Feb 26, 2007
                    MODIFIED: Jan 15, 2008 (RAK/JKK PSOMAS)
                         * ELEMENTS ADDED TO REPRESENT PIMA ROAD CONDUIT
                         * ORIGINAL CARDS STARRED-OUT
                         * COMMENT CARDS ADDED
                    STORM:                  100-year 6-hour Storm
                    DEVELOPMENT CONDITIONS: Future Conditions



                    DDM MCUHP1


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

    IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ        1000  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      4    0  ENDING DATE
                     NDTIME        1115  ENDING TIME
                      ICENT          19  CENTURY MARK

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   83.25 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

 28 JD          INDEX STORM NO. 1
                       STRM        3.20  PRECIPITATION DEPTH
                       TRDA         .01  TRANSPOSITION DRAINAGE AREA

 29 PI            PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                      .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                      .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00

 32 JD          INDEX STORM NO. 2
```

```
                STRM        3.18  PRECIPITATION DEPTH
                TRDA         .50  TRANSPOSITION DRAINAGE AREA

 0 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .05       .05       .05       .15       .15       .15       .03       .03
                .03       .01       .01       .01       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

33 JD       INDEX STORM NO. 3
                STRM        3.12  PRECIPITATION DEPTH
                TRDA        2.80  TRANSPOSITION DRAINAGE AREA

34 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00       .00       .01       .01       .01       .01       .01       .01       .03
                .03       .03       .07       .07       .07       .08       .08       .08       .05       .05
                .05       .02       .02       .02       .01       .01       .01       .00       .00       .00
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

37 JD       INDEX STORM NO. 4
                STRM        2.95  PRECIPITATION DEPTH
                TRDA       16.00  TRANSPOSITION DRAINAGE AREA

38 PI        PRECIPITATION PATTERN
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .01
                .01       .01       .00       .01       .00       .00       .00       .00       .00       .00
                .00       .00       .01       .00       .00       .00       .00       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .06       .06       .06       .07       .07       .07       .04       .04
                .04       .02       .02       .02       .01       .01       .01       .01       .01       .01
                .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .00       .00

41 JD       INDEX STORM NO. 5
                STRM        2.60  PRECIPITATION DEPTH
                TRDA       90.00  TRANSPOSITION DRAINAGE AREA

42 PI        PRECIPITATION PATTERN
                .01       .01       .01       .00       .00       .00       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .05       .05       .05       .05       .05       .05       .04       .04
                .04       .02       .02       .02       .02       .02       .02       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01

45 JD       INDEX STORM NO. 6
                STRM        1.82  PRECIPITATION DEPTH
                TRDA      500.00  TRANSPOSITION DRAINAGE AREA

46 PI        PRECIPITATION PATTERN
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .02       .02       .02       .03
                .03       .03       .04       .04       .04       .04       .04       .04       .04       .04
                .04       .03       .03       .03       .02       .02       .02       .01       .01       .01
                .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                .01       .01

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

          **************
          *            *
93 KK     *     G04    *        BASIN
          *            *
          **************

94 KO       OUTPUT CONTROL VARIABLES
```

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                    IPRNT          3  PRINT CONTROL
                    IPLOT          0  PLOT CONTROL
                    QSCAL         0.  HYDROGRAPH PLOT SCALE

              SUBBASIN RUNOFF DATA

  95 BA          SUBBASIN CHARACTERISTICS
                    TAREA        .05  SUBBASIN AREA

  96 LG          GREEN AND AMPT LOSS RATE
                    STRTL        .25  STARTING LOSS
                      DTH        .25  MOISTURE DEFICIT
                     PSIF       4.80  WETTING FRONT SUCTION
                    XKSAT        .35  HYDRAULIC CONDUCTIVITY
                    RTIMP      51.00  PERCENT IMPERVIOUS AREA

  97 UC          CLARK UNITGRAPH
                       TC        .30  TIME OF CONCENTRATION
                        R        .26  STORAGE COEFFICIENT

  98 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                      .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                   100.0
                                                          ***

                                                   UNIT HYDROGRAPH PARAMETERS
                                             CLARK   TC=   .30 HR,       R=   .26 HR
                                            SNYDER   TP=   .22 HR,      CP=   .53

                                                      UNIT HYDROGRAPH
                                                 19 END-OF-PERIOD ORDINATES
                 13.       49.       68.       58.       44.       32.       23.       17.       12.        9.
                  6.        5.        3.        2.        2.        1.        1.        1.        0.

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

                        HYDROGRAPH AT STATION      G04
                     TRANSPOSITION AREA       .0 SQ MI

    TOTAL RAINFALL =    3.20, TOTAL LOSS =     .81, TOTAL EXCESS =    2.39

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      94.      4.08                 11.          3.          1.          1.
                     (INCHES)     2.371       2.381       2.381       2.381
                      (AC-FT)        6.          6.          6.          6.

                     CUMULATIVE AREA =     .05 SQ MI

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

                        HYDROGRAPH AT STATION      G04
                     TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .81, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      93.      4.08                 11.          3.          1.          1.
                     (INCHES)     2.352       2.363       2.363       2.363
                      (AC-FT)        6.          6.          6.          6.

                     CUMULATIVE AREA =     .05 SQ MI

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

                        HYDROGRAPH AT STATION      G04
                     TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .93, TOTAL EXCESS =    2.19

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
```

```
                    (CFS)
+     59.     4.08                10.          3.          1.          1.
                  (INCHES)     2.164       2.177       2.177       2.177
                   (AC-FT)        5.          5.          5.          5.

                  CUMULATIVE AREA =     .05 SQ MI


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

                   HYDROGRAPH AT STATION      G04
                 TRANSPOSITION AREA     16.0 SQ MI

   TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.94

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     44.     4.08                 9.          2.          1.          1.
                  (INCHES)     1.924       1.937       1.937       1.937
                   (AC-FT)        5.          5.          5.          5.

                  CUMULATIVE AREA =     .05 SQ MI


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

                   HYDROGRAPH AT STATION      G04
                 TRANSPOSITION AREA     90.0 SQ MI

   TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.56

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     30.     4.17                 7.          2.          1.          1.
                  (INCHES)     1.540       1.559       1.559       1.559
                   (AC-FT)        4.          4.          4.          4.

                  CUMULATIVE AREA =     .05 SQ MI

      WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                   HYDROGRAPH AT STATION      G04
                 TRANSPOSITION AREA    500.0 SQ MI

   TOTAL RAINFALL =    1.82, TOTAL LOSS =     .89, TOTAL EXCESS =     .93

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     11.     4.33                 4.          1.          0.          0.
                  (INCHES)      .913        .929        .929        .929
                   (AC-FT)        2.          2.          2.          2.

                  CUMULATIVE AREA =     .05 SQ MI

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


                  INTERPOLATED HYDROGRAPH AT      G04

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     94.     4.08                11.          3.          1.          1.
                  (INCHES)     2.364       2.374       2.374       2.374
                   (AC-FT)        6.          6.          6.          6.

                  CUMULATIVE AREA =     .05 SQ MI
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665 KK    *     D07    *        BASIN
          *            *
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666 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

             SUBBASIN RUNOFF DATA

667 BA          SUBBASIN CHARACTERISTICS
                     TAREA         .05  SUBBASIN AREA

668 LG          GREEN AND AMPT LOSS RATE
                     STRTL         .25  STARTING LOSS
                       DTH         .25  MOISTURE DEFICIT
                      PSIF        4.80  WETTING FRONT SUCTION
                     XKSAT         .35  HYDRAULIC CONDUCTIVITY
                     RTIMP       51.00  PERCENT IMPERVIOUS AREA

669 UC          CLARK UNITGRAPH
                        TC         .51  TIME OF CONCENTRATION
                         R         .58  STORAGE COEFFICIENT

670 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                       .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                    100.0

                                                  ***

                                          UNIT HYDROGRAPH PARAMETERS
                                   CLARK   TC=   .51 HR,       R=   .58 HR
                                  SNYDER   TP=   .33 HR,      CP=   .38

                                          UNIT HYDROGRAPH
                                   40 END-OF-PERIOD ORDINATES
                 3.       13.       28.       36.       36.       34.       31.       27.       23.       20.
                17.       15.       13.       11.       10.        8.        7.        6.        5.        5.
                 4.        4.        3.        3.        2.        2.        2.        1.        1.        1.
                 1.        1.        1.        1.        1.        0.        0.        0.        0.        0.

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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA       .0 SQ MI

   TOTAL RAINFALL =    3.20, TOTAL LOSS =     .81, TOTAL EXCESS =    2.39

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     64.       4.25                12.          3.          1.          1.
                       (INCHES)    2.348       2.380       2.380       2.380
                        (AC-FT)       6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI


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

                      HYDROGRAPH AT STATION      D07
                    TRANSPOSITION AREA       .5 SQ MI

   TOTAL RAINFALL =    3.18, TOTAL LOSS =     .81, TOTAL EXCESS =    2.37

  PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     63.       4.25                12.          3.          1.          1.
                       (INCHES)    2.329       2.361       2.361       2.361
                        (AC-FT)       6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI
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                     HYDROGRAPH AT STATION      D07
                   TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .93, TOTAL EXCESS =    2.19

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                        (CFS)
+      46.      4.33                  11.          3.          1.          1.
                       (INCHES)     2.141       2.176       2.176       2.176
                        (AC-FT)       6.          6.          6.          6.

                      CUMULATIVE AREA =     .05 SQ MI

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

                     HYDROGRAPH AT STATION      D07
                   TRANSPOSITION AREA     16.0 SQ MI

    TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.01, TOTAL EXCESS =    1.94

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                        (CFS)
+      36.      4.33                  10.          3.          1.          1.
                       (INCHES)     1.897       1.936       1.936       1.936
                        (AC-FT)       5.          5.          5.          5.

                      CUMULATIVE AREA =     .05 SQ MI

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

                     HYDROGRAPH AT STATION      D07
                   TRANSPOSITION AREA     90.0 SQ MI

    TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.56

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                        (CFS)
+      25.      4.33                   8.          2.          1.          1.
                       (INCHES)     1.510       1.558       1.558       1.558
                        (AC-FT)       4.          4.          4.          4.

                      CUMULATIVE AREA =     .05 SQ MI

        WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                     HYDROGRAPH AT STATION      D07
                   TRANSPOSITION AREA    500.0 SQ MI

    TOTAL RAINFALL =    1.82, TOTAL LOSS =     .89, TOTAL EXCESS =     .93

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                        (CFS)
+      11.      4.50                   5.          1.          0.          0.
                       (INCHES)      .889        .928        .928        .928
                        (AC-FT)       2.          2.          2.          2.

                      CUMULATIVE AREA =     .05 SQ MI

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


                      INTERPOLATED HYDROGRAPH AT      D07

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
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                                        6-HR        24-HR        72-HR      83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      63.      4.25                    12.           3.           1.           1.
                        (INCHES)     2.340        2.372        2.372        2.372
                         (AC-FT)        6.           6.           6.           6.

                        CUMULATIVE AREA =      .05 SQ MI


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 906 KK     *      C07   *        BASIN
            *            *
            **************

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

               SUBBASIN RUNOFF DATA

 908 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .07  SUBBASIN AREA

 909 LG          GREEN AND AMPT LOSS RATE
                      STRTL         .25  STARTING LOSS
                        DTH         .25  MOISTURE DEFICIT
                       PSIF        4.80  WETTING FRONT SUCTION
                      XKSAT         .35  HYDRAULIC CONDUCTIVITY
                      RTIMP       50.00  PERCENT IMPERVIOUS AREA

 910 UC          CLARK UNITGRAPH
                         TC         .67  TIME OF CONCENTRATION
                          R         .70  STORAGE COEFFICIENT

 911 UA          ACCUMULATED-AREA VS. TIME,  11 ORDINATES
                        .0       5.0      16.0      30.0      65.0      77.0      84.0      90.0      94.0      97.0
                     100.0
                                                          ***

                                                   UNIT HYDROGRAPH PARAMETERS
                                             CLARK   TC=    .67 HR,       R=   .70 HR
                                            SNYDER   TP=    .41 HR,      CP=   .38

                                                     UNIT HYDROGRAPH
                                                 48 END-OF-PERIOD ORDINATES
                 2.        9.       24.       38.       43.       43.       41.       39.       36.       32.
                28.       25.       22.       20.       18.       16.       14.       12.       11.       10.
                 9.        8.        7.        6.        5.        5.        4.        4.        3.        3.
                 3.        2.        2.        2.        2.        1.        1.        1.        1.        1.
                 1.        1.        1.        1.        0.        0.        0.        0.

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

                         HYDROGRAPH AT STATION      C07
                       TRANSPOSITION AREA       .0 SQ MI

   TOTAL RAINFALL =    3.20, TOTAL LOSS =     .83, TOTAL EXCESS =    2.37

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR      83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      79.      4.33                    18.           5.           2.           1.
                        (INCHES)     2.315        2.362        2.362        2.362
                         (AC-FT)        9.           9.           9.           9.

                        CUMULATIVE AREA =      .07 SQ MI

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                         HYDROGRAPH AT STATION      C07
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                    TRANSPOSITION AREA       .5 SQ MI

    TOTAL RAINFALL =    3.18, TOTAL LOSS =     .82, TOTAL EXCESS =    2.35

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+      78.      4.33                  18.         5.          2.          1.
                        (INCHES)    2.297       2.343       2.343       2.343
                         (AC-FT)      9.          9.          9.          9.

                        CUMULATIVE AREA =     .07 SQ MI


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

                       HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA      2.8 SQ MI

    TOTAL RAINFALL =    3.12, TOTAL LOSS =     .95, TOTAL EXCESS =    2.17

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+      60.      4.42                  16.         4.          1.          1.
                        (INCHES)    2.107       2.156       2.156       2.156
                         (AC-FT)      8.          8.          8.          8.

                        CUMULATIVE AREA =     .07 SQ MI


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

                       HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA     16.0 SQ MI

    TOTAL RAINFALL =    2.95, TOTAL LOSS =    1.03, TOTAL EXCESS =    1.92

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+      47.      4.42                  14.         4.          1.          1.
                        (INCHES)    1.860       1.914       1.914       1.914
                         (AC-FT)      7.          7.          7.          7.

                        CUMULATIVE AREA =     .07 SQ MI


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

                       HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA     90.0 SQ MI

    TOTAL RAINFALL =    2.60, TOTAL LOSS =    1.05, TOTAL EXCESS =    1.54

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+      33.      4.42                  11.         3.          1.          1.
                        (INCHES)    1.473       1.536       1.536       1.536
                         (AC-FT)      6.          6.          6.          6.

                        CUMULATIVE AREA =     .07 SQ MI

        WARNING EXCESS AT PONDING LESS THAN ZERO FOR PERIOD. EXCESS SET TO ZERO

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

                       HYDROGRAPH AT STATION      C07
                    TRANSPOSITION AREA    500.0 SQ MI

    TOTAL RAINFALL =    1.82, TOTAL LOSS =     .91, TOTAL EXCESS =     .91

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
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+      15.      4.58                    7.          2.          1.          1.
                          (INCHES)    .861        .910        .910        .910
                           (AC-FT)      3.          3.          3.          3.

                         CUMULATIVE AREA =     .07 SQ MI

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


                         INTERPOLATED HYDROGRAPH AT      C07

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                            (CFS)
+      78.      4.33                   18.          5.          2.          1.
                          (INCHES)   2.306       2.353       2.353       2.353
                           (AC-FT)      9.          9.          9.          9.

                         CUMULATIVE AREA =     .07 SQ MI


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            *            *
1224 KK     *    RD06SD  *
            *            *
            **************

1225 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
                               CREATED (9/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM 86TH ST TO 87TH ST
                               ALONG OSBORN RD

              HYDROGRAPH ROUTING DATA

1228 RK          KINEMATIC WAVE STREAM ROUTING
                          L        540.  CHANNEL LENGTH
                          S       .0065  SLOPE
                          N        .013  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD       10.00  BOTTOM WIDTH OR DIAMETER
                          Z         .00  SIDE SLOPE
                     NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS

                                                   ***
                                  COMPUTED KINEMATIC PARAMETERS
                                       VARIABLE TIME STEP
                                    (DT SHOWN IS A MINIMUM)

                 ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                   (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                 MAIN         1.99      1.67        .26    180.00    281.25    265.26      1.86     24.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2516E+02  EXCESS= .0000E+00 OUTFLOW= .2515E+02 BASIN STORAGE= .1360E-06 PERCENT ERROR=    .0

                                  INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                 MAIN         1.99      1.67       5.00              280.58    265.00      1.86

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

                        HYDROGRAPH AT STATION   RD06SD
                      TRANSPOSITION AREA       .0 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
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                    (CFS)
+     281.     4.42                50.        13.        4.         4.
                  (INCHES)       1.836      1.858      1.858      1.858
                   (AC-FT)        25.        25.        25.        25.

                 CUMULATIVE AREA =     .25 SQ MI

                          COMPUTED KINEMATIC PARAMETERS
                              VARIABLE TIME STEP
                           (DT SHOWN IS A MINIMUM)

              ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

              MAIN         1.99      1.67        .26    180.00    278.42   265.32       1.84     23.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2492E+02  EXCESS= .0000E+00 OUTFLOW= .2492E+02 BASIN STORAGE= .1360E-06 PERCENT ERROR=    .0

                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

              MAIN         1.99      1.67       5.00              277.70   265.00       1.84

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

                 HYDROGRAPH AT STATION   RD06SD
               TRANSPOSITION AREA        .5 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR      72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     278.     4.42                50.        13.        4.         4.
                  (INCHES)       1.819      1.840      1.840      1.840
                   (AC-FT)        25.        25.        25.        25.

                 CUMULATIVE AREA =     .25 SQ MI

                          COMPUTED KINEMATIC PARAMETERS
                              VARIABLE TIME STEP
                           (DT SHOWN IS A MINIMUM)

              ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

              MAIN         1.99      1.67        .30    180.00    198.20   270.17       1.62     20.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2201E+02  EXCESS= .0000E+00 OUTFLOW= .2201E+02 BASIN STORAGE= .1250E-06 PERCENT ERROR=    .0

                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

              MAIN         1.99      1.67       5.00              198.18   270.00       1.63

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

                 HYDROGRAPH AT STATION   RD06SD
               TRANSPOSITION AREA      2.8 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR      72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     198.     4.50                44.        11.        4.         3.
                  (INCHES)       1.602      1.625      1.625      1.625
                   (AC-FT)        22.        22.        22.        22.

                 CUMULATIVE AREA =     .25 SQ MI

                          COMPUTED KINEMATIC PARAMETERS
                              VARIABLE TIME STEP
                           (DT SHOWN IS A MINIMUM)

              ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
```

			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.99	1.67	.26	180.00	146.76	270.02	1.37	18.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1858E+02 EXCESS= .0000E+00 OUTFLOW= .1858E+02 BASIN STORAGE= .1428E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.99	1.67	5.00	146.76	270.00	1.37

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HYDROGRAPH AT STATION RD06SD
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)					
		(CFS)				
+ 147.	4.50		37.	9.	3.	3.
		(INCHES)	1.347	1.372	1.372	1.372
		(AC-FT)	18.	19.	19.	19.

CUMULATIVE AREA = .25 SQ MI

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.99	1.67	.25	180.00	100.17	275.60	1.03	15.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1397E+02 EXCESS= .0000E+00 OUTFLOW= .1397E+02 BASIN STORAGE= .1160E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.99	1.67	5.00	99.49	275.00	1.03

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HYDROGRAPH AT STATION RD06SD
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)					
		(CFS)				
+ 99.	4.58		27.	7.	2.	2.
		(INCHES)	1.001	1.031	1.031	1.031
		(AC-FT)	14.	14.	14.	14.

CUMULATIVE AREA = .25 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO PEAK	VOLUME	MAXIMUM CELERITY
			(MIN)	(FT)	(CFS)	(MIN)	(IN)	(FPS)
MAIN	1.99	1.67	.45	180.00	27.64	276.07	.48	9.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6508E+01 EXCESS= .0000E+00 OUTFLOW= .6508E+01 BASIN STORAGE= .1244E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

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                MAIN          1.99      1.67       5.00                27.61    275.00       .48

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

                     HYDROGRAPH AT STATION   RD06SD
                   TRANSPOSITION AREA    500.0 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                           (CFS)
+     28.       4.58                     12.         3.          1.          1.
                         (INCHES)      .456       .480        .480        .480
                          (AC-FT)        6.         7.          7.          7.

                         CUMULATIVE AREA =     .25 SQ MI

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


                        INTERPOLATED HYDROGRAPH AT   RD06SD

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                           (CFS)
+    278.       4.42                     50.        13.          4.          4.
                         (INCHES)     1.822      1.843       1.843       1.843
                          (AC-FT)       25.        25.         25.         25.

                         CUMULATIVE AREA =     .25 SQ MI


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            *            *
1235 KK     *    RD07SD  *
            *            *
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1236 KO          OUTPUT CONTROL VARIABLES
                       IPRNT          3  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE
                                 CREATED (9/12/07 RAK) TO REPRESENT CONDUIT FLOW FROM OSBORN RD AND
                                 87TH ST TO EARLL DR AND PIMA RD

             HYDROGRAPH ROUTING DATA

1239 RK          KINEMATIC WAVE STREAM ROUTING
                           L        700.  CHANNEL LENGTH
                           S       .0065  SLOPE
                           N        .013  CHANNEL ROUGHNESS COEFFICIENT
                          CA         .00  CONTRIBUTING AREA
                       SHAPE        TRAP  CHANNEL SHAPE
                          WD       10.00  BOTTOM WIDTH OR DIAMETER
                           Z         .00  SIDE SLOPE
                      NDXMIN          10  MINIMUM NUMBER OF DX INTERVALS

                                                   ***
                                  COMPUTED KINEMATIC PARAMETERS
                                       VARIABLE TIME STEP
                                    (DT SHOWN IS A MINIMUM)

                 ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                  (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                MAIN          1.99      1.67        .06     70.00    333.68   265.46       1.50     25.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3100E+02  EXCESS= .0000E+00 OUTFLOW= .3099E+02 BASIN STORAGE= .6511E-06 PERCENT ERROR=     .0
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INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.99	1.67	5.00	332.19	265.00	1.50

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

HYDROGRAPH AT STATION RD07SD
TRANSPOSITION AREA .0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)					
		(CFS)				
+ 332.	4.42		62.	16.	5.	5.
		(INCHES)	1.484	1.503	1.503	1.503
		(AC-FT)	31.	31.	31.	31.

CUMULATIVE AREA = .39 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.99	1.67	.06	70.00	330.37	265.44	1.49	25.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3071E+02 EXCESS= .0000E+00 OUTFLOW= .3071E+02 BASIN STORAGE= .6372E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.99	1.67	5.00	328.88	265.00	1.49

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

HYDROGRAPH AT STATION RD07SD
TRANSPOSITION AREA .5 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)					
		(CFS)				
+ 329.	4.42		61.	15.	5.	4.
		(INCHES)	1.470	1.489	1.489	1.489
		(AC-FT)	30.	31.	31.	31.

CUMULATIVE AREA = .39 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	1.99	1.67	.20	70.00	238.35	269.94	1.32	22.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2733E+02 EXCESS= .0000E+00 OUTFLOW= .2733E+02 BASIN STORAGE= .6284E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	1.99	1.67	5.00	238.35	270.00	1.32

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

HYDROGRAPH AT STATION RD07SD
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)				

```
                    (CFS)
+     238.     4.50                54.         14.         5.          4.
                (INCHES)         1.305       1.325       1.325       1.325
                 (AC-FT)          27.         27.         27.         27.

                CUMULATIVE AREA =     .39 SQ MI

                          COMPUTED KINEMATIC PARAMETERS
                               VARIABLE TIME STEP
                            (DT SHOWN IS A MINIMUM)

            ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
                                              (MIN)     (FT)     (CFS)    (MIN)       (IN)      (FPS)

            MAIN         1.99      1.67        .21     70.00    178.23   270.16       1.13     20.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2333E+02  EXCESS= .0000E+00 OUTFLOW= .2332E+02 BASIN STORAGE= .6335E-06 PERCENT ERROR=    .0

                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

            MAIN         1.99      1.67       5.00              178.21   270.00       1.13

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

                 HYDROGRAPH AT STATION   RD07SD
               TRANSPOSITION AREA     16.0 SQ MI

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     178.     4.50                46.         12.         4.          3.
                (INCHES)         1.108       1.130       1.130       1.130
                 (AC-FT)          23.         23.         23.         23.

                CUMULATIVE AREA =     .39 SQ MI

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

                          COMPUTED KINEMATIC PARAMETERS
                               VARIABLE TIME STEP
                            (DT SHOWN IS A MINIMUM)

            ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                          PEAK                  CELERITY
                                              (MIN)     (FT)     (CFS)    (MIN)       (IN)      (FPS)

            MAIN         1.99      1.67        .12     70.00    120.25   275.74        .86     17.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1781E+02  EXCESS= .0000E+00 OUTFLOW= .1781E+02 BASIN STORAGE= .6138E-06 PERCENT ERROR=    .0

                          INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

            MAIN         1.99      1.67       5.00              119.11   275.00        .86

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

                 HYDROGRAPH AT STATION   RD07SD
               TRANSPOSITION AREA     90.0 SQ MI

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                    (CFS)
+     119.     4.58                35.          9.         3.          3.
                (INCHES)          .836        .863        .863        .863
                 (AC-FT)          17.         18.         18.         18.

                CUMULATIVE AREA =     .39 SQ MI

                          COMPUTED KINEMATIC PARAMETERS
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                                        VARIABLE TIME STEP
                                      (DT SHOWN IS A MINIMUM)

                ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)    (MIN)       (IN)      (FPS)

                MAIN         1.99      1.67       .27     70.00     37.55   275.99        .43     10.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8831E+01  EXCESS= .0000E+00 OUTFLOW= .8830E+01 BASIN STORAGE= .6301E-06 PERCENT ERROR=    .0

                                      INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                MAIN         1.99      1.67      5.00              37.52   275.00        .43

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

                     HYDROGRAPH AT STATION   RD07SD
                   TRANSPOSITION AREA    500.0 SQ MI

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     83.25-HR
+  (CFS)       (HR)
                        (CFS)
+     38.      4.58                17.         4.          1.          1.
                      (INCHES)    .406        .428        .428        .428
                       (AC-FT)      8.          9.          9.          9.

                      CUMULATIVE AREA =     .39 SQ MI

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


                      INTERPOLATED HYDROGRAPH AT   RD07SD

 PEAK FLOW     TIME                        MAXIMUM AVERAGE FLOW
                                  6-HR       24-HR       72-HR     83.25-HR
+  (CFS)       (HR)
                        (CFS)
+    329.      4.42                61.        16.          5.          4.
                      (INCHES)   1.471      1.490       1.490       1.490
                       (AC-FT)     30.        31.         31.         31.

                      CUMULATIVE AREA =     .39 SQ MI


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


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            *            *
1252 KK     *    RD10SD  *
            *            *
            **************

1253 KO          OUTPUT CONTROL VARIABLES
                      IPRNT          3  PRINT CONTROL
                      IPLOT          0  PLOT CONTROL
                      QSCAL         0.  HYDROGRAPH PLOT SCALE
                               CREATED (6/25/07 RAK) TO REPRESENT CONDUIT FLOW FROM 86TH ST TO 87TH ST
                               ALONG EARLL DR

                HYDROGRAPH ROUTING DATA

1256 RK          KINEMATIC WAVE STREAM ROUTING
                          L        565.  CHANNEL LENGTH
                          S       .0046  SLOPE
                          N        .013  CHANNEL ROUGHNESS COEFFICIENT
                         CA         .00  CONTRIBUTING AREA
                      SHAPE        TRAP  CHANNEL SHAPE
                         WD        6.00  BOTTOM WIDTH OR DIAMETER
                          Z         .00  SIDE SLOPE
                     NDXMIN           5  MINIMUM NUMBER OF DX INTERVALS

                                                  ***
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COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.19	113.00	204.86	265.15	1.58	23.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2178E+02 EXCESS= .0000E+00 OUTFLOW= .2178E+02 BASIN STORAGE= .9576E-07 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	204.83	265.00	1.58

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

HYDROGRAPH AT STATION RD10SD
TRANSPOSITION AREA .0 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW	6-HR	24-HR	72-HR	83.25-HR
+		(CFS)	44.	11.	4.	3.
+ 205.	4.42	(INCHES)	1.568	1.583	1.583	1.583
		(AC-FT)	22.	22.	22.	22.

CUMULATIVE AREA = .26 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.19	113.00	202.89	265.17	1.57	23.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2160E+02 EXCESS= .0000E+00 OUTFLOW= .2160E+02 BASIN STORAGE= .1123E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	202.87	265.00	1.57

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

HYDROGRAPH AT STATION RD10SD
TRANSPOSITION AREA .5 SQ MI

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW	6-HR	24-HR	72-HR	83.25-HR
+		(CFS)	43.	11.	4.	3.
+ 203.	4.42	(INCHES)	1.555	1.570	1.570	1.570
		(AC-FT)	21.	22.	22.	22.

CUMULATIVE AREA = .26 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.17	113.00	157.10	265.43	1.44	21.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1984E+02 EXCESS= .0000E+00 OUTFLOW= .1984E+02 BASIN STORAGE= .9391E-07 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	156.86	265.00	1.44

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

HYDROGRAPH AT STATION RD10SD
TRANSPOSITION AREA 2.8 SQ MI

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	83.25-HR
+	(CFS)	(HR)				
			(CFS)			
+	157.	4.42	40.	10.	3.	3.
			(INCHES) 1.425	1.442	1.442	1.442
			(AC-FT) 20.	20.	20.	20.

CUMULATIVE AREA = .26 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.16	113.00	122.11	265.77	1.29	19.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1770E+02 EXCESS= .0000E+00 OUTFLOW= .1770E+02 BASIN STORAGE= .9074E-07 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	121.98	270.00	1.29

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

HYDROGRAPH AT STATION RD10SD
TRANSPOSITION AREA 16.0 SQ MI

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	83.25-HR
+	(CFS)	(HR)				
			(CFS)			
+	122.	4.50	35.	9.	3.	3.
			(INCHES) 1.267	1.287	1.287	1.287
			(AC-FT) 17.	18.	18.	18.

CUMULATIVE AREA = .26 SQ MI

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.26	113.00	83.83	270.49	1.04	16.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1425E+02 EXCESS= .0000E+00 OUTFLOW= .1425E+02 BASIN STORAGE= .9609E-07 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	83.79	270.00	1.04

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

HYDROGRAPH AT STATION RD10SD

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                    TRANSPOSITION AREA     90.0 SQ MI

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+  (CFS)       (HR)
                         (CFS)
+     84.      4.50                  28.          7.          2.          2.
                      (INCHES)     1.009       1.036       1.036       1.036
                       (AC-FT)       14.         14.         14.         14.

                      CUMULATIVE AREA =     .26 SQ MI

                                COMPUTED KINEMATIC PARAMETERS
                                     VARIABLE TIME STEP
                                (DT SHOWN IS A MINIMUM)

                 ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                              PEAK                  CELERITY
                                                   (MIN)     (FT)     (CFS)    (MIN)      (IN)      (FPS)

                 MAIN         2.35      1.67        .25    113.00     36.92   275.66       .61      11.80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8374E+01  EXCESS= .0000E+00 OUTFLOW= .8373E+01 BASIN STORAGE= .1112E-06 PERCENT ERROR=    .0

                                INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                 MAIN         2.35      1.67       5.00                36.90   275.00       .61

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

                      HYDROGRAPH AT STATION   RD10SD
                    TRANSPOSITION AREA    500.0 SQ MI

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+  (CFS)       (HR)
                         (CFS)
+     37.      4.58                  16.          4.          1.          1.
                      (INCHES)      .588        .609        .609        .609
                       (AC-FT)        8.          8.          8.          8.

                      CUMULATIVE AREA =     .26 SQ MI

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


                    INTERPOLATED HYDROGRAPH AT   RD10SD

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+  (CFS)       (HR)
                         (CFS)
+    203.      4.42                  43.         11.          4.          3.
                      (INCHES)     1.557       1.572       1.572       1.572
                       (AC-FT)       21.         22.         22.         22.

                      CUMULATIVE AREA =     .26 SQ MI


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


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          *            *
1263 KK   *    RD11SD  *
          *            *
          **************

1264 KO         OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                              CREATED (6/25/07 RAK) TO REPRESENT CONDUIT FLOW FROM 87TH ST TO PIMA RD
                              ALONG EARLL DR
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HYDROGRAPH ROUTING DATA

1267 RK KINEMATIC WAVE STREAM ROUTING

L	595.	CHANNEL LENGTH
S	.0046	SLOPE
N	.013	CHANNEL ROUGHNESS COEFFICIENT
CA	.00	CONTRIBUTING AREA
SHAPE	TRAP	CHANNEL SHAPE
WD	6.00	BOTTOM WIDTH OR DIAMETER
Z	.00	SIDE SLOPE
NDXMIN	5	MINIMUM NUMBER OF DX INTERVALS

***

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.21	119.00	225.73	265.11	.92	24.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2455E+02 EXCESS= .0000E+00 OUTFLOW= .2455E+02 BASIN STORAGE= .3212E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	225.68	265.00	.92

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

HYDROGRAPH AT STATION RD11SD
TRANSPOSITION AREA .0 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+		(CFS)				
+ 226.	4.42		49.	12.	4.	4.
		(INCHES)	.915	.925	.925	.925
		(AC-FT)	24.	25.	25.	25.

CUMULATIVE AREA = .50 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.21	119.00	223.71	265.26	.92	24.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2436E+02 EXCESS= .0000E+00 OUTFLOW= .2436E+02 BASIN STORAGE= .3359E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	223.67	265.00	.92

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

HYDROGRAPH AT STATION RD11SD
TRANSPOSITION AREA .5 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+		(CFS)				
+ 224.	4.42		49.	12.	4.	4.
		(INCHES)	.908	.918	.918	.918
		(AC-FT)	24.	24.	24.	24.

CUMULATIVE AREA = .50 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.19	119.00	173.58	265.53	.85	21.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2247E+02 EXCESS= .0000E+00 OUTFLOW= .2247E+02 BASIN STORAGE= .3152E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	173.25	265.00	.85

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

HYDROGRAPH AT STATION RD11SD
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+ 173.	4.42	(CFS)	45.	11.	4.	3.
		(INCHES)	.835	.846	.846	.846
		(AC-FT)	22.	22.	22.	22.

CUMULATIVE AREA = .50 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	2.35	1.67	.19	119.00	135.86	270.11	.76	19.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2021E+02 EXCESS= .0000E+00 OUTFLOW= .2021E+02 BASIN STORAGE= .3385E-06 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	2.35	1.67	5.00	135.86	270.00	.76

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

HYDROGRAPH AT STATION RD11SD
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+ 136.	4.50	(CFS)	40.	10.	3.	3.
		(INCHES)	.748	.761	.761	.761
		(AC-FT)	20.	20.	20.	20.

CUMULATIVE AREA = .50 SQ MI

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

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

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COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT	DX	PEAK	TIME TO	VOLUME	MAXIMUM

```
                                                                                PEAK                CELERITY
                                                   (MIN)      (FT)      (CFS)    (MIN)       (IN)      (FPS)

                MAIN          2.35      1.67        .15    119.00     94.41   270.55        .62     17.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1646E+02  EXCESS= .0000E+00 OUTFLOW= .1646E+02 BASIN STORAGE= .3376E-06 PERCENT ERROR=     .0

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                MAIN          2.35      1.67       5.00                94.34   270.00        .62

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

                     HYDROGRAPH AT STATION   RD11SD
                   TRANSPOSITION AREA     90.0 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      94.      4.50                 32.         8.          3.          2.
                        (INCHES)    .603       .620        .620        .620
                         (AC-FT)     16.        16.         16.         16.

                       CUMULATIVE AREA =     .50 SQ MI


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

                                  COMPUTED KINEMATIC PARAMETERS
                                      VARIABLE TIME STEP
                                   (DT SHOWN IS A MINIMUM)

                ELEMENT    ALPHA       M          DT         DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                PEAK                CELERITY
                                                   (MIN)      (FT)      (CFS)    (MIN)       (IN)      (FPS)

                MAIN          2.35      1.67        .19    119.00     42.56   275.66        .37     12.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9831E+01  EXCESS= .0000E+00 OUTFLOW= .9831E+01 BASIN STORAGE= .3340E-06 PERCENT ERROR=     .0

                                        INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                MAIN          2.35      1.67       5.00                42.53   275.00        .37

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

                     HYDROGRAPH AT STATION   RD11SD
                   TRANSPOSITION AREA    500.0 SQ MI

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+      43.      4.58                 19.         5.          2.          1.
                        (INCHES)    .357       .370        .370        .370
                         (AC-FT)      9.        10.         10.         10.

                       CUMULATIVE AREA =     .50 SQ MI

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


                   INTERPOLATED HYDROGRAPH AT   RD11SD

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                          (CFS)
+     224.      4.42                 49.        12.          4.          4.
                        (INCHES)    .908       .918        .918        .918
                         (AC-FT)     24.        24.         24.         24.
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                    CUMULATIVE AREA =     .50 SQ MI

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

          **************
          *            *
1297 KK   *    RC06SD  *
          *            *
          **************

1298 KO        OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                             CREATED (6/13/07 RAK) TO REPRESENT FLOW FROM THE MCDOWELL RD BOX CULVERT
                             TO THE PIMA ROAD CONDUIT

             HYDROGRAPH ROUTING DATA

1301 RK        KINEMATIC WAVE STREAM ROUTING
                       L       1744.  CHANNEL LENGTH
                       S       .0040  SLOPE
                       N        .014  CHANNEL ROUGHNESS COEFFICIENT
                      CA         .00  CONTRIBUTING AREA
                   SHAPE        CIRC  CHANNEL SHAPE
                      WD        8.00  BOTTOM WIDTH OR DIAMETER
                       Z         .00  SIDE SLOPE
                  NDXMIN           2  MINIMUM NUMBER OF DX INTERVALS
                                                        ***
                                 COMPUTED KINEMATIC PARAMETERS
                                      VARIABLE TIME STEP
                                   (DT SHOWN IS A MINIMUM)

                 ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                             PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                 MAIN         5.14      1.25       .66    581.33    543.30    261.35      2.08     16.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4895E+02  EXCESS= .0000E+00 OUTFLOW= .4895E+02 BASIN STORAGE= .5584E-12 PERCENT ERROR=    .0

                                 INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                 MAIN         5.14      1.25      5.00              536.69    260.00      2.08

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

                   HYDROGRAPH AT STATION   RC06SD
                  TRANSPOSITION AREA       .0 SQ MI

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR     83.25-HR
+   (CFS)       (HR)
                         (CFS)
+     537.      4.33                98.         25.          8.           7.
                       (INCHES)    2.060       2.077       2.077        2.077
                        (AC-FT)     49.         49.         49.          49.

                    CUMULATIVE AREA =     .44 SQ MI

                                 COMPUTED KINEMATIC PARAMETERS
                                      VARIABLE TIME STEP
                                   (DT SHOWN IS A MINIMUM)

                 ELEMENT    ALPHA       M        DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                             PEAK                  CELERITY
                                                (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                 MAIN         5.14      1.25       .66    581.33    538.38    261.50      2.06     16.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4854E+02  EXCESS= .0000E+00 OUTFLOW= .4854E+02 BASIN STORAGE= .5557E-12 PERCENT ERROR=    .0
```

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	5.14	1.25	5.00	532.14	260.00	2.06

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

HYDROGRAPH AT STATION RC06SD
TRANSPOSITION AREA .5 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+		(CFS)				
+ 532.	4.33		97.	24.	8.	7.
		(INCHES)	2.043	2.060	2.060	2.060
		(AC-FT)	48.	49.	49.	49.

CUMULATIVE AREA = .44 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	5.14	1.25	.76	581.33	389.26	266.32	1.87	15.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4406E+02 EXCESS= .0000E+00 OUTFLOW= .4406E+02 BASIN STORAGE= .5486E-12 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	5.14	1.25	5.00	388.23	265.00	1.87

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

HYDROGRAPH AT STATION RC06SD
TRANSPOSITION AREA 2.8 SQ MI

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+		(CFS)				
+ 388.	4.42		88.	22.	7.	6.
		(INCHES)	1.849	1.870	1.870	1.870
		(AC-FT)	44.	44.	44.	44.

CUMULATIVE AREA = .44 SQ MI

*** FDKRUT WARNING TIME STEP CALCULATION FAILED TO CONVERGE. STABILITY PROBLEMS MAY RESULT

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	5.14	1.25	.82	581.33	294.58	266.00	1.63	14.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3843E+02 EXCESS= .0000E+00 OUTFLOW= .3843E+02 BASIN STORAGE= .5659E-12 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	5.14	1.25	5.00	293.85	265.00	1.63

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

HYDROGRAPH AT STATION RC06SD
TRANSPOSITION AREA 16.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)	(CFS)				
+ 294.	4.42		76.	19.	6.	6.
		(INCHES)	1.609	1.631	1.631	1.631
		(AC-FT)	38.	38.	38.	38.

CUMULATIVE AREA = .44 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	5.14	1.25	.76	581.33	195.44	266.47	1.28	13.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3025E+02 EXCESS= .0000E+00 OUTFLOW= .3025E+02 BASIN STORAGE= .5626E-12 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	5.14	1.25	5.00	194.36	265.00	1.28

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

HYDROGRAPH AT STATION RC06SD
TRANSPOSITION AREA 90.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)	(CFS)				
+ 194.	4.42		60.	15.	5.	4.
		(INCHES)	1.253	1.283	1.283	1.283
		(AC-FT)	30.	30.	30.	30.

CUMULATIVE AREA = .44 SQ MI

COMPUTED KINEMATIC PARAMETERS
VARIABLE TIME STEP
(DT SHOWN IS A MINIMUM)

ELEMENT	ALPHA	M	DT (MIN)	DX (FT)	PEAK (CFS)	TIME TO PEAK (MIN)	VOLUME (IN)	MAXIMUM CELERITY (FPS)
MAIN	5.14	1.25	.96	581.33	86.64	271.81	.79	11.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1852E+02 EXCESS= .0000E+00 OUTFLOW= .1852E+02 BASIN STORAGE= .5378E-12 PERCENT ERROR= .0

INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

MAIN	5.14	1.25	5.00	86.39	275.00	.79

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

HYDROGRAPH AT STATION RC06SD
TRANSPOSITION AREA 500.0 SQ MI

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
+ (CFS)	(HR)	(CFS)				
+ 86.	4.58		36.	9.	3.	3.
		(INCHES)	.760	.786	.786	.786
		(AC-FT)	18.	19.	19.	19.

CUMULATIVE AREA = .44 SQ MI

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

INTERPOLATED HYDROGRAPH AT RC06SD

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	83.25-HR
532.	4.33	(CFS)	97.	24.	8.	7.
		(INCHES)	2.043	2.061	2.061	2.061
		(AC-FT)	48.	49.	49.	49.

CUMULATIVE AREA = .44 SQ MI

1

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

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	G03	188.	4.17	25.	6.	2.	.09		
DIVERSION TO	DG03I	96.	4.17	13.	3.	1.	.09		
HYDROGRAPH AT	DG03	92.	4.17	12.	3.	1.	.09		
ROUTED TO	RG03S	84.	4.25	12.	3.	1.	.09		
HYDROGRAPH AT	G01	62.	4.25	13.	3.	1.	.05		
2 COMBINED AT	CG01	146.	4.25	25.	6.	2.	.10		
DIVERSION TO	DG01I	104.	4.25	18.	5.	2.	.10		
HYDROGRAPH AT	DG01	42.	4.25	7.	2.	1.	.10		
ROUTED TO	RG01S	39.	4.67	7.	2.	1.	.10		
HYDROGRAPH AT	F04	74.	4.25	17.	4.	1.	.06		
HYDROGRAPH AT	G04	94.	4.08	11.	3.	1.	.05		
ROUTED TO	RG04	92.	4.17	11.	3.	1.	.05		
HYDROGRAPH AT	G05	96.	4.08	13.	3.	1.	.05		
ROUTED TO	RG05	95.	4.25	13.	3.	1.	.05		
HYDROGRAPH AT	G06	333.	4.08	37.	9.	3.	.13		
DIVERSION TO	LG06D	226.	3.92	16.	4.	1.	.13		
HYDROGRAPH AT	LG06	333.	4.08	21.	5.	2.	.13		
DIVERSION TO	DG06I	142.	4.08	9.	2.	1.	.13		
HYDROGRAPH AT	DG06	191.	4.08	12.	3.	1.	.13		

	DIVERSION TO							
+		LG06AD	191.	4.08	9.	2.	1.	.13
	HYDROGRAPH AT							
+		LG06A	43.	4.42	3.	1.	0.	.13
	HYDROGRAPH AT							
+		G02	100.	4.25	19.	5.	2.	.08
	4 COMBINED AT							
+		CG02	283.	4.25	46.	12.	4.	.23
	ROUTED TO							
+		RG02	283.	4.33	46.	12.	4.	.23
	HYDROGRAPH AT							
+		F06	151.	4.25	26.	6.	2.	.10
	2 COMBINED AT							
+		CF06	427.	4.33	71.	18.	6.	.33
	ROUTED TO							
+		RF06	425.	4.33	71.	18.	6.	.33
	HYDROGRAPH AT							
+		F05	137.	4.25	22.	6.	2.	.09
	2 COMBINED AT							
+		CF05	552.	4.33	94.	24.	8.	.42
	DIVERSION TO							
+		DF05I	503.	4.33	68.	17.	6.	.42
	HYDROGRAPH AT							
+		DF05	49.	3.92	25.	6.	2.	.42
	ROUTED TO							
+		RF05W	49.	4.00	25.	6.	2.	.42
	3 COMBINED AT							
+		CF04	147.	4.50	49.	12.	4.	.17
	DIVERSION TO							
+		DF04I	80.	4.50	26.	7.	2.	.17
	HYDROGRAPH AT							
+		DF04	67.	4.50	23.	6.	2.	.17
	HYDROGRAPH AT							
+		F05R	503.	4.33	68.	17.	6.	.42
	ROUTED TO							
+		RF05S	492.	4.42	68.	17.	6.	.42
	HYDROGRAPH AT							
+		F03	243.	4.25	45.	11.	4.	.17
	2 COMBINED AT							
+		CF03	705.	4.42	112.	28.	9.	.56
	ROUTED TO							
+		RF03	700.	4.42	112.	28.	9.	.56
	HYDROGRAPH AT							
+		G06R	142.	4.08	9.	2.	1.	.13
	ROUTED TO							
+		RG06S	127.	4.42	9.	2.	1.	.13
	HYDROGRAPH AT							
+		F07	392.	4.25	72.	18.	6.	.25
	DIVERSION TO							
+		LF07D	381.	4.17	31.	8.	3.	.25
	HYDROGRAPH AT							
+		LF07	370.	4.33	42.	10.	3.	.25
	2 COMBINED AT							
+		CF07	462.	4.42	51.	13.	4.	.31

	DIVERSION TO						
+		DF07I	449.	4.42	45.	11.	4.	.31
	HYDROGRAPH AT						
+		DF07	16.	6.33	6.	2.	1.	.31
	ROUTED TO						
+		RF07W	16.	6.33	6.	2.	1.	.31
	HYDROGRAPH AT						
+		F02	62.	4.25	12.	3.	1.	.05
	3 COMBINED AT						
+		CF02	751.	4.42	129.	33.	11.	.63
	DIVERSION TO						
+		DF02I	701.	4.42	102.	26.	9.	.63
	HYDROGRAPH AT						
+		DF02	50.	3.92	27.	7.	2.	.63
	ROUTED TO						
+		RF02W	50.	4.00	27.	7.	2.	.63
	HYDROGRAPH AT						
+		F04R	80.	4.50	26.	7.	2.	.17
	ROUTED TO						
+		RF04S	80.	4.67	26.	7.	2.	.17
	DIVERSION TO						
+		DRF04I	40.	4.67	13.	3.	1.	.17
	HYDROGRAPH AT						
+		DRF04	40.	4.67	13.	3.	1.	.17
	HYDROGRAPH AT						
+		F01	42.	4.25	8.	2.	1.	.03
	3 COMBINED AT						
+		CF01	127.	4.25	48.	12.	4.	.10
	DIVERSION TO						
+		DF01I	3.	4.25	0.	0.	0.	.10
	HYDROGRAPH AT						
+		DF01	123.	4.25	48.	12.	4.	.10
	HYDROGRAPH AT						
+		DRF02	701.	4.42	102.	26.	9.	.63
	ROUTED TO						
+		RF02S	699.	4.50	102.	26.	9.	.63
	HYDROGRAPH AT						
+		E07	153.	4.17	21.	5.	2.	.08
	2 COMBINED AT						
+		CE07	773.	4.42	122.	31.	10.	.66
	ROUTED TO						
+		RE07	771.	4.50	122.	31.	10.	.66
	HYDROGRAPH AT						
+		E05	91.	4.17	12.	3.	1.	.05
	2 COMBINED AT						
+		CE05	804.	4.50	133.	33.	11.	.71
	DIVERSION TO						
+		DE05I	779.	4.50	120.	30.	10.	.71
	HYDROGRAPH AT						
+		DE05	25.	3.83	13.	3.	1.	.71
	ROUTED TO						
+		RE05W	25.	3.92	13.	3.	1.	.71
	HYDROGRAPH AT						
+		E04	42.	4.25	9.	2.	1.	.04

	DIVERSION TO						
+		LE04D	40.	4.25	3.	1.	0.	.04
	HYDROGRAPH AT						
+		LE04	42.	4.33	6.	2.	1.	.04
	HYDROGRAPH AT						
+		DRF01I	3.	4.25	0.	0.	0.	.10
	ROUTED TO						
+		RF01S	3.	4.58	0.	0.	0.	.10
	3 COMBINED AT						
+		CE04	68.	4.33	19.	5.	2.	.07
	DIVERSION TO						
+		DE04I	0.	.00	0.	0.	0.	.07
	HYDROGRAPH AT						
+		DE04	68.	4.33	19.	5.	2.	.07
	3 COMBINED AT						
+		DUMMY	255.	4.33	89.	23.	8.	.34
	HYDROGRAPH AT						
+		E08	42.	4.25	8.	2.	1.	.03
	ROUTED TO						
+		RE08	41.	4.33	8.	2.	1.	.03
	HYDROGRAPH AT						
+		E06	48.	4.25	9.	2.	1.	.04
	2 COMBINED AT						
+		CE06	87.	4.33	17.	4.	1.	.07
	ROUTED TO						
+		RE06	85.	4.58	17.	4.	1.	.07
	HYDROGRAPH AT						
+		E03	47.	4.58	17.	5.	2.	.07
	HYDROGRAPH AT						
+		DRF07	449.	4.42	45.	11.	4.	.31
	ROUTED TO						
+		RF07S	404.	4.67	45.	11.	4.	.31
	HYDROGRAPH AT						
+		E09	338.	4.25	64.	16.	5.	.22
	DIVERSION TO						
+		LE09D	325.	4.17	27.	7.	2.	.22
	HYDROGRAPH AT						
+		LE09	321.	4.33	37.	9.	3.	.22
	2 COMBINED AT						
+		CE09	596.	4.67	82.	20.	7.	.51
	DIVERSION TO						
+		DE09I	551.	4.67	64.	16.	5.	.51
	HYDROGRAPH AT						
+		DE09	45.	4.33	18.	4.	1.	.51
	ROUTED TO						
+		RE09W	45.	4.42	18.	4.	1.	.51
	HYDROGRAPH AT						
+		DRE05I	779.	4.50	120.	30.	10.	.71
	ROUTED TO						
+		RE05S	766.	4.58	120.	30.	10.	.71
	4 COMBINED AT						
+		CE03	907.	4.58	169.	43.	14.	.86
	DIVERSION TO						
+		DE03I	817.	4.58	122.	31.	10.	.86

	HYDROGRAPH AT						
+		DE03	90.	4.08	46.	12.	4.	.86
	ROUTED TO						
+		RE03W	90.	4.17	46.	12.	4.	.86
	HYDROGRAPH AT						
+		E02	186.	4.33	37.	9.	3.	.15
	2 COMBINED AT						
+		CE02	276.	4.33	82.	21.	7.	.18
	DIVERSION TO						
+		DE02I	142.	4.33	21.	5.	2.	.18
	HYDROGRAPH AT						
+		DE02	134.	4.17	62.	16.	5.	.18
	ROUTED TO						
+		RE02W	134.	4.67	61.	16.	5.	.18
	HYDROGRAPH AT						
+		E01	84.	4.25	15.	4.	1.	.06
	HYDROGRAPH AT						
+		DRE04I	0.	.00	0.	0.	0.	.07
	ROUTED TO						
+		RE04S	0.	.00	0.	0.	0.	.07
	3 COMBINED AT						
+		CE01	217.	4.25	77.	20.	7.	.17
	DIVERSION TO						
+		DE01I	38.	4.25	6.	2.	1.	.17
	HYDROGRAPH AT						
+		DE01	179.	4.17	71.	18.	6.	.17
	HYDROGRAPH AT						
+		DRE01	38.	4.25	6.	2.	1.	.17
	ROUTED TO						
+		RE01S	36.	4.50	6.	2.	1.	.17
	HYDROGRAPH AT						
+		D05	197.	4.33	39.	10.	3.	.16
	2 COMBINED AT						
+		CD05	221.	4.42	45.	12.	4.	.28
	DIVERSION TO						
+		DD05I	54.	4.42	8.	2.	1.	.28
	HYDROGRAPH AT						
+		DD05	167.	4.42	37.	9.	3.	.28
	ROUTED TO						
+		RD05S	167.	4.42	37.	9.	3.	.28
	HYDROGRAPH AT						
+		D13	54.	4.25	11.	3.	1.	.04
	2 COMBINED AT						
+		CD13	216.	4.42	48.	12.	4.	.26
	DIVERSION TO						
+		DD13I	121.	4.42	27.	7.	2.	.26
	HYDROGRAPH AT						
+		DD13	95.	4.42	21.	5.	2.	.26
	ROUTED TO						
+		RD13S	95.	4.50	21.	5.	2.	.26
	HYDROGRAPH AT						
+		D04	16.	4.25	3.	1.	0.	.01
	ROUTED TO						
+		RD04	15.	4.42	3.	1.	0.	.01

	HYDROGRAPH AT						
+		D01	73.	4.42	19.	5.	2.	.08
	3 COMBINED AT						
+		CD01	181.	4.42	43.	11.	4.	.21
	DIVERSION TO						
+		DD01I	68.	4.42	15.	4.	1.	.21
	HYDROGRAPH AT						
+		DD01	113.	4.42	29.	8.	3.	.21
	ROUTED TO						
+		RD01E	112.	4.50	29.	8.	3.	.21
	HYDROGRAPH AT						
+		DRD05	54.	4.42	8.	2.	1.	.28
	ROUTED TO						
+		RD05E	54.	4.42	8.	2.	1.	.28
	DIVERSION TO						
+		DD052I	40.	4.42	7.	2.	1.	.28
	HYDROGRAPH AT						
+		DD052	14.	4.42	2.	0.	0.	.28
	ROUTED TO						
+		RD05S2	13.	4.58	2.	0.	0.	.28
	HYDROGRAPH AT						
+		DRE02	142.	4.33	21.	5.	2.	.18
	ROUTED TO						
+		RE02S	141.	4.42	21.	5.	2.	.18
	HYDROGRAPH AT						
+		DRD052	40.	4.42	7.	2.	1.	.28
	ROUTED TO						
+		RD05E2	40.	4.50	7.	2.	1.	.28
	HYDROGRAPH AT						
+		D06	130.	4.33	28.	7.	2.	.11
	3 COMBINED AT						
+		CD06	306.	4.42	55.	14.	5.	.25
	DIVERSION TO						
+		INT3I	279.	4.42	50.	13.	4.	.25
	HYDROGRAPH AT						
+		INT3	27.	4.42	5.	1.	0.	.25
	DIVERSION TO						
+		DD06I	6.	4.42	1.	0.	0.	.25
	HYDROGRAPH AT						
+		DD06	21.	4.42	4.	1.	0.	.25
	ROUTED TO						
+		RD06S	19.	4.58	4.	1.	0.	.25
	HYDROGRAPH AT						
+		DRD13	121.	4.42	27.	7.	2.	.26
	ROUTED TO						
+		RD13E	120.	4.50	27.	7.	2.	.26
	HYDROGRAPH AT						
+		D02A	114.	4.17	18.	4.	1.	.07
	4 COMBINED AT						
+		CD10	235.	4.42	50.	13.	4.	.26
	DIVERSION TO						
+		INT6I	203.	4.42	43.	11.	4.	.26
	HYDROGRAPH AT						
+		INT6	32.	4.42	7.	2.	1.	.26

	DIVERSION TO						
+		DD10I	12.	4.42	4.	1.	0.	.26
	HYDROGRAPH AT						
+		DD10	20.	4.42	3.	1.	0.	.26
	ROUTED TO						
+		RD10S	20.	4.50	3.	1.	0.	.26
	HYDROGRAPH AT						
+		DO2B	103.	4.25	18.	4.	1.	.07
	3 COMBINED AT						
+		CD02	212.	4.42	49.	13.	4.	.35
	DIVERSION TO						
+		DD02I	37.	4.42	5.	1.	0.	.35
	HYDROGRAPH AT						
+		DD02	176.	4.42	44.	12.	4.	.35
	ROUTED TO						
+		RD02E	174.	4.42	44.	12.	4.	.35
	HYDROGRAPH AT						
+		D07	63.	4.25	12.	3.	1.	.05
	HYDROGRAPH AT						
+		DRD06	6.	4.42	1.	0.	0.	.25
	ROUTED TO						
+		RD06E	6.	4.50	1.	0.	0.	.25
	2 COMBINED AT						
+		CD07	66.	4.25	13.	3.	1.	.13
	DIVERSION TO						
+		INT4I	57.	4.25	12.	3.	1.	.13
	HYDROGRAPH AT						
+		INT4	10.	4.25	2.	0.	0.	.13
	ROUTED TO						
+		RD07	9.	4.42	2.	0.	0.	.13
	HYDROGRAPH AT						
+		DRD10	12.	4.42	4.	1.	0.	.26
	ROUTED TO						
+		RD10E	12.	4.42	4.	1.	0.	.26
	2 COMBINED AT						
+		CD11	21.	4.42	5.	1.	0.	.24
	DIVERSION TO						
+		INT7I	21.	4.42	5.	1.	0.	.24
	HYDROGRAPH AT						
+		INT7	0.	.00	0.	0.	0.	.24
	HYDROGRAPH AT						
+		DRE03	817.	4.58	122.	31.	10.	.86
	DIVERSION TO						
+		INT1I	200.	4.58	30.	7.	2.	.86
	HYDROGRAPH AT						
+		INT1	617.	4.58	92.	23.	8.	.86
	ROUTED TO						
+		RE03SA	616.	4.67	92.	23.	8.	.86
	DIVERSION TO						
+		INT2I	200.	4.67	30.	7.	2.	.86
	HYDROGRAPH AT						
+		INT2	416.	4.67	63.	16.	5.	.86
	ROUTED TO						
+		RE03SB	400.	4.75	63.	16.	5.	.86

	HYDROGRAPH AT						
+		D08	49.	4.33	13.	3.	1.	.05
	2 COMBINED AT						
+		CD08	437.	4.75	75.	19.	6.	.88
	DIVERSION TO						
+		INT5I	200.	4.75	35.	9.	3.	.88
	HYDROGRAPH AT						
+		INT5	237.	4.75	41.	10.	3.	.88
	ROUTED TO						
+		RD08	233.	4.83	41.	10.	3.	.88
	HYDROGRAPH AT						
+		D03A	72.	4.25	13.	3.	1.	.05
	3 COMBINED AT						
+		CD12	251.	4.83	52.	13.	4.	1.17
	DIVERSION TO						
+		INT8I	251.	4.83	52.	13.	4.	1.17
	HYDROGRAPH AT						
+		INT8	0.	.00	0.	0.	0.	1.17
	ROUTED TO						
+		RD12	0.	.00	0.	0.	0.	1.17
	HYDROGRAPH AT						
+		DRE09I	551.	4.67	64.	16.	5.	.51
	ROUTED TO						
+		RE09S	487.	4.92	64.	16.	5.	.51
	HYDROGRAPH AT						
+		D09	360.	4.17	62.	16.	5.	.22
	2 COMBINED AT						
+		CD09	560.	4.92	122.	31.	10.	.69
	DIVERSION TO						
+		IN10I	560.	4.92	122.	31.	10.	.69
	HYDROGRAPH AT						
+		INT10	0.	.00	0.	0.	0.	.69
	HYDROGRAPH AT						
+		D03B	71.	4.25	13.	3.	1.	.05
	4 COMBINED AT						
+		CD03	188.	4.50	53.	14.	5.	2.19
	DIVERSION TO						
+		INT9I	188.	4.50	53.	14.	5.	2.19
	HYDROGRAPH AT						
+		INT9	0.	.00	0.	0.	0.	2.19
	HYDROGRAPH AT						
+		C11	90.	4.17	12.	3.	1.	.05
	HYDROGRAPH AT						
+		C10	85.	4.17	13.	3.	1.	.05
	HYDROGRAPH AT						
+		DRD02	37.	4.42	5.	1.	0.	.35
	ROUTED TO						
+		RD02S	36.	4.58	5.	1.	0.	.35
	2 COMBINED AT						
+		CC10	104.	4.25	19.	5.	2.	.12
	ROUTED TO						
+		RC10	103.	4.33	19.	5.	2.	.12
	2 COMBINED AT						
+		CC11	187.	4.17	31.	8.	3.	.17

	ROUTED TO							
+		RC11	175.	4.33	31.	8.	3.	.17
	HYDROGRAPH AT							
+		C08	170.	4.25	29.	7.	2.	.12
	2 COMBINED AT							
+		CC08	342.	4.25	60.	15.	5.	.29
	ROUTED TO							
+		RC08	337.	4.42	60.	15.	5.	.29
	HYDROGRAPH AT							
+		C06	222.	4.25	38.	9.	3.	.15
	2 COMBINED AT							
+		CC06	539.	4.33	97.	24.	8.	.44
	DIVERSION TO							
+		IN11I	539.	4.33	97.	24.	8.	.44
	HYDROGRAPH AT							
+		INT11	0.	.00	0.	0.	0.	.44
	ROUTED TO							
+		RC06	0.	.00	0.	0.	0.	.44
	HYDROGRAPH AT							
+		DRDO1	68.	4.42	15.	4.	1.	.21
	ROUTED TO							
+		RD01S	67.	4.67	15.	4.	1.	.21
	HYDROGRAPH AT							
+		C07	78.	4.33	18.	5.	2.	.07
	2 COMBINED AT							
+		CC07	139.	4.50	32.	8.	3.	.15
	ROUTED TO							
+		RC07	138.	4.67	32.	8.	3.	.15
	HYDROGRAPH AT							
+		C09	66.	4.25	14.	4.	1.	.06
	ROUTED TO							
+		RC09	56.	4.50	14.	4.	1.	.06
	HYDROGRAPH AT							
+		C05	151.	4.33	35.	9.	3.	.14
	HYDROGRAPH AT							
+		C01	37.	4.25	8.	2.	1.	.03
	ROUTED TO							
+		RC01	36.	4.50	8.	2.	1.	.03
	HYDROGRAPH AT							
+		C02	41.	4.25	10.	3.	1.	.04
	5 COMBINED AT							
+		CC02	397.	4.58	99.	25.	8.	.44
	DIVERSION TO							
+		DC02I	63.	4.58	8.	2.	1.	.44
	HYDROGRAPH AT							
+		DC02	334.	4.58	92.	23.	8.	.44
	ROUTED TO							
+		RC02E	334.	4.58	92.	23.	8.	.44
	HYDROGRAPH AT							
+		C03	68.	4.17	11.	3.	1.	.04
	HYDROGRAPH AT							
+		C12	3.	5.25	2.	1.	0.	.01
	ROUTED TO							
+		RC12	3.	5.75	2.	1.	0.	.01

+	HYDROGRAPH AT	C13	248.	4.25	50.	13.	4.	.18
+	2 COMBINED AT	CC13	249.	4.25	51.	13.	4.	.19
+	DIVERSION TO	IN12I	249.	4.25	51.	13.	4.	.19
+	HYDROGRAPH AT	INT12	0.	.00	0.	0.	0.	.19
+	HYDROGRAPH AT	C04	40.	4.33	10.	3.	1.	.04
+	ROUTED TO	RC04	40.	4.42	10.	3.	1.	.04
+	5 COMBINED AT	CC03	334.	4.58	104.	27.	9.	3.37
+	ROUTED TO	RC03	332.	4.67	104.	27.	9.	3.37
+	HYDROGRAPH AT	B07	35.	4.08	4.	1.	0.	.02
+	2 COMBINED AT	CB07	339.	4.58	107.	27.	9.	3.39
+	ROUTED TO	RB07	339.	4.67	107.	27.	9.	3.39
+	HYDROGRAPH AT	B05	91.	4.25	20.	5.	2.	.09
+	DIVERSION TO	LB05D	2.	1.50	0.	0.	0.	.09
+	HYDROGRAPH AT	LB05	91.	4.25	20.	5.	2.	.09
+	HYDROGRAPH AT	DRC02	63.	4.58	8.	2.	1.	.44
+	ROUTED TO	RC02S	60.	4.67	8.	2.	1.	.44
+	HYDROGRAPH AT	B06	20.	4.17	4.	1.	0.	.01
+	4 COMBINED AT	CB05	437.	4.67	132.	34.	11.	3.49
+	ROUTED TO	RB05	436.	4.67	132.	34.	11.	3.49
+	HYDROGRAPH AT	B04	178.	4.08	22.	6.	2.	.08
+	DIVERSION TO	LB04D	178.	4.08	22.	6.	2.	.08
+	HYDROGRAPH AT	LB04	0.	.00	0.	0.	0.	.08
+	HYDROGRAPH AT	B02	191.	4.17	28.	7.	2.	.10
+	DIVERSION TO	LB02D	50.	3.75	5.	1.	0.	.10
+	HYDROGRAPH AT	LB02	191.	4.17	23.	6.	2.	.10
+	ROUTED TO	RB02	189.	4.17	23.	6.	2.	.10
+	HYDROGRAPH AT	B03	10.	4.17	2.	0.	0.	.01

	4 COMBINED AT						
+		CB03	520.	4.58	154.	39.	13.	3.66
	ROUTED TO						
+		RB03	519.	4.58	154.	39.	13.	3.66
	HYDROGRAPH AT						
+		B01	162.	4.08	16.	4.	1.	.07
	DIVERSION TO						
+		LB01D	25.	3.67	2.	1.	0.	.07
	HYDROGRAPH AT						
+		LB01	162.	4.08	14.	3.	1.	.07
	2 COMBINED AT						
+		CB01	549.	4.58	166.	42.	14.	3.73
	ROUTED TO						
+		RB01	549.	4.58	166.	42.	14.	3.73
	HYDROGRAPH AT						
+		B12	233.	4.17	27.	7.	2.	.12
	HYDROGRAPH AT						
+		B11	107.	4.17	13.	3.	1.	.06
	DIVERSION TO						
+		LB11D	103.	4.08	6.	1.	0.	.06
	HYDROGRAPH AT						
+		LB11	95.	4.25	7.	2.	1.	.06
	HYDROGRAPH AT						
+		B13	445.	4.08	52.	13.	4.	.22
	DIVERSION TO						
+		LB13D	445.	4.08	37.	9.	3.	.22
	HYDROGRAPH AT						
+		LB13	224.	4.42	15.	4.	1.	.22
	ROUTED TO						
+		RB13	216.	4.58	15.	4.	1.	.22
	HYDROGRAPH AT						
+		B14	195.	4.25	44.	11.	4.	.15
	2 COMBINED AT						
+		CB14	374.	4.58	60.	15.	5.	.37
	DIVERSION TO						
+		IN13I	374.	4.58	60.	15.	5.	.37
	HYDROGRAPH AT						
+		INT13	0.	.00	0.	0.	0.	.37
	4 COMBINED AT						
+		CB12	680.	4.42	192.	49.	16.	4.28
	ROUTED TO						
+		RB12	668.	4.67	192.	49.	16.	4.28
	HYDROGRAPH AT						
+		A01	1075.	4.17	154.	39.	13.	.51
	DIVERSION TO						
+		LA01D	953.	4.08	71.	18.	6.	.51
	HYDROGRAPH AT						
+		LA01	1041.	4.25	84.	21.	7.	.51
	2 COMBINED AT						
+		CA01	1165.	4.42	265.	67.	22.	4.79
	HYDROGRAPH AT						
+		B10	95.	4.33	22.	6.	2.	.11
	DIVERSION TO						
+		LB10D	95.	4.33	21.	5.	2.	.11

+	HYDROGRAPH AT LB10	7.	6.75	1.	0.	0.	.11
+	HYDROGRAPH AT DRINT1	200.	4.58	30.	7.	2.	.86
+	ROUTED TO RE3ASD	199.	4.67	30.	8.	3.	.86
+	HYDROGRAPH AT DRINT2	200.	4.67	30.	7.	2.	.86
+	2 COMBINED AT CE3BSD	400.	4.67	60.	15.	5.	.86
+	ROUTED TO RE3BSD	397.	4.67	60.	15.	5.	.86
+	HYDROGRAPH AT DRINT3	279.	4.42	50.	13.	4.	.25
+	ROUTED TO RD06SD	278.	4.42	50.	13.	4.	.25
+	HYDROGRAPH AT DRINT4	57.	4.25	12.	3.	1.	.13
+	2 COMBINED AT CD07SD	331.	4.42	61.	15.	5.	.39
+	ROUTED TO RD07SD	329.	4.42	61.	16.	5.	.39
+	HYDROGRAPH AT DRINT5	200.	4.75	35.	9.	3.	.88
+	3 COMBINED AT CD08SD	786.	4.67	148.	37.	12.	1.26
+	ROUTED TO RD08SD	781.	4.67	148.	37.	12.	1.26
+	HYDROGRAPH AT DRINT6	203.	4.42	43.	11.	4.	.26
+	ROUTED TO RD10SD	203.	4.42	43.	11.	4.	.26
+	HYDROGRAPH AT DRINT7	21.	4.42	5.	1.	0.	.24
+	2 COMBINED AT CD11SD	224.	4.42	49.	12.	4.	.50
+	ROUTED TO RD11SD	224.	4.42	49.	12.	4.	.50
+	HYDROGRAPH AT DRINT8	251.	4.83	52.	13.	4.	1.17
+	3 COMBINED AT CD12SD	1149.	4.67	244.	62.	21.	1.43
+	ROUTED TO RD12SD	1148.	4.75	244.	62.	21.	1.43
+	HYDROGRAPH AT DRINT9	188.	4.50	53.	14.	5.	2.19
+	ROUTED TO RD03SD	188.	4.50	53.	14.	5.	2.19
+	HYDROGRAPH AT DRIN10	560.	4.92	122.	31.	10.	.69
+	3 COMBINED AT CD09SD	1539.	4.83	391.	100.	33.	2.88
+	ROUTED TO RD09SD	1538.	4.83	392.	100.	33.	2.88

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        HYDROGRAPH AT
+                       DRIN12      249.    4.25         51.         13.         4.        .19

        HYDROGRAPH AT
+                       DRIN11      539.    4.33         97.         24.         8.        .44

        ROUTED TO
+                       RC06SD      532.    4.33         97.         24.         8.        .44

        3 COMBINED AT
+                       CC13SD     1876.    4.75        517.        132.        44.       3.58

        ROUTED TO
+                       RC13SD     1874.    4.83        517.        132.        44.       3.58

        HYDROGRAPH AT
+                       DRIN13      374.    4.58         60.         15.         5.        .37

        2 COMBINED AT
+                       CB14SD     2049.    4.83        563.        144.        48.       3.95

        ROUTED TO
+                       RB14SD     2029.    4.83        563.        144.        48.       3.95
1
                                   SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                       (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                  INTERPOLATED TO
                                                                                COMPUTATION INTERVAL
          ISTAQ    ELEMENT      DT        PEAK     TIME TO      VOLUME      DT        PEAK     TIME TO      VOLUME
                                                     PEAK                                                   PEAK

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

         FOR STORM = 1  STORM AREA (SQ MI) =        .01
            RF05W  MANE          .86     49.00    236.76        .57      5.00     49.00    240.00         .57

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1279E+02 EXCESS= .0000E+00 OUTFLOW= .1279E+02 BASIN STORAGE= .1300E-12 PERCENT ERROR=    .0

         FOR STORM = 2  STORM AREA (SQ MI) =        .50
            RF05W  MANE          .82     49.00    237.07        .57      5.00     49.00    240.00         .57

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1275E+02 EXCESS= .0000E+00 OUTFLOW= .1275E+02 BASIN STORAGE= .1314E-12 PERCENT ERROR=    .0

         FOR STORM = 3  STORM AREA (SQ MI) =       2.80
            RF05W  MANE          .87     49.00    232.10        .60      5.00     49.00    235.00         .60

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1342E+02 EXCESS= .0000E+00 OUTFLOW= .1342E+02 BASIN STORAGE= .1328E-12 PERCENT ERROR=    .0

         FOR STORM = 4  STORM AREA (SQ MI) =      16.00
            RF05W  MANE          .76     49.00    236.65        .64      5.00     49.00    240.00         .64

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1428E+02 EXCESS= .0000E+00 OUTFLOW= .1428E+02 BASIN STORAGE= .1323E-12 PERCENT ERROR=    .0

         FOR STORM = 5  STORM AREA (SQ MI) =      90.00
            RF05W  MANE          .73     49.00    236.91        .66      5.00     49.00    240.00         .66

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1473E+02 EXCESS= .0000E+00 OUTFLOW= .1473E+02 BASIN STORAGE= .1352E-12 PERCENT ERROR=    .0

         FOR STORM = 6  STORM AREA (SQ MI) =     500.00
            RF05W  MANE          .85     46.98    275.88        .55      5.00     46.98    275.00         .55

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1242E+02 EXCESS= .0000E+00 OUTFLOW= .1242E+02 BASIN STORAGE= .1305E-12 PERCENT ERROR=    .0

         FOR STORM = 1  STORM AREA (SQ MI) =        .01
             RF03  MANE          .78    723.47    265.93       1.92      5.00    720.34    265.00        1.92

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5696E+02 EXCESS= .0000E+00 OUTFLOW= .5697E+02 BASIN STORAGE= .3554E-04 PERCENT ERROR=    .0
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FOR STORM = 2  STORM AREA (SQ MI) =        .50
    RF03  MANE          .78    715.27    265.63      1.90      5.00    712.47    265.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5639E+02 EXCESS= .0000E+00 OUTFLOW= .5639E+02 BASIN STORAGE= .3461E-04 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
    RF03  MANE          .91    510.61    266.71      1.69      5.00    508.28    270.00        1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4999E+02 EXCESS= .0000E+00 OUTFLOW= .4999E+02 BASIN STORAGE= .3662E-04 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
    RF03  MANE         1.05    384.44    269.83      1.41      5.00    384.36    270.00        1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4184E+02 EXCESS= .0000E+00 OUTFLOW= .4184E+02 BASIN STORAGE= .3605E-04 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
    RF03  MANE         1.35    248.91    271.16      1.04      5.00    248.31    270.00        1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3081E+02 EXCESS= .0000E+00 OUTFLOW= .3081E+02 BASIN STORAGE= .3478E-04 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
    RF03  MANE         2.68     83.31    281.86       .51      5.00     83.27    280.00         .51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1526E+02 EXCESS= .0000E+00 OUTFLOW= .1526E+02 BASIN STORAGE= .3969E-04 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RF07W  MANE         5.00     15.82    380.00       .18      5.00     15.82    380.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3032E+01 EXCESS= .0000E+00 OUTFLOW= .3012E+01 BASIN STORAGE= .6039E-03 PERCENT ERROR=    .6

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RF07W  MANE         5.00     15.82    380.00       .18      5.00     15.82    380.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3029E+01 EXCESS= .0000E+00 OUTFLOW= .3010E+01 BASIN STORAGE= .6008E-03 PERCENT ERROR=    .6

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RF07W  MANE         5.00     15.86    390.00       .19      5.00     15.86    390.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3146E+01 EXCESS= .0000E+00 OUTFLOW= .3124E+01 BASIN STORAGE= .7440E-03 PERCENT ERROR=    .7

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RF07W  MANE         5.00     15.82    390.00       .18      5.00     15.82    390.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3073E+01 EXCESS= .0000E+00 OUTFLOW= .3054E+01 BASIN STORAGE= .7580E-03 PERCENT ERROR=    .6

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RF07W  MANE         5.00     15.85    395.00       .18      5.00     15.85    395.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3052E+01 EXCESS= .0000E+00 OUTFLOW= .3032E+01 BASIN STORAGE= .4244E-03 PERCENT ERROR=    .6

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RF07W  MANE         5.00     15.83    390.00       .14      5.00     15.83    390.00         .14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2318E+01 EXCESS= .0000E+00 OUTFLOW= .2296E+01 BASIN STORAGE= .3909E-03 PERCENT ERROR=    .9

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RF02W  MANE         1.90     50.00    239.64       .41      5.00     50.00    240.00         .41
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1382E+02 EXCESS= .0000E+00 OUTFLOW= .1382E+02 BASIN STORAGE= .7249E-11 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RF02W  MANE        1.90     50.00    239.86       .41      5.00     50.00    240.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1378E+02 EXCESS= .0000E+00 OUTFLOW= .1378E+02 BASIN STORAGE= .7126E-11 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RF02W  MANE        1.90     50.00    235.22       .43      5.00     50.00    240.00         .43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1445E+02 EXCESS= .0000E+00 OUTFLOW= .1445E+02 BASIN STORAGE= .6911E-11 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RF02W  MANE        1.84     50.00    238.78       .46      5.00     50.00    240.00         .46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1533E+02 EXCESS= .0000E+00 OUTFLOW= .1533E+02 BASIN STORAGE= .7064E-11 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RF02W  MANE        1.84     50.00    243.75       .47      5.00     50.00    245.00         .47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1574E+02 EXCESS= .0000E+00 OUTFLOW= .1575E+02 BASIN STORAGE= .7000E-11 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RF02W  MANE        1.92     48.76    283.04       .41      5.00     48.73    285.00         .41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1356E+02 EXCESS= .0000E+00 OUTFLOW= .1356E+02 BASIN STORAGE= .7742E-11 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RE05W  MANE        1.75     25.00    235.00       .17      5.00     25.00    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6361E+01 EXCESS= .0000E+00 OUTFLOW= .6363E+01 BASIN STORAGE= .3600E-11 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RE05W  MANE        1.75     25.00    235.20       .17      5.00     25.00    240.00         .17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6344E+01 EXCESS= .0000E+00 OUTFLOW= .6346E+01 BASIN STORAGE= .3609E-11 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RE05W  MANE        1.87     25.00    228.79       .18      5.00     25.00    230.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6667E+01 EXCESS= .0000E+00 OUTFLOW= .6668E+01 BASIN STORAGE= .3706E-11 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RE05W  MANE        1.82     25.00    230.13       .19      5.00     25.00    235.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7006E+01 EXCESS= .0000E+00 OUTFLOW= .7007E+01 BASIN STORAGE= .3672E-11 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RE05W  MANE        1.83     25.00    234.15       .19      5.00     25.00    235.00         .19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7073E+01 EXCESS= .0000E+00 OUTFLOW= .7074E+01 BASIN STORAGE= .3758E-11 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
           RE05W  MANE        1.78     25.00    269.91       .15      5.00     25.00    270.00         .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5814E+01 EXCESS= .0000E+00 OUTFLOW= .5815E+01 BASIN STORAGE= .3736E-11 PERCENT ERROR=    .0
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FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RE09W  MANE          .70     45.00    256.49       .32      5.00     45.00    260.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8814E+01 EXCESS= .0000E+00 OUTFLOW= .8815E+01 BASIN STORAGE= .9349E-13 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RE09W  MANE          .70     45.00    256.49       .32      5.00     45.00    260.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8798E+01 EXCESS= .0000E+00 OUTFLOW= .8799E+01 BASIN STORAGE= .9238E-13 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RE09W  MANE          .70     45.00    261.49       .33      5.00     45.00    265.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9004E+01 EXCESS= .0000E+00 OUTFLOW= .9005E+01 BASIN STORAGE= .9231E-13 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RE09W  MANE          .70     45.00    261.49       .34      5.00     45.00    265.00         .34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9184E+01 EXCESS= .0000E+00 OUTFLOW= .9185E+01 BASIN STORAGE= .9150E-13 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RE09W  MANE          .81     45.00    272.04       .33      5.00     45.00    275.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8927E+01 EXCESS= .0000E+00 OUTFLOW= .8926E+01 BASIN STORAGE= .9130E-13 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RE09W  MANE          .81     45.00    341.94       .20      5.00     45.00    345.00         .20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5502E+01 EXCESS= .0000E+00 OUTFLOW= .5501E+01 BASIN STORAGE= .9215E-13 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
   RE03W  MANE         1.00     90.00    249.48       .52      5.00     90.00    250.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2384E+02 EXCESS= .0000E+00 OUTFLOW= .2385E+02 BASIN STORAGE= .7045E-11 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
   RE03W  MANE         1.00     90.00    249.64       .52      5.00     90.00    250.00         .52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2378E+02 EXCESS= .0000E+00 OUTFLOW= .2378E+02 BASIN STORAGE= .6965E-11 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
   RE03W  MANE         1.02     90.00    249.09       .54      5.00     90.00    250.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2473E+02 EXCESS= .0000E+00 OUTFLOW= .2474E+02 BASIN STORAGE= .6923E-11 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
   RE03W  MANE         1.01     90.00    254.41       .55      5.00     90.00    255.00         .55

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2525E+02 EXCESS= .0000E+00 OUTFLOW= .2526E+02 BASIN STORAGE= .7197E-11 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
   RE03W  MANE         1.00     90.00    259.10       .54      5.00     90.00    260.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2489E+02 EXCESS= .0000E+00 OUTFLOW= .2490E+02 BASIN STORAGE= .6928E-11 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
   RE03W  MANE         1.10     88.34    322.43       .40      5.00     88.20    320.00         .40
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1840E+02 EXCESS= .0000E+00 OUTFLOW= .1840E+02 BASIN STORAGE= .6994E-11 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RE02W  MANE        1.22    134.00    284.09      3.29      5.00    134.00    280.00        3.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3211E+02 EXCESS= .0000E+00 OUTFLOW= .3209E+02 BASIN STORAGE= .1246E-03 PERCENT ERROR=    .1

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RE02W  MANE        1.22    134.00    284.09      3.28      5.00    134.00    280.00        3.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3202E+02 EXCESS= .0000E+00 OUTFLOW= .3200E+02 BASIN STORAGE= .1240E-03 PERCENT ERROR=    .1

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
          RE02W  MANE        1.22    134.00    279.21      3.39      5.00    133.99    275.00        3.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3314E+02 EXCESS= .0000E+00 OUTFLOW= .3312E+02 BASIN STORAGE= .1236E-03 PERCENT ERROR=    .1

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
          RE02W  MANE        1.22    132.85    264.92      3.44      5.00    132.85    265.00        3.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3357E+02 EXCESS= .0000E+00 OUTFLOW= .3356E+02 BASIN STORAGE= .1230E-03 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
          RE02W  MANE        1.25    119.92    267.83      3.31      5.00    119.86    270.00        3.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3235E+02 EXCESS= .0000E+00 OUTFLOW= .3234E+02 BASIN STORAGE= .1242E-03 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
          RE02W  MANE        1.29     98.31    322.37      2.51      5.00     98.23    325.00        2.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2450E+02 EXCESS= .0000E+00 OUTFLOW= .2449E+02 BASIN STORAGE= .1240E-03 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
           RB05  MANE        1.19    558.69    275.65       .40      5.00    558.26    275.00         .40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7450E+02 EXCESS= .0000E+00 OUTFLOW= .7451E+02 BASIN STORAGE= .4223E-04 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
           RB05  MANE        1.19    553.62    275.55       .40      5.00    553.25    275.00         .40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7391E+02 EXCESS= .0000E+00 OUTFLOW= .7391E+02 BASIN STORAGE= .4152E-04 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
           RB05  MANE        1.30    448.49    279.54       .36      5.00    448.48    280.00         .36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6786E+02 EXCESS= .0000E+00 OUTFLOW= .6786E+02 BASIN STORAGE= .4035E-04 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
           RB05  MANE        1.43    351.54    281.94       .32      5.00    351.11    280.00         .32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5991E+02 EXCESS= .0000E+00 OUTFLOW= .5992E+02 BASIN STORAGE= .4335E-04 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
           RB05  MANE        1.84    244.69    286.79       .26      5.00    244.58    285.00         .26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4773E+02 EXCESS= .0000E+00 OUTFLOW= .4773E+02 BASIN STORAGE= .4431E-04 PERCENT ERROR=    .0
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FOR STORM = 6  STORM AREA (SQ MI) =      500.00
    RB05  MANE        2.83    113.41    291.66       .15      5.00    113.36    295.00        .15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2814E+02 EXCESS= .0000E+00 OUTFLOW= .2814E+02 BASIN STORAGE= .4073E-04 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
    RB02  MANE        1.75    190.13    250.69      2.16      5.00    189.98    250.00       2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1162E+02 EXCESS= .0000E+00 OUTFLOW= .1162E+02 BASIN STORAGE= .1872E-04 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
    RB02  MANE        1.76    189.50    251.52      2.14      5.00    188.67    250.00       2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1151E+02 EXCESS= .0000E+00 OUTFLOW= .1151E+02 BASIN STORAGE= .1908E-04 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
    RB02  MANE        1.50    128.65    252.00      1.99      5.00    127.78    250.00       1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1071E+02 EXCESS= .0000E+00 OUTFLOW= .1071E+02 BASIN STORAGE= .1908E-04 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
    RB02  MANE        2.00     99.49    252.00      1.77      5.00     98.75    250.00       1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9544E+01 EXCESS= .0000E+00 OUTFLOW= .9544E+01 BASIN STORAGE= .2246E-04 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
    RB02  MANE        2.25     69.04    254.25      1.41      5.00     68.84    255.00       1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7572E+01 EXCESS= .0000E+00 OUTFLOW= .7572E+01 BASIN STORAGE= .2417E-04 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
    RB02  MANE        2.00     33.16    262.00       .74      5.00     33.11    260.00        .74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4012E+01 EXCESS= .0000E+00 OUTFLOW= .4011E+01 BASIN STORAGE= .2000E-04 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RE3ASD  MANE         .52    222.66    276.45       .35      5.00    220.67    280.00        .35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1592E+02 EXCESS= .0000E+00 OUTFLOW= .1593E+02 BASIN STORAGE= .1685E-12 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RE3ASD  MANE         .53    220.26    276.39       .34      5.00    218.15    280.00        .34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1573E+02 EXCESS= .0000E+00 OUTFLOW= .1573E+02 BASIN STORAGE= .1644E-12 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RE3ASD  MANE         .56    159.07    281.37       .28      5.00    158.46    280.00        .28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1301E+02 EXCESS= .0000E+00 OUTFLOW= .1301E+02 BASIN STORAGE= .1668E-12 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RE3ASD  MANE         .67    113.79    281.33       .21      5.00    113.58    285.00        .21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9640E+01 EXCESS= .0000E+00 OUTFLOW= .9642E+01 BASIN STORAGE= .1657E-12 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RE3ASD  MANE         .75     64.75    290.51       .12      5.00     64.75    290.00        .12
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .5292E+01 EXCESS= .0000E+00 OUTFLOW= .5293E+01 BASIN STORAGE= .1674E-12 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =      500.00
          RE3ASD  MANE         1.35      2.37    321.16       .01      5.00      2.37    320.00         .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3217E+00 EXCESS= .0000E+00 OUTFLOW= .3218E+00 BASIN STORAGE= .1658E-12 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RE3BSD  MANE          .57    443.35    280.99       .70      5.00    441.89    280.00         .70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3180E+02 EXCESS= .0000E+00 OUTFLOW= .3180E+02 BASIN STORAGE= .9210E-12 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RE3BSD  MANE          .47    438.41    280.71       .69      5.00    436.54    280.00         .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3140E+02 EXCESS= .0000E+00 OUTFLOW= .3141E+02 BASIN STORAGE= .8916E-12 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
          RE3BSD  MANE          .49    313.32    281.35       .57      5.00    313.25    285.00         .57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2595E+02 EXCESS= .0000E+00 OUTFLOW= .2595E+02 BASIN STORAGE= .9089E-12 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
          RE3BSD  MANE          .63    224.26    286.10       .42      5.00    222.79    285.00         .42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1923E+02 EXCESS= .0000E+00 OUTFLOW= .1923E+02 BASIN STORAGE= .9089E-12 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
          RE3BSD  MANE          .71    128.11    291.34       .23      5.00    127.44    290.00         .23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1056E+02 EXCESS= .0000E+00 OUTFLOW= .1056E+02 BASIN STORAGE= .9176E-12 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
          RE3BSD  MANE         1.23      4.36    327.43       .01      5.00      4.32    330.00         .01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6413E+00 EXCESS= .0000E+00 OUTFLOW= .6414E+00 BASIN STORAGE= .9045E-12 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RD06SD  MANE          .26    281.25    265.26      1.86      5.00    280.58    265.00        1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2516E+02 EXCESS= .0000E+00 OUTFLOW= .2515E+02 BASIN STORAGE= .1360E-06 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RD06SD  MANE          .26    278.42    265.32      1.84      5.00    277.70    265.00        1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2492E+02 EXCESS= .0000E+00 OUTFLOW= .2492E+02 BASIN STORAGE= .1360E-06 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
          RD06SD  MANE          .30    198.20    270.17      1.62      5.00    198.18    270.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2201E+02 EXCESS= .0000E+00 OUTFLOW= .2201E+02 BASIN STORAGE= .1250E-06 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
          RD06SD  MANE          .26    146.76    270.02      1.37      5.00    146.76    270.00        1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1858E+02 EXCESS= .0000E+00 OUTFLOW= .1858E+02 BASIN STORAGE= .1428E-06 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
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RD06SD  MANE          .25    100.17    275.60      1.03      5.00     99.49    275.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1397E+02 EXCESS= .0000E+00 OUTFLOW= .1397E+02 BASIN STORAGE= .1160E-06 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
RD06SD  MANE          .45     27.64    276.07       .48      5.00     27.61    275.00         .48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6508E+01 EXCESS= .0000E+00 OUTFLOW= .6508E+01 BASIN STORAGE= .1244E-06 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
RD07SD  MANE          .06    333.68    265.46      1.50      5.00    332.19    265.00        1.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3100E+02 EXCESS= .0000E+00 OUTFLOW= .3099E+02 BASIN STORAGE= .6511E-06 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
RD07SD  MANE          .06    330.37    265.44      1.49      5.00    328.88    265.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3071E+02 EXCESS= .0000E+00 OUTFLOW= .3071E+02 BASIN STORAGE= .6372E-06 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
RD07SD  MANE          .20    238.35    269.94      1.32      5.00    238.35    270.00        1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2733E+02 EXCESS= .0000E+00 OUTFLOW= .2733E+02 BASIN STORAGE= .6284E-06 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
RD07SD  MANE          .21    178.23    270.16      1.13      5.00    178.21    270.00        1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2333E+02 EXCESS= .0000E+00 OUTFLOW= .2332E+02 BASIN STORAGE= .6335E-06 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
RD07SD  MANE          .12    120.25    275.74       .86      5.00    119.11    275.00         .86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1781E+02 EXCESS= .0000E+00 OUTFLOW= .1781E+02 BASIN STORAGE= .6138E-06 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
RD07SD  MANE          .27     37.55    275.99       .43      5.00     37.52    275.00         .43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8831E+01 EXCESS= .0000E+00 OUTFLOW= .8830E+01 BASIN STORAGE= .6301E-06 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
RD08SD  MANE          .39    922.02    280.69      1.21      5.00    919.55    280.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8124E+02 EXCESS= .0000E+00 OUTFLOW= .8124E+02 BASIN STORAGE= .1878E-07 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
RD08SD  MANE          .41    911.31    280.79      1.19      5.00    908.83    280.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8035E+02 EXCESS= .0000E+00 OUTFLOW= .8036E+02 BASIN STORAGE= .1893E-07 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
RD08SD  MANE          .47    677.17    281.37      1.02      5.00    676.37    285.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6867E+02 EXCESS= .0000E+00 OUTFLOW= .6867E+02 BASIN STORAGE= .1892E-07 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
RD08SD  MANE          .52    491.70    286.00       .81      5.00    489.74    285.00         .81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5440E+02 EXCESS= .0000E+00 OUTFLOW= .5440E+02 BASIN STORAGE= .1879E-07 PERCENT ERROR=    .0
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FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RD08SD  MANE          .56    296.33    291.03       .53      5.00    295.76    290.00         .53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3555E+02 EXCESS= .0000E+00 OUTFLOW= .3554E+02 BASIN STORAGE= .1892E-07 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RD08SD  MANE          .76     43.50    277.01       .16      5.00     43.47    280.00         .16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1105E+02 EXCESS= .0000E+00 OUTFLOW= .1105E+02 BASIN STORAGE= .1893E-07 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RD10SD  MANE          .19    204.86    265.15      1.58      5.00    204.83    265.00        1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2178E+02 EXCESS= .0000E+00 OUTFLOW= .2178E+02 BASIN STORAGE= .9576E-07 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RD10SD  MANE          .19    202.89    265.17      1.57      5.00    202.87    265.00        1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2160E+02 EXCESS= .0000E+00 OUTFLOW= .2160E+02 BASIN STORAGE= .1123E-06 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RD10SD  MANE          .17    157.10    265.43      1.44      5.00    156.86    265.00        1.44

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1984E+02 EXCESS= .0000E+00 OUTFLOW= .1984E+02 BASIN STORAGE= .9391E-07 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RD10SD  MANE          .16    122.11    265.77      1.29      5.00    121.98    270.00        1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1770E+02 EXCESS= .0000E+00 OUTFLOW= .1770E+02 BASIN STORAGE= .9074E-07 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RD10SD  MANE          .26     83.83    270.49      1.04      5.00     83.79    270.00        1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1425E+02 EXCESS= .0000E+00 OUTFLOW= .1425E+02 BASIN STORAGE= .9609E-07 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RD10SD  MANE          .25     36.92    275.66       .61      5.00     36.90    275.00         .61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8374E+01 EXCESS= .0000E+00 OUTFLOW= .8373E+01 BASIN STORAGE= .1112E-06 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RD11SD  MANE          .21    225.73    265.11       .92      5.00    225.68    265.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2455E+02 EXCESS= .0000E+00 OUTFLOW= .2455E+02 BASIN STORAGE= .3212E-06 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RD11SD  MANE          .21    223.71    265.26       .92      5.00    223.67    265.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2436E+02 EXCESS= .0000E+00 OUTFLOW= .2436E+02 BASIN STORAGE= .3359E-06 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RD11SD  MANE          .19    173.58    265.53       .85      5.00    173.25    265.00         .85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2247E+02 EXCESS= .0000E+00 OUTFLOW= .2247E+02 BASIN STORAGE= .3152E-06 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RD11SD  MANE          .19    135.86    270.11       .76      5.00    135.86    270.00         .76
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .2021E+02 EXCESS= .0000E+00 OUTFLOW= .2021E+02 BASIN STORAGE= .3385E-06 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
          RD11SD  MANE          .15     94.41    270.55       .62      5.00     94.34    270.00         .62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1646E+02 EXCESS= .0000E+00 OUTFLOW= .1646E+02 BASIN STORAGE= .3376E-06 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
          RD11SD  MANE          .19     42.56    275.66       .37      5.00     42.53    275.00         .37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9831E+01 EXCESS= .0000E+00 OUTFLOW= .9831E+01 BASIN STORAGE= .3340E-06 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RD12SD  MANE          .43   1365.24    280.77      1.76      5.00   1359.45    280.00        1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1341E+03 EXCESS= .0000E+00 OUTFLOW= .1341E+03 BASIN STORAGE= .2726E-07 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RD12SD  MANE          .44   1349.65    280.93      1.74      5.00   1343.78    280.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1328E+03 EXCESS= .0000E+00 OUTFLOW= .1327E+03 BASIN STORAGE= .2729E-07 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
          RD12SD  MANE          .41   1031.78    285.63      1.51      5.00   1030.88    285.00        1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1153E+03 EXCESS= .0000E+00 OUTFLOW= .1153E+03 BASIN STORAGE= .2742E-07 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
          RD12SD  MANE          .41    756.88    286.05      1.23      5.00    756.30    290.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9387E+02 EXCESS= .0000E+00 OUTFLOW= .9387E+02 BASIN STORAGE= .2751E-07 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
          RD12SD  MANE          .47    461.53    291.00       .85      5.00    461.32    295.00         .85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6472E+02 EXCESS= .0000E+00 OUTFLOW= .6472E+02 BASIN STORAGE= .2732E-07 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
          RD12SD  MANE          .66    103.56    276.51       .33      5.00    103.39    275.00         .33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2537E+02 EXCESS= .0000E+00 OUTFLOW= .2537E+02 BASIN STORAGE= .2720E-07 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RD03SD  MANE          .11    237.09    265.19       .25      5.00    236.93    265.00         .25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2952E+02 EXCESS= .0000E+00 OUTFLOW= .2952E+02 BASIN STORAGE= .1575E-12 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RD03SD  MANE          .11    235.14    265.20       .25      5.00    234.96    265.00         .25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2930E+02 EXCESS= .0000E+00 OUTFLOW= .2930E+02 BASIN STORAGE= .1560E-12 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
          RD03SD  MANE          .25    181.41    270.12       .23      5.00    181.39    270.00         .23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2716E+02 EXCESS= .0000E+00 OUTFLOW= .2716E+02 BASIN STORAGE= .1552E-12 PERCENT ERROR=    .0
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FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RD03SD  MANE          .10    140.03    270.13       .21      5.00    140.00    270.00         .21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2483E+02 EXCESS= .0000E+00 OUTFLOW= .2483E+02 BASIN STORAGE= .1622E-12 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RD03SD  MANE          .15     98.02    270.25       .18      5.00     97.97    270.00         .18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2092E+02 EXCESS= .0000E+00 OUTFLOW= .2092E+02 BASIN STORAGE= .1559E-12 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RD03SD  MANE          .17     50.93    274.98       .12      5.00     50.93    275.00         .12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1411E+02 EXCESS= .0000E+00 OUTFLOW= .1411E+02 BASIN STORAGE= .1569E-12 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RD09SD  MANE         1.56   2055.88    288.57      1.48      5.00   2045.42    285.00        1.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2271E+03 EXCESS= .0000E+00 OUTFLOW= .2272E+03 BASIN STORAGE= .1407E-06 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RD09SD  MANE         1.47   2032.43    288.07      1.47      5.00   2018.17    285.00        1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2248E+03 EXCESS= .0000E+00 OUTFLOW= .2249E+03 BASIN STORAGE= .1380E-06 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RD09SD  MANE         1.64   1544.41    292.14      1.29      5.00   1543.84    290.00        1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1979E+03 EXCESS= .0000E+00 OUTFLOW= .1979E+03 BASIN STORAGE= .1355E-06 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RD09SD  MANE         1.64   1163.81    298.29      1.09      5.00   1161.34    295.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1678E+03 EXCESS= .0000E+00 OUTFLOW= .1679E+03 BASIN STORAGE= .1415E-06 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RD09SD  MANE         1.80    719.23    302.82       .81      5.00    718.63    305.00         .81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1239E+03 EXCESS= .0000E+00 OUTFLOW= .1240E+03 BASIN STORAGE= .1428E-06 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RD09SD  MANE         2.28    232.25    273.29       .37      5.00    232.23    275.00         .37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5718E+02 EXCESS= .0000E+00 OUTFLOW= .5720E+02 BASIN STORAGE= .1398E-06 PERCENT ERROR=    .0

FOR STORM = 1  STORM AREA (SQ MI) =        .01
  RC06SD  MANE          .66    543.30    261.35      2.08      5.00    536.69    260.00        2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4895E+02 EXCESS= .0000E+00 OUTFLOW= .4895E+02 BASIN STORAGE= .5584E-12 PERCENT ERROR=    .0

FOR STORM = 2  STORM AREA (SQ MI) =        .50
  RC06SD  MANE          .66    538.38    261.50      2.06      5.00    532.14    260.00        2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4854E+02 EXCESS= .0000E+00 OUTFLOW= .4854E+02 BASIN STORAGE= .5557E-12 PERCENT ERROR=    .0

FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RC06SD  MANE          .76    389.26    266.32      1.87      5.00    388.23    265.00        1.87
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .4406E+02 EXCESS= .0000E+00 OUTFLOW= .4406E+02 BASIN STORAGE= .5486E-12 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
          RC06SD  MANE          .82    294.58    266.00      1.63      5.00    293.85    265.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3843E+02 EXCESS= .0000E+00 OUTFLOW= .3843E+02 BASIN STORAGE= .5659E-12 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
          RC06SD  MANE          .76    195.44    266.47      1.28      5.00    194.36    265.00        1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3025E+02 EXCESS= .0000E+00 OUTFLOW= .3025E+02 BASIN STORAGE= .5626E-12 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
          RC06SD  MANE          .96     86.64    271.81       .79      5.00     86.39    275.00         .79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1852E+02 EXCESS= .0000E+00 OUTFLOW= .1852E+02 BASIN STORAGE= .5378E-12 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RC13SD  MANE         1.39   2526.31    286.75      1.59      5.00   2524.25    285.00        1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3028E+03 EXCESS= .0000E+00 OUTFLOW= .3029E+03 BASIN STORAGE= .1447E-06 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RC13SD  MANE         1.41   2494.72    286.06      1.57      5.00   2492.68    285.00        1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2999E+03 EXCESS= .0000E+00 OUTFLOW= .3000E+03 BASIN STORAGE= .1445E-06 PERCENT ERROR=    .0

        FOR STORM = 3  STORM AREA (SQ MI) =       2.80
          RC13SD  MANE         1.46   1948.47    288.04      1.40      5.00   1944.64    290.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2667E+03 EXCESS= .0000E+00 OUTFLOW= .2668E+03 BASIN STORAGE= .1474E-06 PERCENT ERROR=    .0

        FOR STORM = 4  STORM AREA (SQ MI) =      16.00
          RC13SD  MANE         1.49   1467.21    293.03      1.20      5.00   1463.55    295.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2295E+03 EXCESS= .0000E+00 OUTFLOW= .2295E+03 BASIN STORAGE= .1458E-06 PERCENT ERROR=    .0

        FOR STORM = 5  STORM AREA (SQ MI) =      90.00
          RC13SD  MANE         1.57    914.21    303.45       .91      5.00    911.29    300.00         .91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1746E+03 EXCESS= .0000E+00 OUTFLOW= .1746E+03 BASIN STORAGE= .1485E-06 PERCENT ERROR=    .0

        FOR STORM = 6  STORM AREA (SQ MI) =     500.00
          RC13SD  MANE         1.85    380.44    276.01       .47      5.00    380.44    275.00         .47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8998E+02 EXCESS= .0000E+00 OUTFLOW= .8999E+02 BASIN STORAGE= .1450E-06 PERCENT ERROR=    .0

        FOR STORM = 1  STORM AREA (SQ MI) =        .01
          RB14SD  MANE          .77   2767.10    281.80      1.58      5.00   2759.34    280.00        1.58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3332E+03 EXCESS= .0000E+00 OUTFLOW= .3333E+03 BASIN STORAGE= .1624E-03 PERCENT ERROR=    .0

        FOR STORM = 2  STORM AREA (SQ MI) =        .50
          RB14SD  MANE          .77   2736.85    281.39      1.57      5.00   2726.80    280.00        1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3299E+03 EXCESS= .0000E+00 OUTFLOW= .3300E+03 BASIN STORAGE= .1676E-03 PERCENT ERROR=    .0
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FOR STORM = 3  STORM AREA (SQ MI) =       2.80
  RB14SD  MANE          .85   2170.44    291.50      1.39      5.00   2152.38    290.00        1.39

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2932E+03 EXCESS= .0000E+00 OUTFLOW= .2933E+03 BASIN STORAGE= .1201E-03 PERCENT ERROR=    .0

FOR STORM = 4  STORM AREA (SQ MI) =      16.00
  RB14SD  MANE         1.09   1551.60    296.63      1.19      5.00   1549.63    295.00        1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2514E+03 EXCESS= .0000E+00 OUTFLOW= .2515E+03 BASIN STORAGE= .1315E-03 PERCENT ERROR=    .0

FOR STORM = 5  STORM AREA (SQ MI) =      90.00
  RB14SD  MANE         1.23    976.38    302.45       .91      5.00    975.21    300.00         .91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1916E+03 EXCESS= .0000E+00 OUTFLOW= .1916E+03 BASIN STORAGE= .1631E-03 PERCENT ERROR=    .0

FOR STORM = 6  STORM AREA (SQ MI) =     500.00
  RB14SD  MANE         1.71    430.10    278.38       .48      5.00    429.51    280.00         .48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1015E+03 EXCESS= .0000E+00 OUTFLOW= .1016E+03 BASIN STORAGE= .1453E-03 PERCENT ERROR=    .0


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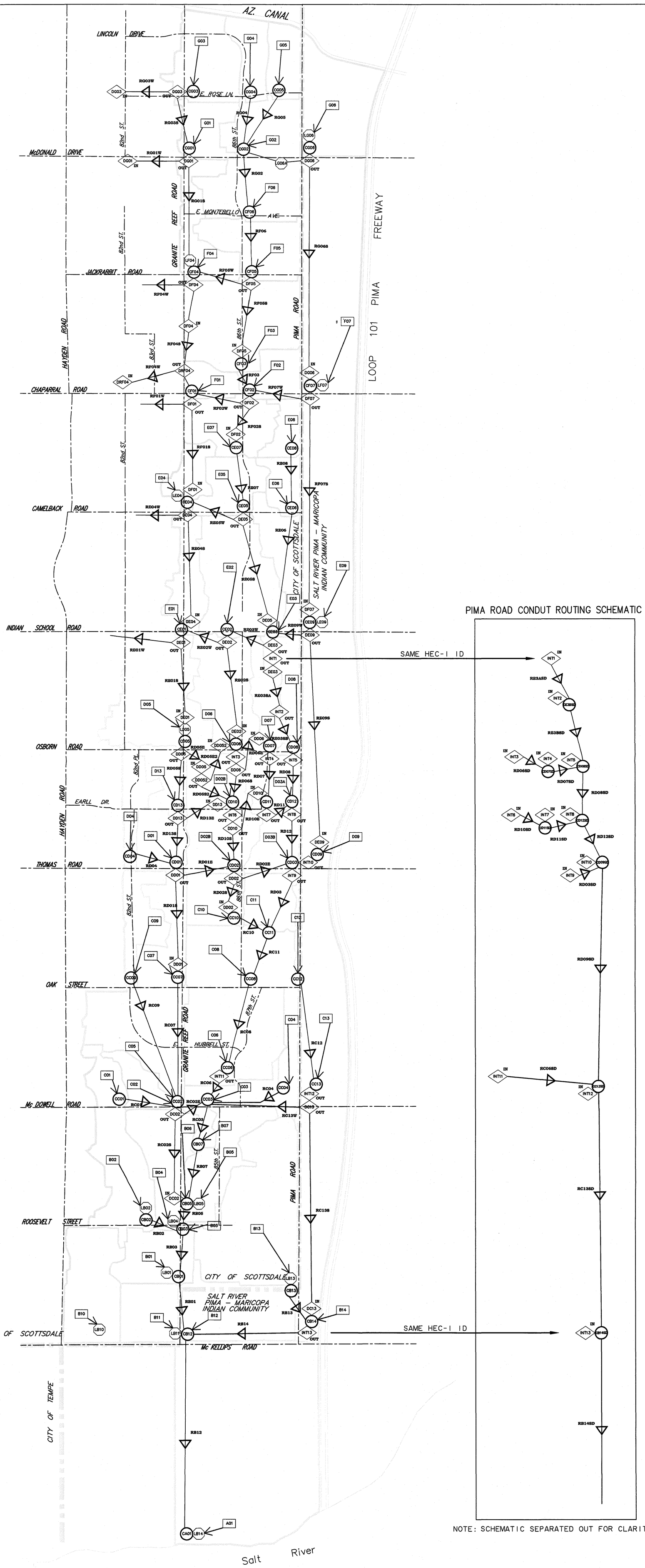



LEGEND

- Basin Boundary
- G03 — Basin Label
- CG03 — Concentration Point
- DG03 OUT — Diversion Point
- DG03 IN — Diversion Recovery Point
- RG03W — Routing Reach
- LE04 — Storage Routing
- Roadway Center Line
- Community Boundary
- Watershed Boundary

1,000 0 1,000 2,000

PSOMAS

3800 N. Central Ave., Suite 1200
Phoenix, AZ 85012
Tel (602) 222-8260 Fax (602) 266-0218

Updated: RAK
Date: 12/07
Project No. 06077-01

GRANITE REEF WASH DRAINAGE STUDY
AND PRELIMINARY DESIGN PROJECT

CITY OF SCOTTSDALE STORMWATER MANAGEMENT
PROJECT NO. F207

EXHIBIT 3

HEC-1 SCHEMATIC DRAWING
PIMA ROAD CONDUIT

ORIGINAL DRAWING CREATED BY:

Entellus™

FOR:

GRANITE REEF DRAINAGE MASTER PLAN
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FCD PROJECT NO. FCD 2000 C 038

HEC-1 Interception Analysis

Location	HEC-1 Concentration Point ID	HEC-1 Interception Structure ID	HEC-1 Peak Flow (cfs)	Bypass (cfs)	Intercepted (cfs)	Comments
Fairmount / Pima Frontage	CE03	INT1	817	617	200	Pima Frontage Road conveys all flows not intercepted. Bypass not calculated.
Olive / Pima Frontage	RE03SA	INT2	616	416	200	Pima Frontage Road conveys all flows not intercepted. Bypass not calculated.
Osborn / 86th	CD06	INT3	306	27[1]	279	
Osborn / 87th	CD07	INT4	66	9[1]	57	
Osborn / Pima Frontage	CD08	INT5	437	237	200	Pima Frontage Road conveys all flows not intercepted. Bypass not calculated.
Earll / 86th	CD10	INT6	235	32[1]	203	
Earll / 87th	CD11	INT7	21	None	21	
Earll / Pima Frontage	CD12	INT8	251	None	251	Sump Condition
Thomas / 87th	CD03	INT9	188	None	188	All flow intercepted at this location, no bypass.
Thomas / Pima	CD09	INT10	560	None	560	
Coronado / 87th	CC06	INT11	539	None	539	
McDowell / Pima	CC13	INT12	249	None	249	
McKellips / Pima	CB14	INT13	374	None	374	

1. Street capacity allowed to flow by.

Osborn Rd. WB (Osborn / 86th) - INT3

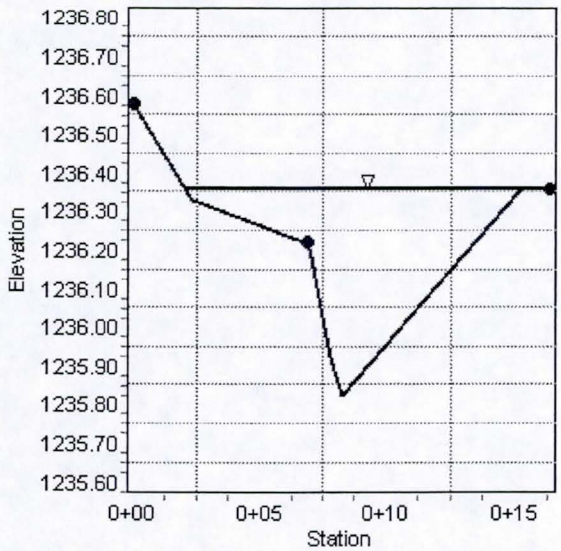
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	0.54	ft
Discharge	1.13	ft^3/s

Cross Section Image



Osborn Rd. WB (Osborn / 86th) - INT3

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	0.54	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1236.58
0+00	1236.54
0+02	1236.33
0+06	1236.23
0+07	1236.22
0+07	1236.18
0+08	1235.92
0+08	1235.82
0+15	1236.35
0+15	1236.36
0+16	1236.36

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1236.58)	(0+07, 1236.22)	0.100
(0+07, 1236.22)	(0+16, 1236.36)	0.020

Results

Discharge	1.13	ft^3/s
Elevation Range	1235.82 to 1236.58 ft	
Flow Area	2.78	ft^2
Wetted Perimeter	13.30	ft
Top Width	13.21	ft
Normal Depth	0.54	ft

Osborn Rd. WB (Osborn / 86th) - INT3

Results

Critical Depth	0.26	ft
Critical Slope	0.11356	ft/ft
Velocity	0.41	ft/s
Velocity Head	0.00	ft
Specific Energy	0.54	ft
Froude Number	0.16	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.54	ft
Critical Depth	0.26	ft
Channel Slope	0.00234	ft/ft
Critical Slope	0.11356	ft/ft

Osborn Rd. EB (Osborn / 86th) - INT3

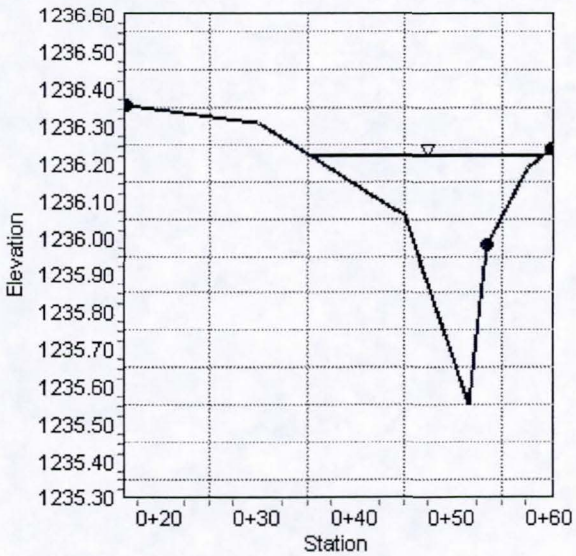
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	0.67	ft
Discharge	2.38	ft^3/s

Cross Section Image



Osborn Rd. EB (Osborn / 86th) - INT3

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00234	ft/ft
Normal Depth	0.67	ft

Section Definitions

Station (ft)	Elevation (ft)
0+16	1236.36
0+30	1236.31
0+30	1236.31
0+30	1236.31
0+45	1236.06
0+49	1235.77
0+52	1235.55
0+53	1235.93
0+53	1235.98
0+57	1236.14
0+58	1236.19
0+60	1236.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+16, 1236.36)	(0+53, 1235.98)	0.020
(0+53, 1235.98)	(0+60, 1236.24)	0.100

Results

Discharge	2.38	ft^3/s
Elevation Range	1235.55 to 1236.36 ft	
Flow Area	4.91	ft^2
Wetted Perimeter	23.64	ft
Top Width	23.56	ft

Osborn Rd. EB (Osborn / 86th) - INT3

Results

Normal Depth		0.67	ft
Critical Depth		0.34	ft
Critical Slope		0.07208	ft/ft
Velocity		0.48	ft/s
Velocity Head		0.00	ft
Specific Energy		0.67	ft
Froude Number		0.19	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.34	ft
Channel Slope	0.00234	ft/ft
Critical Slope	0.07208	ft/ft

86th St. Alley (Osborn / 86th) - INT3

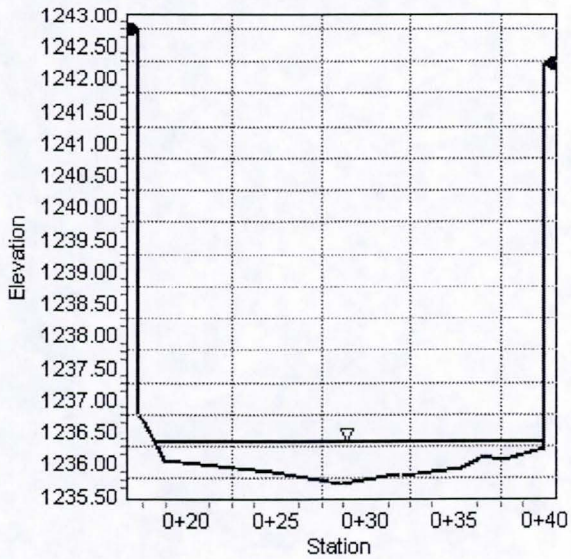
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00370	ft/ft
Normal Depth	0.67	ft
Discharge	23.35	ft^3/s

Cross Section Image



86th St. Alley (Osborn / 86th) - INT3

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00370	ft/ft
Normal Depth	0.67	ft

Section Definitions

Station (ft)	Elevation (ft)
0+17	1242.76
0+17	1242.76
0+17	1236.76
0+17	1236.63
0+19	1236.05
0+25	1235.86
0+29	1235.66
0+31	1235.78
0+32	1235.81
0+35	1235.91
0+36	1236.01
0+37	1236.10
0+38	1236.05
0+40	1236.24
0+40	1242.24
0+40	1242.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+17, 1242.76)	(0+40, 1242.24)	0.020

Results

Discharge	23.35	ft^3/s
Elevation Range	1235.66 to 1242.76 ft	

86th St. Alley (Osborn / 86th) - INT3

Results

Flow Area	9.22	ft²
Wetted Perimeter	22.01	ft
Top Width	21.82	ft
Normal Depth	0.67	ft
Critical Depth	0.57	ft
Critical Slope	0.00846	ft/ft
Velocity	2.53	ft/s
Velocity Head	0.10	ft
Specific Energy	0.77	ft
Froude Number	0.69	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.57	ft
Channel Slope	0.00370	ft/ft
Critical Slope	0.00846	ft/ft

87th St. NB (Osborn / 87th) - INT4

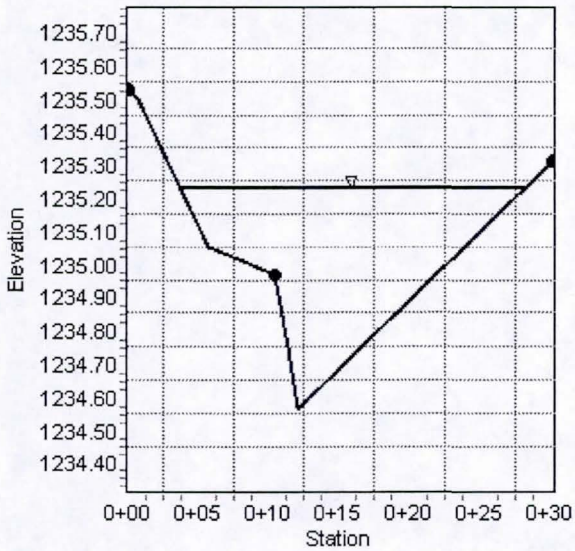
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00321	ft/ft
Normal Depth	0.67	ft
Discharge	5.00	ft^3/s

Cross Section Image



87th St. NB (Osborn / 87th) - INT4

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00321	ft/ft
Normal Depth	0.67	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1235.53
0+01	1235.50
0+06	1235.05
0+08	1235.01
0+10	1234.97
0+11	1234.75
0+12	1234.56
0+21	1234.92
0+30	1235.31

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1235.53)	(0+10, 1234.97)	0.100
(0+10, 1234.97)	(0+30, 1235.31)	0.020

Results

Discharge	5.00	ft^3/s
Elevation Range	1234.56 to 1235.53 ft	
Flow Area	7.34	ft^2
Wetted Perimeter	24.59	ft
Top Width	24.51	ft
Normal Depth	0.67	ft
Critical Depth	0.38	ft
Critical Slope	0.07778	ft/ft

87th St. NB (Osborn / 87th) - INT4

Results

Velocity	0.68	ft/s
Velocity Head	0.01	ft
Specific Energy	0.68	ft
Froude Number	0.22	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.38	ft
Channel Slope	0.00321	ft/ft
Critical Slope	0.07778	ft/ft

87th St. SB (Osborn / 87th) - INT4

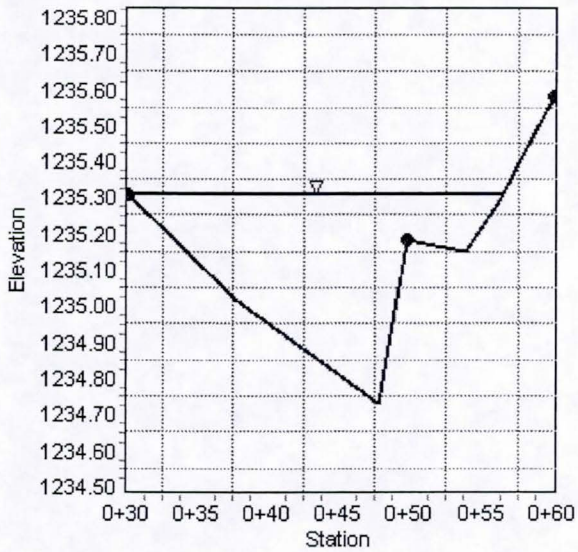
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00321	ft/ft
Normal Depth	0.58	ft
Discharge	4.49	ft^3/s

Cross Section Image



87th St. SB (Osborn / 87th) - INT4

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00321	ft/ft
Normal Depth	0.58	ft

Section Definitions

Station (ft)	Elevation (ft)
0+30	1235.31
0+38	1235.02
0+48	1234.73
0+50	1235.18
0+54	1235.15
0+56	1235.28
0+60	1235.58

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+30, 1235.31)	(0+50, 1235.18)	0.020
(0+50, 1235.18)	(0+60, 1235.58)	0.100

Results

Discharge	4.49	ft^3/s
Elevation Range	1234.73 to 1235.58 ft	
Flow Area	6.97	ft^2
Wetted Perimeter	26.42	ft
Top Width	26.36	ft
Normal Depth	0.58	ft
Critical Depth	0.32	ft
Critical Slope	0.07737	ft/ft
Velocity	0.64	ft/s
Velocity Head	0.01	ft

87th St. SB (Osborn / 87th) - INT4

Results

Specific Energy	0.59	ft
Froude Number	0.22	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.58	ft
Critical Depth	0.32	ft
Channel Slope	0.00321	ft/ft
Critical Slope	0.07737	ft/ft

Earll Dr. (Earll / 86th) - INT6

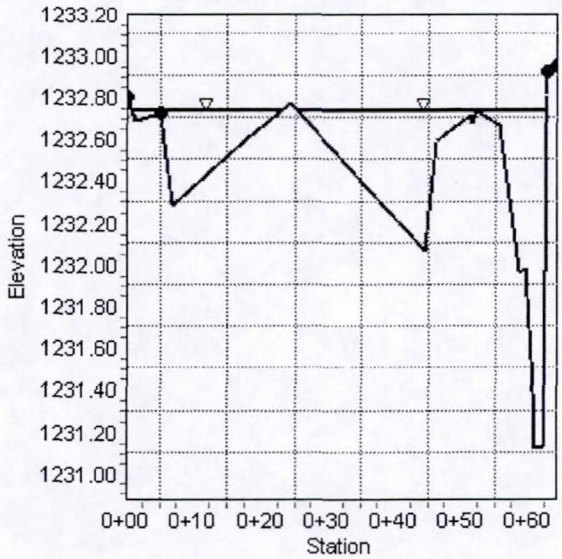
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00320	ft/ft
Normal Depth	1.61	ft
Discharge	11.82	ft^3/s

Cross Section Image



Earll Dr. (Earll / 86th) - INT6

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00320	ft/ft
Normal Depth	1.61	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1232.80
0+01	1232.71
0+01	1232.69
0+05	1232.72
0+07	1232.28
0+18	1232.60
0+24	1232.77
0+27	1232.67
0+45	1232.06
0+45	1232.26
0+46	1232.59
0+51	1232.71
0+51	1232.68
0+52	1232.73
0+56	1232.67
0+59	1231.96
0+59	1231.98
0+61	1231.38
0+61	1231.12
0+62	1231.13
0+63	1232.81
0+63	1232.92
0+64	1232.95

Roughness Segment Definitions

Earll Dr. (Earll / 86th) - INT6

Input Data

Start Station	Ending Station	Roughness Coefficient
(0+00, 1232.80)	(0+05, 1232.72)	0.100
(0+05, 1232.72)	(0+63, 1232.92)	0.020
(0+63, 1232.92)	(0+64, 1232.95)	0.100

Results

Discharge		11.82	ft^3/s
Elevation Range	1231.12 to 1232.95 ft		
Flow Area		17.54	ft^2
Wetted Perimeter		60.87	ft
Top Width		59.36	ft
Normal Depth		1.61	ft
Critical Depth		1.15	ft
Critical Slope		0.07088	ft/ft
Velocity		0.67	ft/s
Velocity Head		0.01	ft
Specific Energy		1.62	ft
Froude Number		0.22	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.61	ft
Critical Depth	1.15	ft
Channel Slope	0.00320	ft/ft
Critical Slope	0.07088	ft/ft

86th St. (Earll / 86th) - INT6

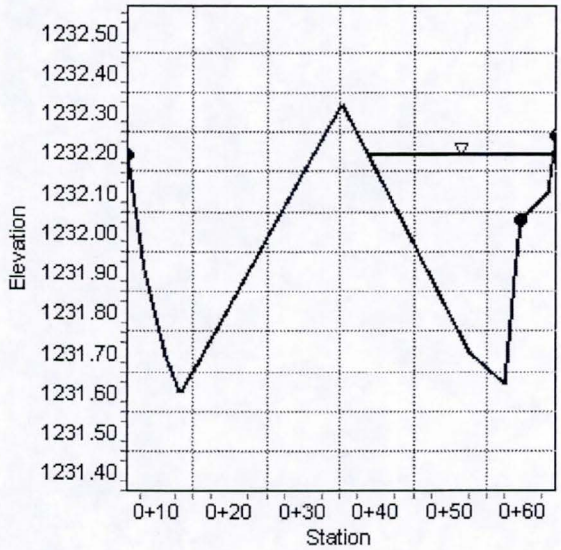
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00510	ft/ft
Normal Depth	0.59	ft
Discharge	20.20	ft^3/s

Cross Section Image



86th St. (Earll / 86th) - INT6

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00510	ft/ft
Normal Depth	0.59	ft

Section Definitions

Station (ft)	Elevation (ft)
0+06	1232.19
0+08	1231.90
0+11	1231.69
0+13	1231.60
0+13	1231.60
0+35	1232.32
0+53	1231.70
0+57	1231.62
0+59	1231.89
0+59	1232.03
0+63	1232.10
0+64	1232.24

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+06, 1232.19)	(0+59, 1232.03)	0.020
(0+59, 1232.03)	(0+64, 1232.24)	0.100

Results

Discharge	20.20	ft^3/s
Elevation Range	1231.60 to 1232.32 ft	
Flow Area	15.07	ft^2
Wetted Perimeter	50.39	ft
Top Width	50.29	ft

86th St. (Earll / 86th) - INT6

Results

Normal Depth		0.59	ft
Critical Depth		0.42	ft
Critical Slope		0.03027	ft/ft
Velocity		1.34	ft/s
Velocity Head		0.03	ft
Specific Energy		0.62	ft
Froude Number		0.43	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.59	ft
Critical Depth	0.42	ft
Channel Slope	0.00510	ft/ft
Critical Slope	0.03027	ft/ft

48" SD (Thomas / 87th) - INT9

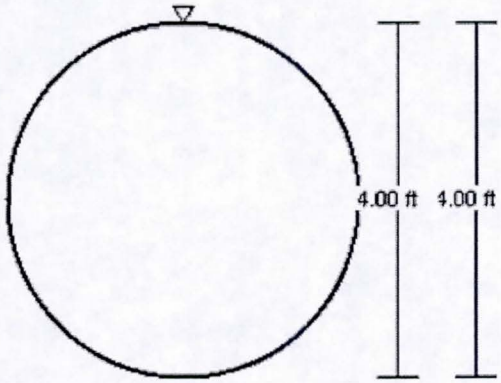
Project Description

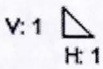
Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Normal Depth	4.00	ft
Diameter	4.00	ft
Discharge	55.63	ft^3/s

Cross Section Image





48" SD (Thomas / 87th) - INT9

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00150	ft/ft
Normal Depth	4.00	ft
Diameter	4.00	ft

Results

Discharge	55.63	ft^3/s
Flow Area	12.57	ft^2
Wetted Perimeter	12.57	ft
Top Width	0.00	ft
Critical Depth	2.24	ft
Percent Full	100.0	%
Critical Slope	0.00411	ft/ft
Velocity	4.43	ft/s
Velocity Head	0.30	ft
Specific Energy	4.30	ft
Froude Number	0.00	
Maximum Discharge	59.84	ft^3/s
Discharge Full	55.63	ft^3/s
Slope Full	0.00150	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s

48" SD (Thomas / 87th) - INT9

GVF Output Data

Normal Depth	4.00	ft
Critical Depth	2.24	ft
Channel Slope	0.00150	ft/ft
Critical Slope	0.00411	ft/ft

87th St. (Thomas / 87th) - INT9

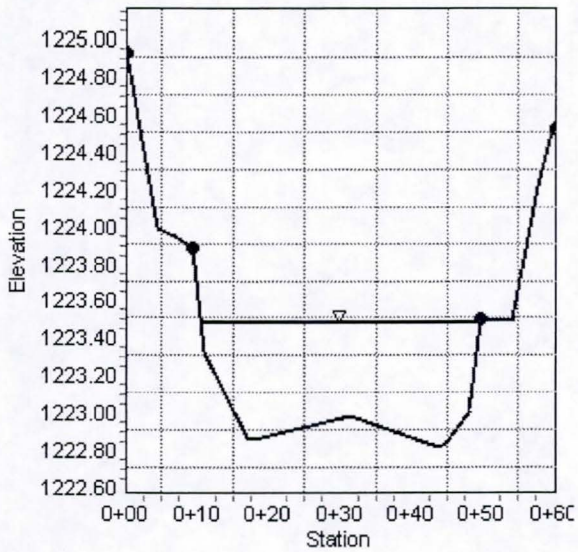
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00326	ft/ft
Normal Depth	0.67	ft
Discharge	57.54	ft^3/s

Cross Section Image



87th St. (Thomas / 87th) - INT9

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00326	ft/ft
Normal Depth	0.67	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	1224.93
0+04	1223.99
0+07	1223.94
0+09	1223.88
0+10	1223.50
0+11	1223.32
0+17	1222.86
0+18	1222.85
0+19	1222.86
0+32	1222.98
0+41	1222.84
0+44	1222.81
0+45	1222.84
0+48	1223.01
0+48	1223.07
0+50	1223.50
0+54	1223.49
0+58	1224.22
0+60	1224.52
0+60	1224.53

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1224.93)	(0+09, 1223.88)	0.100

87th St. (Thomas / 87th) - INT9

Input Data

Start Station	Ending Station	Roughness Coefficient
(0+09, 1223.88)	(0+50, 1223.50)	0.020
(0+50, 1223.50)	(0+60, 1224.53)	0.100

Results

Discharge		57.54	ft³/s
Elevation Range	1222.81 to 1224.93 ft		
Flow Area		20.74	ft²
Wetted Perimeter		39.20	ft
Top Width		39.07	ft
Normal Depth		0.67	ft
Critical Depth		0.54	ft
Critical Slope		0.00785	ft/ft
Velocity		2.77	ft/s
Velocity Head		0.12	ft
Specific Energy		0.79	ft
Froude Number		0.67	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.54	ft
Channel Slope	0.00326	ft/ft
Critical Slope	0.00785	ft/ft