```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                      Michael Baker International
                    5 Hutton Centre Drive, Suite 500
                         Santa Ana, CA 92707


 ************************* DESCRIPTION OF STUDY *************************
* SAN JUAN CREEK WATERSHED STUDY - RATIONAL METHOD                      *
* REGIONAL WATERSHED S19- COMPLEX                                       *
* 100-YR RM EV MARCH 2019 FKAZI                                         *
 ************************************************************************

  FILE NAME: RU00EV19.DAT
  TIME/DATE OF STUDY: 11:52 03/29/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.126
   2)   10.00;  3.913
   3)   15.00;  3.013
   4)   20.00;  2.470
   5)   25.00;  2.132
   6)   30.00;  1.903
   7)   40.00;  1.647
   8)   50.00;  1.421
   9)   60.00;  1.323
  10)   90.00;  1.122
  11)  120.00;  0.987
  12)  180.00;  0.829
  13)  360.00;  0.620
  14) 1200.00;  0.273
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  5.151
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         -        1.62      0.30      0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      7.07
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      7.07

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.47
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   3.19
  Tc(MIN.) =   10.39
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   26.83
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      32.00
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.69   FLOW VELOCITY(FEET/SEC.) =   4.07
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.267
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.84
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   13.59
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   92.97
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =     119.81
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.64   FLOW VELOCITY(FEET/SEC.) =   5.52
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.763
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.02
  AVERAGE FLOW DEPTH(FEET) =   2.44   TRAVEL TIME(MIN.) =   3.71
```



```
  Tc(MIN.) =   17.30
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   52.69
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     152.33
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.50   FLOW VELOCITY(FEET/SEC.) =   4.06
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.315
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     215.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.43
  AVERAGE FLOW DEPTH(FEET) =   2.29   TRAVEL TIME(MIN.) =   4.99
  Tc(MIN.) =   22.29
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =  125.00
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     249.87
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.49   FLOW VELOCITY(FEET/SEC.) =   6.70
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.99
```

```
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.122
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       63.15      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     301.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.98
 AVERAGE FLOW DEPTH(FEET) =   1.97   TRAVEL TIME(MIN.) =   2.93
 Tc(MIN.) =   25.22
 SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =  103.55
 EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
 TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     329.70
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.07

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.07   FLOW VELOCITY(FEET/SEC.) =  11.26
 LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.004
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       84.87      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     394.80
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.18
 AVERAGE FLOW DEPTH(FEET) =   1.80   TRAVEL TIME(MIN.) =   2.57
 Tc(MIN.) =   27.79
 SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =  130.16
 EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
 TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     438.66
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.90

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.90   FLOW VELOCITY(FEET/SEC.) =  16.70
 LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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



```
 FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.89
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.848
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      199.43      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     577.66
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.91
 AVERAGE FLOW DEPTH(FEET) =   2.85   TRAVEL TIME(MIN.) =   4.35
 Tc(MIN.) =   32.15
 SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  277.86
 EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
 TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     676.56
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.10   FLOW VELOCITY(FEET/SEC.) =  13.47
 LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =   32.15
 RAINFALL INTENSITY(INCH/HR) =   1.85
 AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98
 EFFECTIVE STREAM AREA(ACRES) =     484.08
 TOTAL STREAM AREA(ACRES) =     484.08
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     676.56

****************************************************************************
 FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
 ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.520
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.03
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =     10.03

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.259
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.58
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   1.45
  Tc(MIN.) =   13.63
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =   15.42
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      24.64
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.44

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   5.18
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.25
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.579
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.88
  AVERAGE FLOW DEPTH(FEET) =   1.13   TRAVEL TIME(MIN.) =   5.36
  Tc(MIN.) =   19.00
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =  111.38
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =     130.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =   6.81
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.349
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     190.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.69
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   21.79
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =  120.15
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     237.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.47   FLOW VELOCITY(FEET/SEC.) =  12.50
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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

```
 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.198
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     304.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.52
 AVERAGE FLOW DEPTH(FEET) =   1.79   TRAVEL TIME(MIN.) =   2.24
 Tc(MIN.) =   24.03
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =  134.10
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     353.89
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.95

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.95   FLOW VELOCITY(FEET/SEC.) =  13.07
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.60
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.037
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     409.00
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.45
 AVERAGE FLOW DEPTH(FEET) =   2.58   TRAVEL TIME(MIN.) =   3.05
 Tc(MIN.) =   27.08
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =  110.18
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     434.11
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.66

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.66   FLOW VELOCITY(FEET/SEC.) =  10.65
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.64
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.939
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     605.42
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.15
 AVERAGE FLOW DEPTH(FEET) =   2.62   TRAVEL TIME(MIN.) =   2.14
 Tc(MIN.) =   29.22
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  342.51
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     752.12
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.94   FLOW VELOCITY(FEET/SEC.) =  16.11
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.74
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.837
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED                -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     828.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.74
  AVERAGE FLOW DEPTH(FEET) =   3.73   TRAVEL TIME(MIN.) =   3.36
  Tc(MIN.) =   32.57
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =  153.32
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     858.76
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.80   FLOW VELOCITY(FEET/SEC.) =  12.86
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   32.57
  RAINFALL INTENSITY(INCH/HR) =   1.84
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     858.76

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      676.56   32.15    1.848  0.30( 0.30) 0.98     484.1   11900.00
      2      858.76   32.57    1.837  0.30( 0.30) 1.00     620.7   11910.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1530.12   32.15    1.848  0.30( 0.30) 0.99    1096.7   11900.00
      2     1530.59   32.57    1.837  0.30( 0.30) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1530.59    Tc(MIN.) =    32.57
  EFFECTIVE AREA(ACRES) =    1104.79   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.782
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1602.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.86
  AVERAGE FLOW DEPTH(FEET) =   6.44   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   34.75
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =  143.30
  EFFECTIVE AREA(ACRES) =   1212.26     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =    1618.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.47   FLOW VELOCITY(FEET/SEC.) =  10.89
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1619.54   34.32    1.792  0.30( 0.30) 0.99    1204.2   11900.00
      2     1618.54   34.75    1.782  0.30( 0.30) 0.99    1212.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1619.54  Tc(MIN.) =   34.32
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =    1204.17

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.59
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.726
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1840.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.10
  AVERAGE FLOW DEPTH(FEET) =   6.57   TRAVEL TIME(MIN.) =   2.60
  Tc(MIN.) =   36.92
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  441.81
  EFFECTIVE AREA(ACRES) =   1548.44     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1989.26
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.82   FLOW VELOCITY(FEET/SEC.) =  12.35
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1989.26   36.92    1.726  0.30( 0.30) 0.99    1548.4   11900.00
      2     1984.41   37.34    1.715  0.30( 0.30) 1.00    1556.5   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1989.26  Tc(MIN.) =   36.92
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =    1548.44

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.630
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2088.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.47
  AVERAGE FLOW DEPTH(FEET) =   6.99   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   40.74
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  197.76
  EFFECTIVE AREA(ACRES) =   1713.62     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    2053.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.93   FLOW VELOCITY(FEET/SEC.) =  12.42
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2053.72   40.74    1.630  0.30( 0.30) 1.00    1713.6   11900.00
      2     2048.46   41.17    1.621  0.30( 0.30) 1.00    1721.7   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2053.72  Tc(MIN.) =   40.74
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    1713.62

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2302.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.07
  AVERAGE FLOW DEPTH(FEET) =   7.58   TRAVEL TIME(MIN.) =   2.55
  Tc(MIN.) =   43.29
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  496.81
  EFFECTIVE AREA(ACRES) =   2147.35     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    2461.77
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.82   FLOW VELOCITY(FEET/SEC.) =  12.27
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2461.77   43.29    1.573  0.30( 0.30) 1.00    2147.4   11900.00
      2     2452.21   43.72    1.563  0.30( 0.30) 1.00    2155.4   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2461.77  Tc(MIN.) =   43.29
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
```

```
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2147.35

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.487
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2603.57
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.12
  AVERAGE FLOW DEPTH(FEET) =   8.16   TRAVEL TIME(MIN.) =   3.79
  Tc(MIN.) =   47.08
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  283.56
  EFFECTIVE AREA(ACRES) =   2412.77     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    2579.81
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.13   FLOW VELOCITY(FEET/SEC.) =  12.09
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2579.81   47.08    1.487  0.30( 0.30) 1.00    2412.8   11900.00
      2     2567.11   47.51    1.477  0.30( 0.30) 1.00    2420.9   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2579.81  Tc(MIN.) =   47.08
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2412.77

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.23
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.418
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2628.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.03
  AVERAGE FLOW DEPTH(FEET) =   9.22   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   50.28
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   98.10
  EFFECTIVE AREA(ACRES) =   2510.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    2579.81
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.14

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.14   FLOW VELOCITY(FEET/SEC.) =   9.98
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2579.81   50.28    1.418  0.30( 0.30) 1.00    2510.2   11900.00
      2     2567.11   50.71    1.414  0.30( 0.30) 1.00    2518.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2579.81  Tc(MIN.) =   50.28
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2510.23

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.388
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2606.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.55
  AVERAGE FLOW DEPTH(FEET) =   8.41   TRAVEL TIME(MIN.) =   3.13
  Tc(MIN.) =   53.41
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   52.70
  EFFECTIVE AREA(ACRES) =   2564.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```

```
 TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    2579.81
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.37

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  8.37   FLOW VELOCITY(FEET/SEC.) =  11.52
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1     2579.81   53.41    1.388  0.30( 0.30) 1.00    2564.1   11900.00
     2     2567.11   53.85    1.383  0.30( 0.30) 1.00    2572.1   11910.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2579.81  Tc(MIN.) =   53.41
 AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2564.06

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P401XXCE.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      944.38   25.32  0.30( 0.30) 1.00     624.3   40130.00
     2      939.28   27.13  0.30( 0.30) 1.00     654.2   40100.00
   TOTAL AREA(ACRES) =      654.2

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1     2579.81   53.41    1.388  0.30( 0.30) 1.00    2564.1   11900.00
     2     2567.11   53.85    1.383  0.30( 0.30) 1.00    2572.1   11910.00
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1      944.38   25.32    2.118  0.30( 0.30) 1.00     624.3   40130.00
     2      939.28   27.13    2.034  0.30( 0.30) 1.00     654.2   40100.00
 LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.
```



```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1     2987.26   25.32    2.118  0.30( 0.30) 1.00    1839.8   40130.00
     2     3028.60   27.13    2.034  0.30( 0.30) 1.00    1956.9   40100.00
     3     3168.88   53.41    1.388  0.30( 0.30) 1.00    3218.3   11900.00
     4     3153.84   53.85    1.383  0.30( 0.30) 1.00    3226.4   11910.00
   TOTAL AREA(ACRES) =      3226.4

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     3168.88  Tc(MIN.) =   53.406
 EFFECTIVE AREA(ACRES) =   3218.26  AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3226.4
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.49
 CHANNEL FLOW THRU SUBAREA(CFS) =    3168.88
 FLOW VELOCITY(FEET/SEC.) =   9.76   FLOW DEPTH(FEET) =  10.49
 TRAVEL TIME(MIN.) =   1.68   Tc(MIN.) =   55.09
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1     2987.26   27.03    2.039  0.30( 0.30) 1.00    1839.8   40130.00
     2     3028.60   28.84    1.956  0.30( 0.30) 1.00    1956.9   40100.00
     3     3168.88   55.09    1.371  0.30( 0.30) 1.00    3218.3   11900.00
     4     3153.84   55.53    1.367  0.30( 0.30) 1.00    3226.4   11910.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    3168.88  Tc(MIN.) =   55.09
 AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3218.26

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   55.09
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.371
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    8.10
  EFFECTIVE AREA(ACRES) =   3226.66   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.371
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.48
  EFFECTIVE AREA(ACRES) =   3227.16   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.371
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.93
  EFFECTIVE AREA(ACRES) =   3229.16   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.363
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       78.01      0.30     0.984     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3206.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.86
  AVERAGE FLOW DEPTH(FEET) =   8.54   TRAVEL TIME(MIN.) =   0.78
  Tc(MIN.) =   55.87
  SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   75.01
  EFFECTIVE AREA(ACRES) =   3307.17     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    3168.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.50   FLOW VELOCITY(FEET/SEC.) =  13.82
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2987.26   27.82    2.003  0.30( 0.30) 1.00    1928.7   40130.00
      2     3028.60   29.63    1.920  0.30( 0.30) 1.00    2045.8   40100.00
      3     3168.88   55.87    1.363  0.30( 0.30) 1.00    3307.2   11900.00
```

```
     4     3162.81   56.31    1.359  0.30( 0.30) 1.00    3315.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3168.88  Tc(MIN.) =   55.87
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3307.17

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.363
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    1.63
  EFFECTIVE AREA(ACRES) =   3308.87   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    3169.66

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.18      0.30     0.890     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3173.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.24
  AVERAGE FLOW DEPTH(FEET) =  10.84   TRAVEL TIME(MIN.) =   2.38
  Tc(MIN.) =   58.25
  SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    7.90
  EFFECTIVE AREA(ACRES) =   3317.05     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    3169.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.84
```



```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.84   FLOW VELOCITY(FEET/SEC.) =   9.23
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2987.26   30.24    1.897  0.30( 0.30) 1.00    1938.6   40130.00
      2     3028.60   32.04    1.851  0.30( 0.30) 1.00    2055.7   40100.00
      3     3169.66   58.25    1.340  0.30( 0.30) 1.00    3317.1   11900.00
      4     3164.43   58.70    1.336  0.30( 0.30) 1.00    3325.1   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3169.66  Tc(MIN.) =   58.25
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3317.05

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.25
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.340
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    2.34
  EFFECTIVE AREA(ACRES) =   3319.55   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    3169.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S18X00.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    22054.84   36.58  0.30( 0.30) 1.00    7926.9   11831.00
      2    22725.41   39.13  0.30( 0.30) 1.00    8505.3   11801.00
      3    25134.97   47.53  0.30( 0.30) 1.00   10691.9   11500.00
      4    25502.09   49.16  0.30( 0.30) 1.00   11329.9   11530.00
      5    26360.19   53.71  0.30( 0.30) 1.00   13011.5   11701.00
```

```
      6    26779.09   55.76  0.30( 0.30) 1.00   13818.6   11000.00
      7    29291.04   65.53  0.30( 0.30) 1.00   18866.7   11330.00
      8    30114.29   72.03  0.30( 0.30) 1.00   22317.4   11130.00
      9    29645.18   80.38  0.30( 0.30) 1.00   25368.4   11620.00
     10    29500.26   82.66  0.30( 0.30) 1.00   26144.7   11600.00
     11    29052.00   88.60  0.30( 0.30) 1.00   27897.1   11111.00
     12    28910.69   90.07  0.30( 0.30) 1.00   28280.6   11101.00
     13    28571.47   94.86  0.30( 0.30) 1.00   29290.8   10710.00
     14    28361.22   96.69  0.30( 0.30) 1.00   29594.6   10410.00
     15    27934.24  101.05  0.30( 0.30) 1.00   30249.2   10700.00
     16    27383.49  107.91  0.30( 0.30) 1.00   31215.0   10400.00
     17    27137.20  109.87  0.30( 0.30) 1.00   31440.4   10200.00
     18    26251.80  115.74  0.30( 0.30) 1.00   32001.9   10300.00
     19    25289.37  121.31  0.30( 0.30) 1.00   32223.4   10210.00
     20    23048.07  146.70  0.30( 0.30) 1.00   32916.6   10100.00
    TOTAL AREA(ACRES) =    32916.6

****************************************************************************
  FLOW PROCESS FROM NODE  12526.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S25X00.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     7548.90   65.18  0.30( 0.30) 0.99    6431.3   12500.00
      2     8477.91   78.32  0.30( 0.30) 0.99    8413.1   12300.00
      3     8593.88   79.61  0.30( 0.30) 0.98    8691.0   12330.00
      4     8774.49   82.20  0.30( 0.30) 0.98    9202.6   12410.00
      5     9008.69   86.22  0.30( 0.29) 0.98    9924.8   12400.00
      6     9221.87   90.84  0.30( 0.29) 0.98   10622.1   12211.00
      7     9347.17   94.81  0.30( 0.29) 0.98   11209.1   12201.00
      8     9384.46   98.70  0.30( 0.29) 0.98   11677.0   12111.00
      9     9366.85  101.16  0.30( 0.29) 0.98   11977.9   12231.00
     10     9319.62  103.97  0.30( 0.29) 0.98   12282.5   12101.10
     11     9299.62  104.81  0.30( 0.29) 0.98   12363.8   12261.00
     12     8916.90  115.67  0.30( 0.29) 0.98   13112.3   12010.00
     13     8576.29  123.92  0.30( 0.29) 0.98   13237.1   12000.00
    TOTAL AREA(ACRES) =    13237.1

****************************************************************************
  FLOW PROCESS FROM NODE  12526.00 TO NODE  12527.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     7548.90   65.18  0.30( 0.30) 0.99    6431.3   12500.00
      2     8477.91   78.32  0.30( 0.30) 0.99    8413.1   12300.00
      3     8593.88   79.61  0.30( 0.30) 0.98    8691.0   12330.00
      4     8774.49   82.20  0.30( 0.30) 0.98    9202.6   12410.00
      5     9008.69   86.22  0.30( 0.29) 0.98    9924.8   12400.00
      6     9221.87   90.84  0.30( 0.29) 0.98   10622.1   12211.00
      7     9347.17   94.81  0.30( 0.29) 0.98   11209.1   12201.00
      8     9384.46   98.70  0.30( 0.29) 0.98   11677.0   12111.00
```



```
      9     9366.85  101.16  0.30( 0.29) 0.98   11977.9   12231.00
     10     9319.62  103.97  0.30( 0.29) 0.98   12282.5   12101.10
     11     9299.62  104.81  0.30( 0.29) 0.98   12363.8   12261.00
     12     8916.90  115.67  0.30( 0.29) 0.98   13112.3   12010.00
     13     8576.29  123.92  0.30( 0.29) 0.98   13237.1   12000.00
    TOTAL AREA(ACRES) =     13237.1

****************************************************************************
  FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     7548.90   65.18    1.288  0.30( 0.30) 0.99    6431.3   12500.00
      2     8477.91   78.32    1.200  0.30( 0.30) 0.99    8413.1   12300.00
      3     8593.88   79.61    1.192  0.30( 0.30) 0.98    8691.0   12330.00
      4     8774.49   82.20    1.174  0.30( 0.30) 0.98    9202.6   12410.00
      5     9008.69   86.22    1.147  0.30( 0.29) 0.98    9924.8   12400.00
      6     9221.87   90.84    1.118  0.30( 0.29) 0.98   10622.1   12211.00
      7     9347.17   94.81    1.100  0.30( 0.29) 0.98   11209.1   12201.00
      8     9384.46   98.70    1.083  0.30( 0.29) 0.98   11677.0   12111.00
      9     9366.85  101.16    1.072  0.30( 0.29) 0.98   11977.9   12231.00
     10     9319.62  103.97    1.059  0.30( 0.29) 0.98   12282.5   12101.10
     11     9299.62  104.81    1.055  0.30( 0.29) 0.98   12363.8   12261.00
     12     8916.90  115.67    1.006  0.30( 0.29) 0.98   13112.3   12010.00
     13     8576.29  123.92    0.977  0.30( 0.29) 0.98   13237.1   12000.00
  LONGEST FLOWPATH FROM NODE  12000.00 TO NODE  12527.00 =   77156.98 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22054.84   36.58    1.735  0.30( 0.30) 1.00    7926.9   11831.00
      2    22725.41   39.13    1.669  0.30( 0.30) 1.00    8505.3   11801.00
      3    25134.97   47.53    1.477  0.30( 0.30) 1.00   10691.9   11500.00
      4    25502.09   49.16    1.440  0.30( 0.30) 1.00   11329.9   11530.00
      5    26360.19   53.71    1.385  0.30( 0.30) 1.00   13011.5   11701.00
      6    26779.09   55.76    1.365  0.30( 0.30) 1.00   13818.6   11000.00
      7    29291.04   65.53    1.286  0.30( 0.30) 1.00   18866.7   11330.00
      8    30114.29   72.03    1.242  0.30( 0.30) 1.00   22317.4   11130.00
      9    29645.18   80.38    1.186  0.30( 0.30) 1.00   25368.4   11620.00
     10    29500.26   82.66    1.171  0.30( 0.30) 1.00   26144.7   11600.00
     11    29052.00   88.60    1.131  0.30( 0.30) 1.00   27897.1   11111.00
     12    28910.69   90.07    1.122  0.30( 0.30) 1.00   28280.6   11101.00
     13    28571.47   94.86    1.100  0.30( 0.30) 1.00   29290.8   10710.00
     14    28361.22   96.69    1.092  0.30( 0.30) 1.00   29594.6   10410.00
     15    27934.24  101.05    1.072  0.30( 0.30) 1.00   30249.2   10700.00
     16    27383.49  107.91    1.041  0.30( 0.30) 1.00   31215.0   10400.00
     17    27137.20  109.87    1.033  0.30( 0.30) 1.00   31440.4   10200.00
     18    26251.80  115.74    1.006  0.30( 0.30) 1.00   32001.9   10300.00
     19    25289.37  121.31    0.984  0.30( 0.30) 1.00   32223.4   10210.00
     20    23048.07  146.70    0.917  0.30( 0.30) 1.00   32916.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12527.00 =   97868.13 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	28196.41	36.58	1.735	0.30(0.30)	0.99	11536.0	11831.00
2	28997.24	39.13	1.669	0.30(0.30)	0.99	12366.4	11801.00
3	31685.73	47.53	1.477	0.30(0.30)	0.99	15382.2	11500.00
4	32066.13	49.16	1.440	0.30(0.30)	0.99	16181.3	11530.00
5	33185.00	53.71	1.385	0.30(0.30)	0.99	18311.7	11701.00
6	33733.33	55.76	1.365	0.30(0.30)	0.99	19320.5	11000.00
7	36747.98	65.18	1.288	0.30(0.30)	0.99	25113.1	12500.00
8	36865.25	65.53	1.286	0.30(0.30)	0.99	25351.9	11330.00
9	38148.02	72.03	1.242	0.30(0.30)	0.99	29783.0	11130.00
10	38239.23	78.32	1.200	0.30(0.30)	0.99	33026.2	12300.00
11	38282.50	79.61	1.192	0.30(0.30)	0.99	33776.9	12330.00
12	38292.96	80.38	1.186	0.30(0.30)	0.99	34212.1	11620.00
13	38303.77	82.20	1.174	0.30(0.30)	0.99	35191.7	12410.00
14	38301.27	82.66	1.171	0.30(0.30)	0.99	35429.0	11600.00
15	38240.18	86.22	1.147	0.30(0.30)	0.99	37120.1	12400.00
16	38170.52	88.60	1.131	0.30(0.30)	0.99	38181.1	11111.00
17	38097.30	90.07	1.122	0.30(0.30)	0.99	38787.4	11101.00
18	38078.45	90.84	1.118	0.30(0.30)	0.99	39063.9	12211.00
19	37922.34	94.81	1.100	0.30(0.30)	0.99	40488.9	12201.00
20	37919.14	94.86	1.100	0.30(0.30)	0.99	40506.2	10710.00
21	37726.41	96.69	1.092	0.30(0.30)	0.99	41029.8	10410.00
22	37548.75	98.70	1.083	0.30(0.30)	0.99	41573.6	12111.00
23	37301.90	101.05	1.072	0.30(0.30)	0.99	42213.4	10700.00
24	37292.05	101.16	1.072	0.30(0.30)	0.99	42243.0	12231.00
25	37019.30	103.97	1.059	0.30(0.30)	0.99	42943.0	12101.10
26	36931.54	104.81	1.055	0.30(0.30)	0.99	43143.1	12261.00
27	36574.05	107.91	1.041	0.30(0.30)	0.99	43792.1	10400.00
28	36258.75	109.87	1.033	0.30(0.30)	0.99	44152.4	10200.00
29	35179.73	115.67	1.006	0.30(0.30)	0.99	45107.2	12010.00
30	35165.68	115.74	1.006	0.30(0.30)	0.99	45115.3	10300.00
31	33973.56	121.31	0.984	0.30(0.30)	0.99	45420.9	10210.00
32	33634.95	123.92	0.977	0.30(0.30)	0.99	45531.8	12000.00
33	30871.16	146.70	0.917	0.30(0.30)	0.99	46153.7	10100.00

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 38303.77 Tc(MIN.) = 82.200
EFFECTIVE AREA(ACRES) = 35191.74 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

****
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.79
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.170
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.30	0.987	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38309.42
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.73
AVERAGE FLOW DEPTH(FEET) = 9.79 TRAVEL TIME(MIN.) = 0.56
Tc(MIN.) = 82.76
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 11.31
EFFECTIVE AREA(ACRES) = 35206.11 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 38303.77
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.79 FLOW VELOCITY(FEET/SEC.) = 15.72
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	28196.41	37.20	1.719	0.30(0.30)		0.99	11550.4	11831.00
2	28997.24	39.75	1.653	0.30(0.30)		0.99	12380.8	11801.00
3	31685.73	48.13	1.463	0.30(0.30)		0.99	15396.6	11500.00
4	32066.13	49.76	1.426	0.30(0.30)		0.99	16195.7	11530.00
5	33185.00	54.30	1.379	0.30(0.30)		0.99	18326.0	11701.00
6	33733.33	56.35	1.359	0.30(0.30)		0.99	19334.9	11000.00
7	36747.98	65.75	1.284	0.30(0.30)		0.99	25127.5	12500.00
8	36865.25	66.10	1.282	0.30(0.30)		0.99	25366.3	11330.00
9	38148.02	72.60	1.239	0.30(0.30)		0.99	29797.3	11130.00
10	38239.23	78.88	1.197	0.30(0.30)		0.99	33040.6	12300.00
11	38282.50	80.17	1.188	0.30(0.30)		0.99	33791.3	12330.00
12	38292.96	80.95	1.183	0.30(0.30)		0.99	34226.5	11620.00
13	38303.77	82.76	1.170	0.30(0.30)		0.99	35206.1	12410.00
14	38301.27	83.22	1.167	0.30(0.30)		0.99	35443.4	11600.00
15	38240.18	86.78	1.144	0.30(0.30)		0.99	37134.5	12400.00
16	38170.52	89.16	1.128	0.30(0.30)		0.99	38195.5	11111.00
17	38097.30	90.64	1.119	0.30(0.30)		0.99	38801.7	11101.00
18	38078.45	91.40	1.116	0.30(0.30)		0.99	39078.2	12211.00
19	37922.34	95.38	1.098	0.30(0.30)		0.99	40503.2	12201.00
20	37919.14	95.43	1.098	0.30(0.30)		0.99	40520.6	10710.00
21	37726.41	97.26	1.089	0.30(0.30)		0.99	41044.2	10410.00
22	37548.75	99.27	1.080	0.30(0.30)		0.99	41587.9	12111.00
23	37301.90	101.62	1.070	0.30(0.30)		0.99	42227.7	10700.00
24	37292.05	101.73	1.069	0.30(0.30)		0.99	42257.4	12231.00
25	37019.30	104.54	1.057	0.30(0.30)		0.99	42957.4	12101.10
26	36931.54	105.38	1.053	0.30(0.30)		0.99	43157.5	12261.00
27	36574.05	108.48	1.039	0.30(0.30)		0.99	43806.5	10400.00
28	36258.75	110.44	1.030	0.30(0.30)		0.99	44166.8	10200.00
29	35179.73	116.25	1.004	0.30(0.30)		0.99	45121.6	12010.00
30	35165.68	116.32	1.004	0.30(0.30)		0.99	45129.7	10300.00
31	33973.56	121.90	0.982	0.30(0.30)		0.99	45435.3	10210.00
32	33634.95	124.51	0.975	0.30(0.30)		0.99	45546.2	12000.00
33	30871.16	147.31	0.915	0.30(0.30)		0.99	46168.0	10100.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 38303.77 Tc(MIN.) = 82.76

AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 35206.11

****
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28196.41	37.20	1.719	0.30(0.30)	0.99	11550.4	11831.00
2	28997.24	39.75	1.653	0.30(0.30)	0.99	12380.8	11801.00
3	31685.73	48.13	1.463	0.30(0.30)	0.99	15396.6	11500.00
4	32066.13	49.76	1.426	0.30(0.30)	0.99	16195.7	11530.00
5	33185.00	54.30	1.379	0.30(0.30)	0.99	18326.0	11701.00
6	33733.33	56.35	1.359	0.30(0.30)	0.99	19334.9	11000.00
7	36747.98	65.75	1.284	0.30(0.30)	0.99	25127.5	12500.00
8	36865.25	66.10	1.282	0.30(0.30)	0.99	25366.3	11330.00
9	38148.02	72.60	1.239	0.30(0.30)	0.99	29797.3	11130.00
10	38239.23	78.88	1.197	0.30(0.30)	0.99	33040.6	12300.00
11	38282.50	80.17	1.188	0.30(0.30)	0.99	33791.3	12330.00
12	38292.96	80.95	1.183	0.30(0.30)	0.99	34226.5	11620.00
13	38303.77	82.76	1.170	0.30(0.30)	0.99	35206.1	12410.00
14	38301.27	83.22	1.167	0.30(0.30)	0.99	35443.4	11600.00
15	38240.18	86.78	1.144	0.30(0.30)	0.99	37134.5	12400.00
16	38170.52	89.16	1.128	0.30(0.30)	0.99	38195.5	11111.00
17	38097.30	90.64	1.119	0.30(0.30)	0.99	38801.7	11101.00
18	38078.45	91.40	1.116	0.30(0.30)	0.99	39078.2	12211.00
19	37922.34	95.38	1.098	0.30(0.30)	0.99	40503.2	12201.00
20	37919.14	95.43	1.098	0.30(0.30)	0.99	40520.6	10710.00
21	37726.41	97.26	1.089	0.30(0.30)	0.99	41044.2	10410.00
22	37548.75	99.27	1.080	0.30(0.30)	0.99	41587.9	12111.00
23	37301.90	101.62	1.070	0.30(0.30)	0.99	42227.7	10700.00
24	37292.05	101.73	1.069	0.30(0.30)	0.99	42257.4	12231.00
25	37019.30	104.54	1.057	0.30(0.30)	0.99	42957.4	12101.10
26	36931.54	105.38	1.053	0.30(0.30)	0.99	43157.5	12261.00
27	36574.05	108.48	1.039	0.30(0.30)	0.99	43806.5	10400.00
28	36258.75	110.44	1.030	0.30(0.30)	0.99	44166.8	10200.00
29	35179.73	116.25	1.004	0.30(0.30)	0.99	45121.6	12010.00
30	35165.68	116.32	1.004	0.30(0.30)	0.99	45129.7	10300.00
31	33973.56	121.90	0.982	0.30(0.30)	0.99	45435.3	10210.00
32	33634.95	124.51	0.975	0.30(0.30)	0.99	45546.2	12000.00
33	30871.16	147.31	0.915	0.30(0.30)	0.99	46168.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2987.26	30.24	1.897	0.30(0.30)	1.00	1941.1	40130.00
2	3028.60	32.04	1.851	0.30(0.30)	1.00	2058.2	40100.00
3	3169.66	58.25	1.340	0.30(0.30)	1.00	3319.6	11900.00
4	3164.43	58.70	1.336	0.30(0.30)	1.00	3327.6	11910.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28781.04	30.24	1.897	0.30(0.30)	0.99	11329.6	40130.00
2	29570.59	32.04	1.851	0.30(0.30)	0.99	12005.8	40100.00
3	31252.79	37.20	1.719	0.30(0.30)	0.99	13857.0	11831.00
4	32067.32	39.75	1.653	0.30(0.30)	0.99	14809.9	11801.00
5	34800.94	48.13	1.463	0.30(0.30)	0.99	18229.2	11500.00
6	35190.11	49.76	1.426	0.30(0.30)	0.99	19106.7	11530.00
7	36333.41	54.30	1.379	0.30(0.30)	0.99	21455.5	11701.00
8	36892.72	56.35	1.359	0.30(0.30)	0.99	22562.6	11000.00
9	37514.99	58.25	1.340	0.30(0.30)	0.99	23830.4	11900.00
10	37652.28	58.70	1.336	0.30(0.30)	0.99	24112.3	11910.00
11	39755.94	65.75	1.284	0.30(0.30)	0.99	28455.1	12500.00
12	39865.90	66.10	1.282	0.30(0.30)	0.99	28694.0	11330.00
13	41015.88	72.60	1.239	0.30(0.30)	0.99	33125.0	11130.00
14	40978.60	78.88	1.197	0.30(0.30)	0.99	36368.2	12300.00
15	40995.41	80.17	1.188	0.30(0.30)	0.99	37118.9	12330.00
16	40990.07	80.95	1.183	0.30(0.30)	0.99	37554.1	11620.00
17	40963.71	82.76	1.170	0.30(0.30)	0.99	38533.8	12410.00
18	40951.90	83.22	1.167	0.30(0.30)	0.99	38771.0	11600.00
19	40817.93	86.78	1.144	0.30(0.30)	0.99	40462.1	12400.00
20	40699.58	89.16	1.128	0.30(0.30)	0.99	41523.1	11111.00
21	40600.48	90.64	1.119	0.30(0.30)	0.99	42129.4	11101.00
22	40571.13	91.40	1.116	0.30(0.30)	0.99	42405.9	12211.00
23	40360.44	95.38	1.098	0.30(0.30)	0.99	43830.9	12201.00
24	40356.51	95.43	1.098	0.30(0.30)	0.99	43848.2	10710.00
25	40138.69	97.26	1.089	0.30(0.30)	0.99	44371.8	10410.00
26	39933.41	99.27	1.080	0.30(0.30)	0.99	44915.6	12111.00
27	39654.30	101.62	1.070	0.30(0.30)	0.99	45555.4	10700.00
28	39642.91	101.73	1.069	0.30(0.30)	0.99	45585.0	12231.00
29	39331.55	104.54	1.057	0.30(0.30)	0.99	46285.0	12101.10
30	39232.20	105.38	1.053	0.30(0.30)	0.99	46485.2	12261.00
31	38832.19	108.48	1.039	0.30(0.30)	0.99	47134.1	10400.00
32	38489.96	110.44	1.030	0.30(0.30)	0.99	47494.5	10200.00
33	37331.12	116.25	1.004	0.30(0.30)	0.99	48449.2	12010.00
34	37316.06	116.32	1.004	0.30(0.30)	0.99	48457.4	10300.00
35	36058.22	121.90	0.982	0.30(0.30)	0.99	48763.0	10210.00
36	35698.59	124.51	0.975	0.30(0.30)	0.99	48873.8	12000.00
37	32751.58	147.31	0.915	0.30(0.30)	0.99	49495.7	10100.00

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41015.88 Tc(MIN.) = 72.598
EFFECTIVE AREA(ACRES) = 33124.96 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 72.60
EFFECTIVE AREA(ACRES) = 33124.96 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 41015.88

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28781.04	30.24	1.897	0.30(0.30)	0.99	11329.6	40130.00
2	29570.59	32.04	1.851	0.30(0.30)	0.99	12005.8	40100.00

3	31252.79	37.20	1.719	0.30(0.30)	0.99	13857.0	11831.00
4	32067.32	39.75	1.653	0.30(0.30)	0.99	14809.9	11801.00
5	34800.94	48.13	1.463	0.30(0.30)	0.99	18229.2	11500.00
6	35190.11	49.76	1.426	0.30(0.30)	0.99	19106.7	11530.00
7	36333.41	54.30	1.379	0.30(0.30)	0.99	21455.5	11701.00
8	36892.72	56.35	1.359	0.30(0.30)	0.99	22562.6	11000.00
9	37514.99	58.25	1.340	0.30(0.30)	0.99	23830.4	11900.00
10	37652.28	58.70	1.336	0.30(0.30)	0.99	24112.3	11910.00
11	39755.94	65.75	1.284	0.30(0.30)	0.99	28455.1	12500.00
12	39865.90	66.10	1.282	0.30(0.30)	0.99	28694.0	11330.00
13	41015.88	72.60	1.239	0.30(0.30)	0.99	33125.0	11130.00
14	40978.60	78.88	1.197	0.30(0.30)	0.99	36368.2	12300.00
15	40995.41	80.17	1.188	0.30(0.30)	0.99	37118.9	12330.00
16	40990.07	80.95	1.183	0.30(0.30)	0.99	37554.1	11620.00
17	40963.71	82.76	1.170	0.30(0.30)	0.99	38533.8	12410.00
18	40951.90	83.22	1.167	0.30(0.30)	0.99	38771.0	11600.00
19	40817.93	86.78	1.144	0.30(0.30)	0.99	40462.1	12400.00
20	40699.58	89.16	1.128	0.30(0.30)	0.99	41523.1	11111.00
21	40600.48	90.64	1.119	0.30(0.30)	0.99	42129.4	11101.00
22	40571.13	91.40	1.116	0.30(0.30)	0.99	42405.9	12211.00
23	40360.44	95.38	1.098	0.30(0.30)	0.99	43830.9	12201.00
24	40356.51	95.43	1.098	0.30(0.30)	0.99	43848.2	10710.00
25	40138.69	97.26	1.089	0.30(0.30)	0.99	44371.8	10410.00
26	39933.41	99.27	1.080	0.30(0.30)	0.99	44915.6	12111.00
27	39654.30	101.62	1.070	0.30(0.30)	0.99	45555.4	10700.00
28	39642.91	101.73	1.069	0.30(0.30)	0.99	45585.0	12231.00
29	39331.55	104.54	1.057	0.30(0.30)	0.99	46285.0	12101.10
30	39232.20	105.38	1.053	0.30(0.30)	0.99	46485.2	12261.00
31	38832.19	108.48	1.039	0.30(0.30)	0.99	47134.1	10400.00
32	38489.96	110.44	1.030	0.30(0.30)	0.99	47494.5	10200.00
33	37331.12	116.25	1.004	0.30(0.30)	0.99	48449.2	12010.00
34	37316.06	116.32	1.004	0.30(0.30)	0.99	48457.4	10300.00
35	36058.22	121.90	0.982	0.30(0.30)	0.99	48763.0	10210.00
36	35698.59	124.51	0.975	0.30(0.30)	0.99	48873.8	12000.00
37	32751.58	147.31	0.915	0.30(0.30)	0.99	49495.7	10100.00

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2010 Advanced Engineering Software (aes)
            Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 100-YR EV JULY 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RU00EV26.DAT
  TIME/DATE OF STUDY: 13:02 07/05/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.101
   2)   10.00;  3.900
   3)   15.00;  3.005
   4)   20.00;  2.465
   5)   25.00;  2.128
   6)   30.00;  1.900
   7)   40.00;  1.644
   8)   50.00;  1.419
   9)   60.00;  1.320
  10)   90.00;  1.119
  11)  120.00;  0.983
  12)  180.00;  0.826
  13)  360.00;  0.617
  14) 1200.00;  0.271
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    29570.59   32.04  0.30( 0.30) 0.99   12005.8   40100.00
      2    31252.79   37.20  0.30( 0.30) 0.99   13857.0   11831.00
      3    32067.32   39.75  0.30( 0.30) 0.99   14809.9   11801.00
      4    35190.11   49.76  0.30( 0.30) 0.99   19106.7   11530.00
      5    37652.28   58.70  0.30( 0.30) 0.99   24112.3   11910.00
      6    39865.90   66.10  0.30( 0.30) 0.99   28694.0   11330.00
      7    41015.88   72.60  0.30( 0.30) 0.99   33125.0   11130.00
      8    40995.41   80.17  0.30( 0.30) 0.99   37118.9   12330.00
      9    40963.71   82.76  0.30( 0.30) 0.99   38533.8   12410.00
     10    40817.93   86.78  0.30( 0.30) 0.99   40462.1   12400.00
     11    40699.58   89.16  0.30( 0.30) 0.99   41523.1   11111.00
     12    40360.44   95.38  0.30( 0.30) 0.99   43830.9   12201.00
     13    39933.41   99.27  0.30( 0.30) 0.99   44915.6   12111.00
     14    39654.30  101.62  0.30( 0.30) 0.99   45555.4   10700.00
     15    39331.55  104.54  0.30( 0.30) 0.99   46285.0   12101.10
     16    38832.19  108.48  0.30( 0.30) 0.99   47134.1   10400.00
     17    37331.12  116.25  0.30( 0.30) 0.99   48449.2   12010.00
     18    36058.22  121.90  0.30( 0.30) 0.99   48763.0   10210.00
     19    35698.59  124.51  0.30( 0.30) 0.99   48873.8   12000.00
     20    32751.58  147.31  0.30( 0.30) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =    49495.7

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    29570.59   32.04  0.30( 0.30) 0.99   12005.8   40100.00
      2    31252.79   37.20  0.30( 0.30) 0.99   13857.0   11831.00
      3    32067.32   39.75  0.30( 0.30) 0.99   14809.9   11801.00
      4    35190.11   49.76  0.30( 0.30) 0.99   19106.7   11530.00
      5    37652.28   58.70  0.30( 0.30) 0.99   24112.3   11910.00
      6    39865.90   66.10  0.30( 0.30) 0.99   28694.0   11330.00
      7    41015.88   72.60  0.30( 0.30) 0.99   33125.0   11130.00
      8    40995.41   80.17  0.30( 0.30) 0.99   37118.9   12330.00
      9    40963.71   82.76  0.30( 0.30) 0.99   38533.8   12410.00
     10    40817.93   86.78  0.30( 0.30) 0.99   40462.1   12400.00
     11    40699.58   89.16  0.30( 0.30) 0.99   41523.1   11111.00
     12    40360.44   95.38  0.30( 0.30) 0.99   43830.9   12201.00
     13    39933.41   99.27  0.30( 0.30) 0.99   44915.6   12111.00
```

```
    14    39654.30  101.62  0.30( 0.30) 0.99   45555.4   10700.00
    15    39331.55  104.54  0.30( 0.30) 0.99   46285.0   12101.10
    16    38832.19  108.48  0.30( 0.30) 0.99   47134.1   10400.00
    17    37331.12  116.25  0.30( 0.30) 0.99   48449.2   12010.00
    18    36058.22  121.90  0.30( 0.30) 0.99   48763.0   10210.00
    19    35698.59  124.51  0.30( 0.30) 0.99   48873.8   12000.00
    20    32751.58  147.31  0.30( 0.30) 0.99   49495.7   10100.00
  TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.56
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.227
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41021.76
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  19.73
  AVERAGE FLOW DEPTH(FEET) =   8.56   TRAVEL TIME(MIN.) =   1.24
  Tc(MIN.) =   73.84
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =   11.77
  EFFECTIVE AREA(ACRES) =  33139.07     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   41015.88
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.56   FLOW VELOCITY(FEET/SEC.) =  19.73
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
```



```
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O00EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1      117.77   16.39  0.30( 0.29) 0.98       51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    29570.59   33.42    1.812  0.30( 0.30) 0.99   12019.9   40100.00
      2    31252.79   38.56    1.681  0.30( 0.30) 0.99   13871.1   11831.00
      3    32067.32   41.09    1.619  0.30( 0.30) 0.99   14824.0   11801.00
      4    35190.11   51.07    1.408  0.30( 0.30) 0.99   19120.8   11530.00
      5    37652.28   59.97    1.320  0.30( 0.30) 0.99   24126.4   11910.00
      6    39865.90   67.36    1.271  0.30( 0.30) 0.99   28708.1   11330.00
      7    41015.88   73.84    1.227  0.30( 0.30) 0.99   33139.1   11130.00
      8    40995.41   81.41    1.177  0.30( 0.30) 0.99   37133.0   12330.00
      9    40963.71   84.01    1.159  0.30( 0.30) 0.99   38547.9   12410.00
     10    40817.93   88.03    1.132  0.30( 0.30) 0.99   40476.2   12400.00
     11    40699.58   90.41    1.117  0.30( 0.30) 0.99   41537.2   11111.00
     12    40360.44   96.63    1.089  0.30( 0.30) 0.99   43845.0   12201.00
     13    39933.41  100.52    1.071  0.30( 0.30) 0.99   44929.7   12111.00
     14    39654.30  102.87    1.061  0.30( 0.30) 0.99   45569.5   10700.00
     15    39331.55  105.80    1.047  0.30( 0.30) 0.99   46299.1   12101.10
     16    38832.19  109.74    1.029  0.30( 0.30) 0.99   47148.2   10400.00
     17    37331.12  117.53    0.994  0.30( 0.30) 0.99   48463.4   12010.00
     18    36058.22  123.19    0.975  0.30( 0.30) 0.99   48777.1   10210.00
     19    35698.59  125.81    0.968  0.30( 0.30) 0.99   48887.9   12000.00
     20    32751.58  148.64    0.908  0.30( 0.30) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      117.77   16.39    2.855  0.30( 0.29) 0.98       51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    24602.09   16.39    2.855  0.30( 0.30) 0.99    5946.4     600.00
      2    29640.42   33.42    1.812  0.30( 0.30) 0.99   12071.0   40100.00
      3    31316.57   38.56    1.681  0.30( 0.30) 0.99   13922.2   11831.00
      4    32128.28   41.09    1.619  0.30( 0.30) 0.99   14875.1   11801.00
      5    35241.36   51.07    1.408  0.30( 0.30) 0.99   19171.9   11530.00
      6    37699.48   59.97    1.320  0.30( 0.30) 0.99   24177.5   11910.00
      7    39910.82   67.36    1.271  0.30( 0.30) 0.99   28759.2   11330.00
      8    41058.80   73.84    1.227  0.30( 0.30) 0.99   33190.2   11130.00
      9    41036.00   81.41    1.177  0.30( 0.30) 0.99   37184.1   12330.00
```

```
    10    41003.50   84.01    1.159  0.30( 0.30) 0.99   38599.0   12410.00
    11    40856.48   88.03    1.132  0.30( 0.30) 0.99   40527.3   12400.00
    12    40737.44   90.41    1.117  0.30( 0.30) 0.99   41588.3   11111.00
    13    40397.00   96.63    1.089  0.30( 0.30) 0.99   43896.1   12201.00
    14    39969.16  100.52    1.071  0.30( 0.30) 0.99   44980.8   12111.00
    15    39689.56  102.87    1.061  0.30( 0.30) 0.99   45620.6   10700.00
    16    39366.20  105.80    1.047  0.30( 0.30) 0.99   46350.2   12101.10
    17    38866.02  109.74    1.029  0.30( 0.30) 0.99   47199.3   10400.00
    18    37363.33  117.53    0.994  0.30( 0.30) 0.99   48514.5   12010.00
    19    36089.53  123.19    0.975  0.30( 0.30) 0.99   48828.2   10210.00
    20    35729.58  125.81    0.968  0.30( 0.30) 0.99   48939.0   12000.00
    21    32779.82  148.64    0.908  0.30( 0.30) 0.99   49560.9   10100.00
   TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    41058.80  Tc(MIN.) =   73.838
  EFFECTIVE AREA(ACRES) =  33190.17  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.18
  CHANNEL FLOW THRU SUBAREA(CFS) =   41058.80
  FLOW VELOCITY(FEET/SEC.) =  18.18   FLOW DEPTH(FEET) =   9.18
  TRAVEL TIME(MIN.) =   1.55   Tc(MIN.) =   75.39
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   75.39
  RAINFALL INTENSITY(INCH/HR) =   1.22
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33190.17
  TOTAL STREAM AREA(ACRES) =   49560.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41058.80
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   14.01   RAINFALL INTENSITY(INCH/HR) =  3.18
  EFFECTIVE AREA(ACRES) =   102.60
  TOTAL AREA(ACRES) =   171.00        PEAK FLOW RATE(CFS) =    232.50
  AREA-AVERAGED Fm(INCH/HR) =   0.17  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.58
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE   1260.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.01
  RAINFALL INTENSITY(INCH/HR) =   3.18
  AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =    102.60
  TOTAL STREAM AREA(ACRES) =    171.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    232.50

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24602.09   18.23    2.656  0.30( 0.30) 0.99    5946.4     600.00
      1    29640.42   35.15    1.768  0.30( 0.30) 0.99   12071.0   40100.00
      1    31316.57   40.25    1.638  0.30( 0.30) 0.99   13922.2   11831.00
      1    32128.28   42.77    1.582  0.30( 0.30) 0.99   14875.1   11801.00
      1    35241.36   52.70    1.392  0.30( 0.30) 0.99   19171.9   11530.00
      1    37699.48   61.57    1.309  0.30( 0.30) 0.99   24177.5   11910.00
      1    39910.82   68.92    1.260  0.30( 0.30) 0.99   28759.2   11330.00
      1    41058.80   75.39    1.217  0.30( 0.30) 0.99   33190.2   11130.00
      1    41036.00   82.96    1.166  0.30( 0.30) 0.99   37184.1   12330.00
      1    41003.50   85.55    1.149  0.30( 0.30) 0.99   38599.0   12410.00
      1    40856.48   89.58    1.122  0.30( 0.30) 0.99   40527.3   12400.00
      1    40737.44   91.96    1.110  0.30( 0.30) 0.99   41588.3   11111.00
      1    40397.00   98.18    1.082  0.30( 0.30) 0.99   43896.1   12201.00
      1    39969.16  102.08    1.064  0.30( 0.30) 0.99   44980.8   12111.00
      1    39689.56  104.44    1.054  0.30( 0.30) 0.99   45620.6   10700.00
      1    39366.20  107.37    1.040  0.30( 0.30) 0.99   46350.2   12101.10
      1    38866.02  111.32    1.022  0.30( 0.30) 0.99   47199.3   10400.00
      1    37363.33  119.13    0.987  0.30( 0.30) 0.99   48514.5   12010.00
      1    36089.53  124.81    0.970  0.30( 0.30) 0.99   48828.2   10210.00
      1    35729.58  127.43    0.964  0.30( 0.30) 0.99   48939.0   12000.00
      1    32779.82  150.31    0.904  0.30( 0.30) 0.99   49560.9   10100.00
      2      232.50   14.01    3.182  0.30( 0.17) 0.58     102.6   12603.00
```

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23356.96	14.01	3.182	0.30(0.30)	0.98	4672.4	12603.00
2	24793.93	18.23	2.656	0.30(0.30)	0.99	6049.0	600.00
3	29763.63	35.15	1.768	0.30(0.30)	0.99	12173.6	40100.00
4	31429.75	40.25	1.638	0.30(0.30)	0.99	14024.8	11831.00
5	32237.07	42.77	1.582	0.30(0.30)	0.99	14977.7	11801.00
6	35335.52	52.70	1.392	0.30(0.30)	0.99	19274.5	11530.00
7	37787.24	61.57	1.309	0.30(0.30)	0.99	24280.1	11910.00
8	39994.78	68.92	1.260	0.30(0.30)	0.99	28861.8	11330.00
9	41139.40	75.39	1.217	0.30(0.30)	0.99	33292.8	11130.00
10	41112.68	82.96	1.166	0.30(0.30)	0.99	37286.7	12330.00
11	41078.84	85.55	1.149	0.30(0.30)	0.99	38701.6	12410.00
12	40929.73	89.58	1.122	0.30(0.30)	0.99	40629.9	12400.00
13	40809.79	91.96	1.110	0.30(0.30)	0.99	41690.9	11111.00
14	40467.17	98.18	1.082	0.30(0.30)	0.99	43998.7	12201.00
15	40037.96	102.08	1.064	0.30(0.30)	0.99	45083.4	12111.00
16	39757.54	104.44	1.054	0.30(0.30)	0.99	45723.2	10700.00
17	39433.16	107.37	1.040	0.30(0.30)	0.99	46452.8	12101.10
18	38931.59	111.32	1.022	0.30(0.30)	0.99	47301.9	10400.00
19	37426.16	119.13	0.987	0.30(0.30)	0.99	48617.1	12010.00
20	36151.08	124.81	0.970	0.30(0.30)	0.99	48930.8	10210.00
21	35790.61	127.43	0.964	0.30(0.30)	0.99	49041.6	12000.00
22	32836.21	150.31	0.904	0.30(0.30)	0.99	49663.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41139.40 Tc(MIN.) = 75.39
EFFECTIVE AREA(ACRES) = 33292.77 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49731.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 1260.00 = 101558.45 FEET.

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.39
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
PUBLIC PARK	B	1.30	0.30	0.850	56
COMMERCIAL	B	1.40	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	12.40	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.911

SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 15.54
EFFECTIVE AREA(ACRES) = 33311.07 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49750.2 PEAK FLOW RATE(CFS) = 41139.40
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.39
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	26.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 26.90 SUBAREA RUNOFF(CFS) = 22.20
EFFECTIVE AREA(ACRES) = 33337.97 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49777.1 PEAK FLOW RATE(CFS) = 41139.40
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.39
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.40	0.30	1.000	72
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69
PUBLIC PARK	B	0.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.70	0.30	1.000	72

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.968
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 2.75
EFFECTIVE AREA(ACRES) = 33341.27 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49780.4 PEAK FLOW RATE(CFS) = 41139.40
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   75.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    9.01
  EFFECTIVE AREA(ACRES) =  33352.07   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   41139.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   75.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.217
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =   12.05
  EFFECTIVE AREA(ACRES) =  33366.67   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   41139.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.44
  CHANNEL FLOW THRU SUBAREA(CFS) =   41139.40
  FLOW VELOCITY(FEET/SEC.) =  15.62   FLOW DEPTH(FEET) =  10.44
  TRAVEL TIME(MIN.) =   0.94   Tc(MIN.) =   76.33
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   76.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.211
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    6.57
  EFFECTIVE AREA(ACRES) =  33374.47   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   41139.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   76.33
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.211
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =   10.74
  EFFECTIVE AREA(ACRES) =  33387.27   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   41139.40
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.21
  CHANNEL FLOW THRU SUBAREA(CFS) =   41139.40
  FLOW VELOCITY(FEET/SEC.) =  18.15   FLOW DEPTH(FEET) =   9.21
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   78.31
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   78.31
  RAINFALL INTENSITY(INCH/HR) =   1.20
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33387.27
  TOTAL STREAM AREA(ACRES) =   49826.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41139.40

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   16.64   RAINFALL INTENSITY(INCH/HR) =  2.83
  EFFECTIVE AREA(ACRES) =   463.30
  TOTAL AREA(ACRES) =   553.80        PEAK FLOW RATE(CFS) =    912.70
  AREA-AVERAGED Fm(INCH/HR) =   0.26  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.85
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.64
  RAINFALL INTENSITY(INCH/HR) =   2.83
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
```



```
AREA-AVERAGED Ap =  0.85
EFFECTIVE STREAM AREA(ACRES) =     463.30
TOTAL STREAM AREA(ACRES) =     553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     912.70

** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23356.96   17.55    2.730  0.30( 0.30) 0.98    4766.9   12603.00
    1    24793.93   21.70    2.351  0.30( 0.30) 0.99    6143.5     600.00
    1    29763.63   38.41    1.685  0.30( 0.30) 0.99   12268.1   40100.00
    1    31429.75   43.45    1.566  0.30( 0.30) 0.99   14119.3   11831.00
    1    32237.07   45.95    1.510  0.30( 0.30) 0.99   15072.2   11801.00
    1    35335.52   55.77    1.362  0.30( 0.30) 0.99   19369.0   11530.00
    1    37787.24   64.58    1.289  0.30( 0.30) 0.99   24374.6   11910.00
    1    39994.78   71.88    1.240  0.30( 0.30) 0.99   28956.3   11330.00
    1    41139.40   78.31    1.197  0.30( 0.30) 0.99   33387.3   11130.00
    1    41112.68   85.89    1.147  0.30( 0.30) 0.99   37381.2   12330.00
    1    41078.84   88.48    1.129  0.30( 0.30) 0.99   38796.1   12410.00
    1    40929.73   92.51    1.108  0.30( 0.30) 0.99   40724.4   12400.00
    1    40809.79   94.90    1.097  0.30( 0.30) 0.99   41785.4   11111.00
    1    40467.17  101.13    1.069  0.30( 0.30) 0.99   44093.2   12201.00
    1    40037.96  105.04    1.051  0.30( 0.30) 0.99   45177.9   12111.00
    1    39757.54  107.40    1.040  0.30( 0.30) 0.99   45817.7   10700.00
    1    39433.16  110.34    1.027  0.30( 0.30) 0.99   46547.3   12101.10
    1    38931.59  114.30    1.009  0.30( 0.30) 0.99   47396.4   10400.00
    1    37426.16  122.15    0.977  0.30( 0.30) 0.99   48711.6   12010.00
    1    36151.08  127.86    0.962  0.30( 0.30) 0.99   49025.3   10210.00
    1    35790.61  130.50    0.956  0.30( 0.30) 0.99   49136.1   12000.00
    1    32836.21  153.46    0.895  0.30( 0.30) 0.99   49758.0   10100.00
    2      912.70   16.64    2.828  0.30( 0.26) 0.85     463.3   12606.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23953.63   16.64    2.828  0.30( 0.29) 0.97    4984.0   12606.00
    2    24234.94   17.55    2.730  0.30( 0.29) 0.97    5230.2   12603.00
    3    25537.37   21.70    2.351  0.30( 0.29) 0.98    6606.8     600.00
    4    30270.85   38.41    1.685  0.30( 0.30) 0.98   12731.4   40100.00
    5    31894.93   43.45    1.566  0.30( 0.30) 0.99   14582.6   11831.00
    6    32682.35   45.95    1.510  0.30( 0.30) 0.99   15535.5   11801.00
    7    35728.16   55.77    1.362  0.30( 0.30) 0.99   19832.3   11530.00
    8    38154.16   64.58    1.289  0.30( 0.30) 0.99   24837.9   11910.00
    9    40344.35   71.88    1.240  0.30( 0.30) 0.99   29419.6   11330.00
   10    41473.67   78.31    1.197  0.30( 0.30) 0.99   33850.6   11130.00
   11    41428.94   85.89    1.147  0.30( 0.30) 0.99   37844.5   12330.00
   12    41388.93   88.48    1.129  0.30( 0.30) 0.99   39259.4   12410.00
   13    41232.19   92.51    1.108  0.30( 0.30) 0.99   41187.7   12400.00
   14    41108.41   94.90    1.097  0.30( 0.30) 0.99   42248.7   11111.00
   15    40755.77  101.13    1.069  0.30( 0.30) 0.99   44556.5   12201.00
   16    40320.28  105.04    1.051  0.30( 0.30) 0.99   45641.2   12111.00
   17    40036.05  107.40    1.040  0.30( 0.30) 0.99   46281.0   10700.00
   18    39706.95  110.34    1.027  0.30( 0.30) 0.99   47010.6   12101.10
   19    39199.00  114.30    1.009  0.30( 0.30) 0.99   47859.7   10400.00
   20    37682.42  122.15    0.977  0.30( 0.30) 0.99   49174.9   12010.00
```

21	36402.04	127.86	0.962	0.30(0.30)	0.99	49488.6	10210.00
22	36039.11	130.50	0.956	0.30(0.30)	0.99	49599.4	12000.00
23	33063.40	153.46	0.895	0.30(0.30)	0.99	50221.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41473.67 Tc(MIN.) = 78.31
EFFECTIVE AREA(ACRES) = 33850.57 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 78.31
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.60	0.30	1.000	72
COMMERCIAL	B	1.10	0.30	0.100	56
PUBLIC PARK	B	0.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.666
SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 3.14
EFFECTIVE AREA(ACRES) = 33854.07 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50383.7 PEAK FLOW RATE(CFS) = 41473.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 78.31
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
AGRICULTURAL POOR COVER					
"ROW CROPS,STRAIGHT ROW"	B	1.50	0.30	1.000	81
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66

NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 8.50 SUBAREA RUNOFF(CFS) = 6.86
EFFECTIVE AREA(ACRES) = 33862.57 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50392.2 PEAK FLOW RATE(CFS) = 41473.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 78.31
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
PUBLIC PARK	B	3.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	3.90	0.30	1.000	72
PUBLIC PARK	B	5.90	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	9.10	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	20.60	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969
SUBAREA AREA(ACRES) = 46.50 SUBAREA RUNOFF(CFS) = 37.94
EFFECTIVE AREA(ACRES) = 33909.07 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50438.7 PEAK FLOW RATE(CFS) = 41473.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 50438.7 TC(MIN.) = 78.31
EFFECTIVE AREA(ACRES) = 33909.07 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
PEAK FLOW RATE(CFS) = 41473.67

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23953.63	16.64	2.828	0.30(0.29)	0.97	5042.5	12606.00
2	24234.94	17.55	2.730	0.30(0.29)	0.97	5288.7	12603.00
3	25537.37	21.70	2.351	0.30(0.29)	0.98	6665.3	600.00
4	30270.85	38.41	1.685	0.30(0.30)	0.98	12789.9	40100.00
5	31894.93	43.45	1.566	0.30(0.30)	0.99	14641.1	11831.00
6	32682.35	45.95	1.510	0.30(0.30)	0.99	15594.0	11801.00
7	35728.16	55.77	1.362	0.30(0.30)	0.99	19890.8	11530.00
8	38154.16	64.58	1.289	0.30(0.30)	0.99	24896.4	11910.00
9	40344.35	71.88	1.240	0.30(0.30)	0.99	29478.1	11330.00
10	41473.67	78.31	1.197	0.30(0.30)	0.99	33909.1	11130.00
11	41428.94	85.89	1.147	0.30(0.30)	0.99	37903.0	12330.00

12	41388.93	88.48	1.129	0.30	(0.30)	0.99	39317.9	12410.00
13	41232.19	92.51	1.108	0.30	(0.30)	0.99	41246.2	12400.00
14	41108.41	94.90	1.097	0.30	(0.30)	0.99	42307.2	11111.00
15	40755.77	101.13	1.069	0.30	(0.30)	0.99	44615.0	12201.00
16	40320.28	105.04	1.051	0.30	(0.30)	0.99	45699.7	12111.00
17	40036.05	107.40	1.040	0.30	(0.30)	0.99	46339.5	10700.00
18	39706.95	110.34	1.027	0.30	(0.30)	0.99	47069.1	12101.10
19	39199.00	114.30	1.009	0.30	(0.30)	0.99	47918.2	10400.00
20	37682.42	122.15	0.977	0.30	(0.30)	0.99	49233.4	12010.00
21	36402.04	127.86	0.962	0.30	(0.30)	0.99	49547.1	10210.00
22	36039.11	130.50	0.956	0.30	(0.30)	0.99	49657.9	12000.00
23	33063.40	153.46	0.895	0.30	(0.30)	0.99	50279.8	10100.00

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 100-YR EV JULY 2023 ROKAMOTO                                         *
 ************************************************************************

  FILE NAME: RU00EV27.DAT
  TIME/DATE OF STUDY: 13:02 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.046
   2)   10.00;  3.873
   3)   15.00;  2.987
   4)   20.00;  2.453
   5)   25.00;  2.121
   6)   30.00;  1.894
   7)   40.00;  1.637
   8)   50.00;  1.414
   9)   60.00;  1.313
  10)   90.00;  1.111
  11)  120.00;  0.975
  12)  180.00;  0.818
  13)  360.00;  0.610
  14) 1200.00;  0.267
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)     NODE
      1    24234.94   17.55  0.30( 0.29) 0.97    5288.7   12603.00
      2    25537.37   21.70  0.30( 0.29) 0.98    6665.3     600.00
      3    30270.85   38.41  0.30( 0.30) 0.98   12789.9   40100.00
      4    32682.35   45.95  0.30( 0.30) 0.99   15594.0   11801.00
      5    35728.16   55.77  0.30( 0.30) 0.99   19890.8   11530.00
      6    38154.16   64.58  0.30( 0.30) 0.99   24896.4   11910.00
      7    40344.35   71.88  0.30( 0.30) 0.99   29478.1   11330.00
      8    41473.67   78.31  0.30( 0.30) 0.99   33909.1   11130.00
      9    41428.94   85.89  0.30( 0.30) 0.99   37903.0   12330.00
     10    41388.93   88.48  0.30( 0.30) 0.99   39317.9   12410.00
     11    41232.19   92.51  0.30( 0.30) 0.99   41246.2   12400.00
     12    40755.77  101.13  0.30( 0.30) 0.99   44615.0   12201.00
     13    40320.28  105.04  0.30( 0.30) 0.99   45699.7   12111.00
     14    40036.05  107.40  0.30( 0.30) 0.99   46339.5   10700.00
     15    39706.95  110.34  0.30( 0.30) 0.99   47069.1   12101.10
     16    39199.00  114.30  0.30( 0.30) 0.99   47918.2   10400.00
     17    37682.42  122.15  0.30( 0.30) 0.99   49233.4   12010.00
     18    36402.04  127.86  0.30( 0.30) 0.99   49547.1   10210.00
     19    36039.11  130.50  0.30( 0.30) 0.99   49657.9   12000.00
     20    33063.40  153.46  0.30( 0.30) 0.99   50279.8   10100.00
   TOTAL AREA(ACRES) =    50279.8

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)     NODE
      1    24234.94   17.55  0.30( 0.29) 0.97    5288.7   12603.00
      2    25537.37   21.70  0.30( 0.29) 0.98    6665.3     600.00
      3    30270.85   38.41  0.30( 0.30) 0.98   12789.9   40100.00
      4    32682.35   45.95  0.30( 0.30) 0.99   15594.0   11801.00
      5    35728.16   55.77  0.30( 0.30) 0.99   19890.8   11530.00
      6    38154.16   64.58  0.30( 0.30) 0.99   24896.4   11910.00
      7    40344.35   71.88  0.30( 0.30) 0.99   29478.1   11330.00
      8    41473.67   78.31  0.30( 0.30) 0.99   33909.1   11130.00
      9    41428.94   85.89  0.30( 0.30) 0.99   37903.0   12330.00
     10    41388.93   88.48  0.30( 0.30) 0.99   39317.9   12410.00
     11    41232.19   92.51  0.30( 0.30) 0.99   41246.2   12400.00
     12    40755.77  101.13  0.30( 0.30) 0.99   44615.0   12201.00
     13    40320.28  105.04  0.30( 0.30) 0.99   45699.7   12111.00
```

```
     14    40036.05  107.40  0.30( 0.30) 0.99   46339.5   10700.00
     15    39706.95  110.34  0.30( 0.30) 0.99   47069.1   12101.10
     16    39199.00  114.30  0.30( 0.30) 0.99   47918.2   10400.00
     17    37682.42  122.15  0.30( 0.30) 0.99   49233.4   12010.00
     18    36402.04  127.86  0.30( 0.30) 0.99   49547.1   10210.00
     19    36039.11  130.50  0.30( 0.30) 0.99   49657.9   12000.00
     20    33063.40  153.46  0.30( 0.30) 0.99   50279.8   10100.00
    TOTAL AREA(ACRES) =     50279.8

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.53
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.182
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41488.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.57
  AVERAGE FLOW DEPTH(FEET) =   9.53   TRAVEL TIME(MIN.) =   1.20
  Tc(MIN.) =   79.51
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   30.01
  EFFECTIVE AREA(ACRES) =  33945.18     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50315.9         PEAK FLOW RATE(CFS) =   41473.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.53   FLOW VELOCITY(FEET/SEC.) =  17.57
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.97
  CHANNEL FLOW THRU SUBAREA(CFS) =   41473.67
  FLOW VELOCITY(FEET/SEC.) =  16.65   FLOW DEPTH(FEET) =   9.97
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =   79.66
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   79.66
  RAINFALL INTENSITY(INCH/HR) =   1.18
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33945.18
  TOTAL STREAM AREA(ACRES) =   50315.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41473.67

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.180
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     17.00
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     17.00

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.862
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.94      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.64
  AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   2.26
  Tc(MIN.) =   16.17
  SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   62.11
  EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      77.24
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   6.64
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.622
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.73      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      92.63
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.61
  AVERAGE FLOW DEPTH(FEET) =   1.01   TRAVEL TIME(MIN.) =   2.25
  Tc(MIN.) =   18.42
  SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   30.78
  EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =     100.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   7.80
```



```
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.414
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      105.64      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     201.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.81
  AVERAGE FLOW DEPTH(FEET) =   1.70   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   20.59
  SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  200.98
  EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     292.73
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.09   FLOW VELOCITY(FEET/SEC.) =   9.89
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.263
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      127.13      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     405.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.65
```

```
  AVERAGE FLOW DEPTH(FEET) =   2.72   TRAVEL TIME(MIN.) =   2.27
  Tc(MIN.) =   22.86
  SUBAREA AREA(ACRES) =   127.13       SUBAREA RUNOFF(CFS) =  224.61
  EFFECTIVE AREA(ACRES) =    281.00     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      281.0         PEAK FLOW RATE(CFS) =     496.45
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.03   FLOW VELOCITY(FEET/SEC.) =  10.22
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12720.00 =    5198.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   22.86
  RAINFALL INTENSITY(INCH/HR) =   2.26
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     281.00
  TOTAL STREAM AREA(ACRES) =     281.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     496.45

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24234.94   19.15    2.544  0.30( 0.29) 0.97    5324.8   12603.00
      1    25537.37   23.27    2.236  0.30( 0.29) 0.98    6701.4     600.00
      1    30270.85   39.90    1.640  0.30( 0.30) 0.98   12826.0   40100.00
      1    32682.35   47.40    1.472  0.30( 0.30) 0.99   15630.1   11801.00
      1    35728.16   57.18    1.341  0.30( 0.30) 0.99   19926.9   11530.00
      1    38154.16   65.96    1.273  0.30( 0.30) 0.99   24932.5   11910.00
      1    40344.35   73.23    1.224  0.30( 0.30) 0.99   29514.2   11330.00
      1    41473.67   79.66    1.181  0.30( 0.30) 0.99   33945.2   11130.00
      1    41428.94   87.24    1.130  0.30( 0.30) 0.99   37939.1   12330.00
      1    41388.93   89.83    1.112  0.30( 0.30) 0.99   39354.0   12410.00
      1    41232.19   93.86    1.094  0.30( 0.30) 0.99   41282.3   12400.00
      1    40755.77  102.48    1.054  0.30( 0.30) 0.99   44651.1   12201.00
      1    40320.28  106.39    1.037  0.30( 0.30) 0.99   45735.8   12111.00
      1    40036.05  108.76    1.026  0.30( 0.30) 0.99   46375.6   10700.00
      1    39706.95  111.70    1.013  0.30( 0.30) 0.99   47105.2   12101.10
      1    39199.00  115.67    0.995  0.30( 0.30) 0.99   47954.3   10400.00
      1    37682.42  123.53    0.966  0.30( 0.30) 0.99   49269.5   12010.00
      1    36402.04  129.26    0.951  0.30( 0.30) 0.99   49583.2   10210.00
      1    36039.11  131.90    0.944  0.30( 0.30) 0.99   49694.0   12000.00
      1    33063.40  154.91    0.884  0.30( 0.30) 0.99   50315.9   10100.00
      2      496.45   22.86    2.263  0.30( 0.30) 1.00     281.0   12710.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24710.29   19.15    2.544  0.30( 0.29) 0.97    5560.2   12603.00
      2    25903.59   22.86    2.263  0.30( 0.29) 0.98    6844.8   12710.00
      3    26026.91   23.27    2.236  0.30( 0.29) 0.98    6982.4     600.00
      4    30609.65   39.90    1.640  0.30( 0.30) 0.98   13107.0   40100.00
      5    32978.75   47.40    1.472  0.30( 0.30) 0.99   15911.1   11801.00
      6    35991.54   57.18    1.341  0.30( 0.30) 0.99   20207.9   11530.00
      7    38400.20   65.96    1.273  0.30( 0.30) 0.99   25213.5   11910.00
      8    40578.00   73.23    1.224  0.30( 0.30) 0.99   29795.2   11330.00
      9    41696.38   79.66    1.181  0.30( 0.30) 0.99   34226.2   11130.00
     10    41638.75   87.24    1.130  0.30( 0.30) 0.99   38220.1   12330.00
     11    41594.33   89.83    1.112  0.30( 0.30) 0.99   39635.0   12410.00
     12    41432.87   93.86    1.094  0.30( 0.30) 0.99   41563.3   12400.00
     13    40946.57  102.48    1.054  0.30( 0.30) 0.99   44932.1   12201.00
     14    40506.59  106.39    1.037  0.30( 0.30) 0.99   46016.8   12111.00
     15    40219.65  108.76    1.026  0.30( 0.30) 0.99   46656.6   10700.00
     16    39887.17  111.70    1.013  0.30( 0.30) 0.99   47386.2   12101.10
     17    39374.67  115.67    0.995  0.30( 0.30) 0.99   48235.3   10400.00
     18    37850.79  123.53    0.966  0.30( 0.30) 0.99   49550.5   12010.00
     19    36566.61  129.26    0.951  0.30( 0.30) 0.99   49864.2   10210.00
     20    36201.94  131.90    0.944  0.30( 0.30) 0.99   49975.0   12000.00
     21    33211.01  154.91    0.884  0.30( 0.30) 0.99   50596.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   41696.38    Tc(MIN.) =    79.66
  EFFECTIVE AREA(ACRES) =   34226.18   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50596.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    275.00  DOWNSTREAM(FEET) =    258.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2669.21   CHANNEL SLOPE =  0.0064
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
```

```
  "MEADOWS"                 B        0.50      0.30     1.000    70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   41697.08
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.34
  AVERAGE FLOW DEPTH(FEET) =  10.17   TRAVEL TIME(MIN.) =   2.72
  Tc(MIN.) =   82.38
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    1.39
  EFFECTIVE AREA(ACRES) =  34227.88     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50598.6         PEAK FLOW RATE(CFS) =   41696.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.17   FLOW VELOCITY(FEET/SEC.) =  16.34
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   82.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  COMMERCIAL                 B        1.40      0.30     0.100    56
  COMMERCIAL                 B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   13.10
  EFFECTIVE AREA(ACRES) =  34243.57   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50614.3       PEAK FLOW RATE(CFS) =   41696.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   82.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.162
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"           B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   48.19
  EFFECTIVE AREA(ACRES) =  34305.68   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50676.4       PEAK FLOW RATE(CFS) =   41696.38
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   82.38
  RAINFALL INTENSITY(INCH/HR) =   1.16
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   34305.68
  TOTAL STREAM AREA(ACRES) =   50676.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   41696.38

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   21.87   RAINFALL INTENSITY(INCH/HR) =  2.33
  EFFECTIVE AREA(ACRES) =   641.70
  TOTAL AREA(ACRES) =  1292.30        PEAK FLOW RATE(CFS) =   1134.00
  AREA-AVERAGED Fm(INCH/HR) =   0.13  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.43
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   21.87
  RAINFALL INTENSITY(INCH/HR) =   2.33
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.43
```

EFFECTIVE STREAM AREA(ACRES) = 641.70
TOTAL STREAM AREA(ACRES) = 1292.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1134.00

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24710.29	22.39	2.294	0.30(0.29)	0.97	5639.7	12603.00
1	25903.59	26.04	2.074	0.30(0.29)	0.98	6924.3	12710.00
1	26026.91	26.45	2.055	0.30(0.29)	0.98	7061.9	600.00
1	30609.65	42.91	1.572	0.30(0.30)	0.98	13186.5	40100.00
1	32978.75	50.34	1.411	0.30(0.30)	0.99	15990.6	11801.00
1	35991.54	60.04	1.313	0.30(0.30)	0.99	20287.4	11530.00
1	38400.20	68.76	1.254	0.30(0.30)	0.99	25293.0	11910.00
1	40578.00	75.98	1.205	0.30(0.30)	0.99	29874.7	11330.00
1	41696.38	82.38	1.162	0.30(0.30)	0.99	34305.7	11130.00
1	41638.75	89.96	1.111	0.30(0.30)	0.99	38299.6	12330.00
1	41594.33	92.55	1.099	0.30(0.30)	0.99	39714.5	12410.00
1	41432.87	96.58	1.081	0.30(0.30)	0.99	41642.8	12400.00
1	40946.57	105.22	1.042	0.30(0.30)	0.99	45011.6	12201.00
1	40506.59	109.14	1.024	0.30(0.30)	0.99	46096.3	12111.00
1	40219.65	111.51	1.013	0.30(0.30)	0.99	46736.1	10700.00
1	39887.17	114.46	1.000	0.30(0.30)	0.99	47465.7	12101.10
1	39374.67	118.44	0.982	0.30(0.30)	0.99	48314.8	10400.00
1	37850.79	126.34	0.958	0.30(0.30)	0.99	49630.0	12010.00
1	36566.61	132.10	0.943	0.30(0.30)	0.99	49943.7	10210.00
1	36201.94	134.76	0.936	0.30(0.30)	0.99	50054.5	12000.00
1	33211.01	157.84	0.876	0.30(0.30)	0.99	50676.4	10100.00
2	1134.00	21.87	2.329	0.30(0.13)	0.43	641.7	12720.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25687.30	21.87	2.329	0.30(0.27)	0.92	6151.1	12720.50
2	25826.59	22.39	2.294	0.30(0.27)	0.92	6281.4	12603.00
3	26906.00	26.04	2.074	0.30(0.28)	0.93	7566.0	12710.00
4	27019.77	26.45	2.055	0.30(0.28)	0.93	7703.6	600.00
5	31353.59	42.91	1.572	0.30(0.29)	0.96	13828.2	40100.00
6	33639.41	50.34	1.411	0.30(0.29)	0.96	16632.3	11801.00
7	36601.75	60.04	1.313	0.30(0.29)	0.97	20929.1	11530.00
8	38980.15	68.76	1.254	0.30(0.29)	0.98	25934.7	11910.00
9	41132.89	75.98	1.205	0.30(0.29)	0.98	30516.4	11330.00
10	42229.04	82.38	1.162	0.30(0.29)	0.98	34947.4	11130.00
11	42145.10	89.96	1.111	0.30(0.29)	0.98	38941.3	12330.00
12	42094.57	92.55	1.099	0.30(0.29)	0.98	40356.2	12410.00
13	41923.70	96.58	1.081	0.30(0.29)	0.98	42284.5	12400.00
14	41417.23	105.22	1.042	0.30(0.29)	0.98	45653.3	12201.00
15	40968.07	109.14	1.024	0.30(0.29)	0.98	46738.0	12111.00
16	40675.60	111.51	1.013	0.30(0.29)	0.98	47377.8	10700.00
17	40336.22	114.46	1.000	0.30(0.29)	0.98	48107.4	12101.10
18	39814.41	118.44	0.982	0.30(0.29)	0.98	48956.5	10400.00
19	38278.34	126.34	0.958	0.30(0.29)	0.98	50271.7	12010.00
20	36986.39	132.10	0.943	0.30(0.29)	0.98	50585.4	10210.00
21	36618.14	134.76	0.936	0.30(0.29)	0.98	50696.2	12000.00
22	33596.07	157.84	0.876	0.30(0.29)	0.98	51318.1	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 42229.04 Tc(MIN.) = 82.38
EFFECTIVE AREA(ACRES) = 34947.38 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51968.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==
MEMORY BANK # 2 IS EMPTY - PROCESS IGNORED.

****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12722.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.50
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.150
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
COMMERCIAL	B	0.40	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42229.63
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.69
AVERAGE FLOW DEPTH(FEET) = 13.50 TRAVEL TIME(MIN.) = 1.81
Tc(MIN.) = 84.19
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 1.17
EFFECTIVE AREA(ACRES) = 34948.77 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51970.1 PEAK FLOW RATE(CFS) = 42229.04
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 13.50 FLOW VELOCITY(FEET/SEC.) = 11.69
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.96 FEET.

```
****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.150
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.50      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.60      0.30     1.000    86
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    3.48
  EFFECTIVE AREA(ACRES) =  34952.97   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51974.3       PEAK FLOW RATE(CFS) =   42229.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.19
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.150
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   15.46
  EFFECTIVE AREA(ACRES) =  34973.17   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51994.5       PEAK FLOW RATE(CFS) =   42229.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
```



```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.20
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.145
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
  COMMERCIAL                 B        1.50      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   42230.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.74
  AVERAGE FLOW DEPTH(FEET) =  11.20   TRAVEL TIME(MIN.) =   0.71
  Tc(MIN.) =   84.90
  SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    3.88
  EFFECTIVE AREA(ACRES) =  34977.77     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =    51999.1         PEAK FLOW RATE(CFS) =   42229.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.19   FLOW VELOCITY(FEET/SEC.) =  14.75
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.145
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.40      0.30     1.000    66
```

```
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   20.39
  EFFECTIVE AREA(ACRES) =  35003.77   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52025.1       PEAK FLOW RATE(CFS) =   42229.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.90
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.145
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   29.67
  EFFECTIVE AREA(ACRES) =  35042.77   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52064.1       PEAK FLOW RATE(CFS) =   42229.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   84.90
  RAINFALL INTENSITY(INCH/HR) =   1.15
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =   35042.77
  TOTAL STREAM AREA(ACRES) =   52064.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   42229.04

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
```



```
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.196
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     16.50
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =     16.50

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.771
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.18
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.06
  AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   17.02
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   76.99
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      91.07
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   5.97
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.468
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       59.52      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.79
  AVERAGE FLOW DEPTH(FEET) =   1.65   TRAVEL TIME(MIN.) =   2.84
  Tc(MIN.) =   19.86
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =  116.12
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     196.02
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.92   FLOW VELOCITY(FEET/SEC.) =   7.38
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.201
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       64.05      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     250.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.00
  AVERAGE FLOW DEPTH(FEET) =   2.42   TRAVEL TIME(MIN.) =   3.94
  Tc(MIN.) =   23.80
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =  109.57
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     281.43
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.57
```



```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.57   FLOW VELOCITY(FEET/SEC.) =   7.24
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.011
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       26.02      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     301.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.68
  AVERAGE FLOW DEPTH(FEET) =   2.36   TRAVEL TIME(MIN.) =   3.61
  Tc(MIN.) =   27.41
  SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   40.08
  EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     293.49
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   8.62
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   27.41
  RAINFALL INTENSITY(INCH/HR) =   2.01
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     190.54
  TOTAL STREAM AREA(ACRES) =     190.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     293.49

  ** CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25687.30	24.82	2.133	0.30(0.27)	0.92	6246.5	12720.50
1	25826.59	25.33	2.106	0.30(0.28)	0.92	6376.8	12603.00
1	26906.00	28.95	1.942	0.30(0.28)	0.93	7661.4	12710.00
1	27019.77	29.35	1.923	0.30(0.28)	0.93	7799.0	600.00
1	31353.59	45.67	1.511	0.30(0.29)	0.96	13923.6	40100.00
1	33639.41	53.04	1.383	0.30(0.29)	0.96	16727.7	11801.00
1	36601.75	62.67	1.295	0.30(0.29)	0.97	21024.5	11530.00
1	38980.15	71.33	1.237	0.30(0.29)	0.98	26030.1	11910.00
1	41132.89	78.51	1.188	0.30(0.29)	0.98	30611.8	11330.00
1	42229.04	84.90	1.145	0.30(0.29)	0.98	35042.8	11130.00
1	42145.10	92.48	1.100	0.30(0.29)	0.98	39036.7	12330.00
1	42094.57	95.07	1.088	0.30(0.29)	0.98	40451.6	12410.00
1	41923.70	99.10	1.070	0.30(0.29)	0.98	42379.9	12400.00
1	41417.23	107.75	1.031	0.30(0.29)	0.98	45748.7	12201.00
1	40968.07	111.68	1.013	0.30(0.29)	0.98	46833.4	12111.00
1	40675.60	114.06	1.002	0.30(0.29)	0.98	47473.2	10700.00
1	40336.22	117.01	0.989	0.30(0.29)	0.98	48202.8	12101.10
1	39814.41	121.01	0.972	0.30(0.29)	0.98	49051.9	10400.00
1	38278.34	128.94	0.952	0.30(0.29)	0.98	50367.1	12010.00
1	36986.39	134.72	0.936	0.30(0.29)	0.98	50680.8	10210.00
1	36618.14	137.39	0.930	0.30(0.29)	0.98	50791.6	12000.00
1	33596.07	160.55	0.869	0.30(0.29)	0.98	51413.5	10100.00
2	293.49	27.41	2.011	0.30(0.30)	1.00	190.5	12730.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25971.90	24.82	2.133	0.30(0.28)	0.92	6419.0	12720.50
2	26112.75	25.33	2.106	0.30(0.28)	0.92	6552.8	12603.00
3	26741.85	27.41	2.011	0.30(0.28)	0.93	7307.3	12730.00
4	27187.54	28.95	1.942	0.30(0.28)	0.93	7851.9	12710.00
5	27298.17	29.35	1.923	0.30(0.28)	0.93	7989.6	600.00
6	31561.18	45.67	1.511	0.30(0.29)	0.96	14114.1	40100.00
7	33825.18	53.04	1.383	0.30(0.29)	0.96	16918.2	11801.00
8	36772.38	62.67	1.295	0.30(0.29)	0.97	21215.0	11530.00
9	39140.78	71.33	1.237	0.30(0.29)	0.98	26220.7	11910.00
10	41285.23	78.51	1.188	0.30(0.29)	0.98	30802.3	11330.00
11	42374.01	84.90	1.145	0.30(0.29)	0.98	35233.3	11130.00
12	42282.25	92.48	1.100	0.30(0.29)	0.98	39227.3	12330.00
13	42229.71	95.07	1.088	0.30(0.29)	0.98	40642.1	12410.00
14	42055.70	99.10	1.070	0.30(0.29)	0.98	42570.5	12400.00
15	41542.51	107.75	1.031	0.30(0.29)	0.98	45939.2	12201.00
16	41090.30	111.68	1.013	0.30(0.29)	0.98	47023.9	12111.00
17	40795.97	114.06	1.002	0.30(0.29)	0.98	47663.7	10700.00
18	40454.29	117.01	0.989	0.30(0.29)	0.98	48393.4	12101.10
19	39929.71	121.01	0.972	0.30(0.29)	0.98	49242.4	10400.00
20	38390.08	128.94	0.952	0.30(0.29)	0.98	50557.6	12010.00
21	37095.54	134.72	0.936	0.30(0.29)	0.98	50871.3	10210.00
22	36726.09	137.39	0.930	0.30(0.29)	0.98	50982.2	12000.00
23	33693.63	160.55	0.869	0.30(0.29)	0.98	51604.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 42374.01 Tc(MIN.) = 84.90

EFFECTIVE AREA(ACRES) = 35233.31 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52254.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.96 FEET.

****
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 240.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0099
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.06
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.138
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,STRAIGHT ROW"	B	0.30	0.30	1.000	81
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
COMMERCIAL	B	0.40	0.30	0.100	56
COMMERCIAL	B	0.60	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.30	1.000	66
PUBLIC PARK	B	3.20	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.784
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42376.61
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 19.07
AVERAGE FLOW DEPTH(FEET) = 9.06 TRAVEL TIME(MIN.) = 1.07
Tc(MIN.) = 85.96
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 5.20
EFFECTIVE AREA(ACRES) = 35239.71 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52261.0 PEAK FLOW RATE(CFS) = 42374.01
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.06 FLOW VELOCITY(FEET/SEC.) = 19.07
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

****
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 85.96
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.138
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN

```
  NATURAL FAIR COVER
  "GRASS"                    B        3.90      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        8.70      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       10.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.90      SUBAREA RUNOFF(CFS) =   17.28
  EFFECTIVE AREA(ACRES) =  35262.61   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52283.9       PEAK FLOW RATE(CFS) =   42374.01
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    52283.9  TC(MIN.) =     85.96
  EFFECTIVE AREA(ACRES) =  35262.61  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.981
  PEAK FLOW RATE(CFS)   =   42374.01

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25971.90   26.07    2.072  0.30( 0.28) 0.92    6448.3   12720.50
      2    26112.75   26.58    2.049  0.30( 0.28) 0.92    6582.1   12603.00
      3    26741.85   28.66    1.955  0.30( 0.28) 0.93    7336.6   12730.00
      4    27187.54   30.18    1.889  0.30( 0.28) 0.93    7881.2   12710.00
      5    27298.17   30.59    1.879  0.30( 0.28) 0.93    8018.9     600.00
      6    31561.18   46.85    1.484  0.30( 0.29) 0.96   14143.4   40100.00
      7    33825.18   54.19    1.372  0.30( 0.29) 0.96   16947.5   11801.00
      8    36772.38   63.79    1.287  0.30( 0.29) 0.97   21244.3   11530.00
      9    39140.78   72.43    1.229  0.30( 0.29) 0.98   26250.0   11910.00
     10    41285.23   79.59    1.181  0.30( 0.29) 0.98   30831.6   11330.00
     11    42374.01   85.96    1.138  0.30( 0.29) 0.98   35262.6   11130.00
     12    42282.25   93.54    1.095  0.30( 0.29) 0.98   39256.6   12330.00
     13    42229.71   96.14    1.083  0.30( 0.29) 0.98   40671.4   12410.00
     14    42055.70  100.17    1.065  0.30( 0.29) 0.98   42599.8   12400.00
     15    41542.51  108.82    1.026  0.30( 0.29) 0.98   45968.5   12201.00
     16    41090.30  112.75    1.008  0.30( 0.29) 0.98   47053.2   12111.00
     17    40795.97  115.14    0.997  0.30( 0.29) 0.98   47693.0   10700.00
     18    40454.29  118.09    0.984  0.30( 0.29) 0.98   48422.7   12101.10
     19    39929.71  122.09    0.970  0.30( 0.29) 0.98   49271.7   10400.00
     20    38390.08  130.04    0.949  0.30( 0.29) 0.98   50586.9   12010.00
     21    37095.54  135.84    0.934  0.30( 0.29) 0.98   50900.6   10210.00
     22    36726.09  138.50    0.927  0.30( 0.29) 0.98   51011.5   12000.00
     23    33693.63  161.70    0.866  0.30( 0.29) 0.98   51633.3   10100.00
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 100-YR EV JULY 2023 ROKAMOTO                                         *
 ***********************************************************************

  FILE NAME: RU00EV28.DAT
  TIME/DATE OF STUDY: 13:02 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.046
   2)   10.00;  3.873
   3)   15.00;  2.987
   4)   20.00;  2.453
   5)   25.00;  2.121
   6)   30.00;  1.894
   7)   40.00;  1.637
   8)   50.00;  1.414
   9)   60.00;  1.313
  10)   90.00;  1.111
  11)  120.00;  0.975
  12)  180.00;  0.818
  13)  360.00;  0.610
  14) 1200.00;  0.267
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV27.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    26112.75   26.58  0.30( 0.28) 0.92    6582.1   12603.00
      2    27298.17   30.59  0.30( 0.28) 0.93    8018.9     600.00
      3    31561.18   46.85  0.30( 0.29) 0.96   14143.4   40100.00
      4    33825.18   54.19  0.30( 0.29) 0.96   16947.5   11801.00
      5    36772.38   63.79  0.30( 0.29) 0.97   21244.3   11530.00
      6    39140.78   72.43  0.30( 0.29) 0.98   26250.0   11910.00
      7    41285.23   79.59  0.30( 0.29) 0.98   30831.6   11330.00
      8    42374.01   85.96  0.30( 0.29) 0.98   35262.6   11130.00
      9    42282.25   93.54  0.30( 0.29) 0.98   39256.6   12330.00
     10    42229.71   96.14  0.30( 0.29) 0.98   40671.4   12410.00
     11    42055.70  100.17  0.30( 0.29) 0.98   42599.8   12400.00
     12    41542.51  108.82  0.30( 0.29) 0.98   45968.5   12201.00
     13    41090.30  112.75  0.30( 0.29) 0.98   47053.2   12111.00
     14    40795.97  115.14  0.30( 0.29) 0.98   47693.0   10700.00
     15    40454.29  118.09  0.30( 0.29) 0.98   48422.7   12101.10
     16    39929.71  122.09  0.30( 0.29) 0.98   49271.7   10400.00
     17    38390.08  130.04  0.30( 0.29) 0.98   50586.9   12010.00
     18    37095.54  135.84  0.30( 0.29) 0.98   50900.6   10210.00
     19    36726.09  138.50  0.30( 0.29) 0.98   51011.5   12000.00
     20    33693.63  161.70  0.30( 0.29) 0.98   51633.3   10100.00
    TOTAL AREA(ACRES) =    51633.3

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P501XXCE.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      411.92   13.14  0.30( 0.25) 0.84     174.7   50110.00
      2      436.73   17.51  0.30( 0.26) 0.85     223.2   50100.00
    TOTAL AREA(ACRES) =      223.2

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
```

1	411.92	13.14	0.30(0.25)	0.84	174.7	50110.00	
2	436.73	17.51	0.30(0.26)	0.85	223.2	50100.00	

TOTAL AREA(ACRES) = 223.2

****

FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	411.92	13.14	3.317	0.30(0.25)	0.84	174.7	50110.00
2	436.73	17.51	2.719	0.30(0.26)	0.85	223.2	50100.00

LONGEST FLOWPATH FROM NODE 50100.00 TO NODE 12800.00 = 4170.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26112.75	26.58	2.049	0.30(0.28)	0.92	6582.1	12603.00
2	27298.17	30.59	1.879	0.30(0.28)	0.93	8018.9	600.00
3	31561.18	46.85	1.484	0.30(0.29)	0.96	14143.4	40100.00
4	33825.18	54.19	1.372	0.30(0.29)	0.96	16947.5	11801.00
5	36772.38	63.79	1.287	0.30(0.29)	0.97	21244.3	11530.00
6	39140.78	72.43	1.229	0.30(0.29)	0.98	26250.0	11910.00
7	41285.23	79.59	1.181	0.30(0.29)	0.98	30831.6	11330.00
8	42374.01	85.96	1.138	0.30(0.29)	0.98	35262.6	11130.00
9	42282.25	93.54	1.095	0.30(0.29)	0.98	39256.6	12330.00
10	42229.71	96.14	1.083	0.30(0.29)	0.98	40671.4	12410.00
11	42055.70	100.17	1.065	0.30(0.29)	0.98	42599.8	12400.00
12	41542.51	108.82	1.026	0.30(0.29)	0.98	45968.5	12201.00
13	41090.30	112.75	1.008	0.30(0.29)	0.98	47053.2	12111.00
14	40795.97	115.14	0.997	0.30(0.29)	0.98	47693.0	10700.00
15	40454.29	118.09	0.984	0.30(0.29)	0.98	48422.7	12101.10
16	39929.71	122.09	0.970	0.30(0.29)	0.98	49271.7	10400.00
17	38390.08	130.04	0.949	0.30(0.29)	0.98	50586.9	12010.00
18	37095.54	135.84	0.934	0.30(0.29)	0.98	50900.6	10210.00
19	36726.09	138.50	0.927	0.30(0.29)	0.98	51011.5	12000.00
20	33693.63	161.70	0.866	0.30(0.29)	0.98	51633.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22544.81	13.14	3.317	0.30(0.27)	0.92	3428.3	50110.00
2	24134.71	17.51	2.719	0.30(0.27)	0.92	4559.7	50100.00
3	26430.80	26.58	2.049	0.30(0.28)	0.92	6805.3	12603.00
4	27586.04	30.59	1.879	0.30(0.28)	0.93	8242.1	600.00
5	31779.09	46.85	1.484	0.30(0.29)	0.96	14366.6	40100.00
6	34023.13	54.19	1.372	0.30(0.29)	0.96	17170.7	11801.00
7	36955.39	63.79	1.287	0.30(0.29)	0.97	21467.5	11530.00
8	39313.48	72.43	1.229	0.30(0.29)	0.97	26473.2	11910.00
9	41449.39	79.59	1.181	0.30(0.29)	0.98	31054.8	11330.00
10	42530.56	85.96	1.138	0.30(0.29)	0.98	35485.8	11130.00
11	42431.13	93.54	1.095	0.30(0.29)	0.98	39479.8	12330.00
12	42376.50	96.14	1.083	0.30(0.29)	0.98	40894.6	12410.00
13	42199.25	100.17	1.065	0.30(0.29)	0.98	42823.0	12400.00

14	41679.11	108.82	1.026	0.30(0.29)	0.98	46191.7	12201.00
15	41223.74	112.75	1.008	0.30(0.29)	0.98	47276.4	12111.00
16	40927.50	115.14	0.997	0.30(0.29)	0.98	47916.2	10700.00
17	40583.45	118.09	0.984	0.30(0.29)	0.98	48645.9	12101.10
18	40056.36	122.09	0.970	0.30(0.29)	0.98	49494.9	10400.00
19	38513.04	130.04	0.949	0.30(0.29)	0.98	50810.1	12010.00
20	37215.81	135.84	0.934	0.30(0.29)	0.98	51123.8	10210.00
21	36845.13	138.50	0.927	0.30(0.29)	0.98	51234.7	12000.00
22	33801.91	161.70	0.866	0.30(0.29)	0.98	51856.5	10100.00

TOTAL AREA(ACRES) = 51856.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 42530.56 Tc(MIN.) = 85.961

EFFECTIVE AREA(ACRES) = 35485.81 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98

TOTAL AREA(ACRES) = 51856.5

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

==========

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 51856.5 TC(MIN.) = 85.96

EFFECTIVE AREA(ACRES) = 35485.81 AREA-AVERAGED Fm(INCH/HR)= 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.980

PEAK FLOW RATE(CFS) = 42530.56

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22544.81	13.14	3.317	0.30(0.27)	0.92	3428.3	50110.00
2	24134.71	17.51	2.719	0.30(0.27)	0.92	4559.7	50100.00
3	26430.80	26.58	2.049	0.30(0.28)	0.92	6805.3	12603.00
4	27586.04	30.59	1.879	0.30(0.28)	0.93	8242.1	600.00
5	31779.09	46.85	1.484	0.30(0.29)	0.96	14366.6	40100.00
6	34023.13	54.19	1.372	0.30(0.29)	0.96	17170.7	11801.00
7	36955.39	63.79	1.287	0.30(0.29)	0.97	21467.5	11530.00
8	39313.48	72.43	1.229	0.30(0.29)	0.97	26473.2	11910.00
9	41449.39	79.59	1.181	0.30(0.29)	0.98	31054.8	11330.00
10	42530.56	85.96	1.138	0.30(0.29)	0.98	35485.8	11130.00
11	42431.13	93.54	1.095	0.30(0.29)	0.98	39479.8	12330.00
12	42376.50	96.14	1.083	0.30(0.29)	0.98	40894.6	12410.00
13	42199.25	100.17	1.065	0.30(0.29)	0.98	42823.0	12400.00
14	41679.11	108.82	1.026	0.30(0.29)	0.98	46191.7	12201.00
15	41223.74	112.75	1.008	0.30(0.29)	0.98	47276.4	12111.00
16	40927.50	115.14	0.997	0.30(0.29)	0.98	47916.2	10700.00
17	40583.45	118.09	0.984	0.30(0.29)	0.98	48645.9	12101.10
18	40056.36	122.09	0.970	0.30(0.29)	0.98	49494.9	10400.00
19	38513.04	130.04	0.949	0.30(0.29)	0.98	50810.1	12010.00
20	37215.81	135.84	0.934	0.30(0.29)	0.98	51123.8	10210.00
21	36845.13	138.50	0.927	0.30(0.29)	0.98	51234.7	12000.00
22	33801.91	161.70	0.866	0.30(0.29)	0.98	51856.5	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 100-YR EV JULY 2023 ROKAMOTO                                         *
 ***********************************************************************

  FILE NAME: RU00EV29.DAT
  TIME/DATE OF STUDY: 13:02 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  6.006
   2)   10.00;  3.853
   3)   15.00;  2.975
   4)   20.00;  2.445
   5)   25.00;  2.115
   6)   30.00;  1.889
   7)   40.00;  1.632
   8)   50.00;  1.411
   9)   60.00;  1.307
  10)   90.00;  1.106
  11)  120.00;  0.969
  12)  180.00;  0.813
  13)  360.00;  0.605
  14) 1200.00;  0.265
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22544.81   13.14  0.30( 0.27) 0.92    3428.3   50110.00
      2    24134.71   17.51  0.30( 0.27) 0.92    4559.7   50100.00
      3    26430.80   26.58  0.30( 0.28) 0.92    6805.3   12603.00
      4    27586.04   30.59  0.30( 0.28) 0.93    8242.1     600.00
      5    31779.09   46.85  0.30( 0.29) 0.96   14366.6   40100.00
      6    34023.13   54.19  0.30( 0.29) 0.96   17170.7   11801.00
      7    36955.39   63.79  0.30( 0.29) 0.97   21467.5   11530.00
      8    39313.48   72.43  0.30( 0.29) 0.97   26473.2   11910.00
      9    41449.39   79.59  0.30( 0.29) 0.98   31054.8   11330.00
     10    42530.56   85.96  0.30( 0.29) 0.98   35485.8   11130.00
     11    42431.13   93.54  0.30( 0.29) 0.98   39479.8   12330.00
     12    42199.25  100.17  0.30( 0.29) 0.98   42823.0   12400.00
     13    41679.11  108.82  0.30( 0.29) 0.98   46191.7   12201.00
     14    41223.74  112.75  0.30( 0.29) 0.98   47276.4   12111.00
     15    40583.45  118.09  0.30( 0.29) 0.98   48645.9   12101.10
     16    40056.36  122.09  0.30( 0.29) 0.98   49494.9   10400.00
     17    38513.04  130.04  0.30( 0.29) 0.98   50810.1   12010.00
     18    37215.81  135.84  0.30( 0.29) 0.98   51123.8   10210.00
     19    36845.13  138.50  0.30( 0.29) 0.98   51234.7   12000.00
     20    33801.91  161.70  0.30( 0.29) 0.98   51856.5   10100.00
   TOTAL AREA(ACRES) =    51856.5

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22544.81   13.14  0.30( 0.27) 0.92    3428.3   50110.00
      2    24134.71   17.51  0.30( 0.27) 0.92    4559.7   50100.00
      3    26430.80   26.58  0.30( 0.28) 0.92    6805.3   12603.00
      4    27586.04   30.59  0.30( 0.28) 0.93    8242.1     600.00
      5    31779.09   46.85  0.30( 0.29) 0.96   14366.6   40100.00
      6    34023.13   54.19  0.30( 0.29) 0.96   17170.7   11801.00
      7    36955.39   63.79  0.30( 0.29) 0.97   21467.5   11530.00
      8    39313.48   72.43  0.30( 0.29) 0.97   26473.2   11910.00
      9    41449.39   79.59  0.30( 0.29) 0.98   31054.8   11330.00
     10    42530.56   85.96  0.30( 0.29) 0.98   35485.8   11130.00
     11    42431.13   93.54  0.30( 0.29) 0.98   39479.8   12330.00
     12    42199.25  100.17  0.30( 0.29) 0.98   42823.0   12400.00
     13    41679.11  108.82  0.30( 0.29) 0.98   46191.7   12201.00
```

```
     14    41223.74  112.75  0.30( 0.29) 0.98   47276.4   12111.00
     15    40583.45  118.09  0.30( 0.29) 0.98   48645.9   12101.10
     16    40056.36  122.09  0.30( 0.29) 0.98   49494.9   10400.00
     17    38513.04  130.04  0.30( 0.29) 0.98   50810.1   12010.00
     18    37215.81  135.84  0.30( 0.29) 0.98   51123.8   10210.00
     19    36845.13  138.50  0.30( 0.29) 0.98   51234.7   12000.00
     20    33801.91  161.70  0.30( 0.29) 0.98   51856.5   10100.00
    TOTAL AREA(ACRES) =     51856.5

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.76
  CHANNEL FLOW THRU SUBAREA(CFS) =   42530.56
  FLOW VELOCITY(FEET/SEC.) =  17.53   FLOW DEPTH(FEET) =   9.76
  TRAVEL TIME(MIN.) =   2.97   Tc(MIN.) =   88.93
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   21.20
  EFFECTIVE AREA(ACRES) =  35509.51   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51880.2       PEAK FLOW RATE(CFS) =   42530.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.57
  EFFECTIVE AREA(ACRES) =  35512.61   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51883.3       PEAK FLOW RATE(CFS) =   42530.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    7.17
  EFFECTIVE AREA(ACRES) =  35521.81   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51892.5       PEAK FLOW RATE(CFS) =   42530.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   27.18
  EFFECTIVE AREA(ACRES) =  35557.31   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51928.0       PEAK FLOW RATE(CFS) =   42530.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.93
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   39.25
  EFFECTIVE AREA(ACRES) =  35608.81   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51979.5       PEAK FLOW RATE(CFS) =   42530.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.58
  CHANNEL FLOW THRU SUBAREA(CFS) =   42530.56
  FLOW VELOCITY(FEET/SEC.) =  17.91   FLOW DEPTH(FEET) =   9.58
  TRAVEL TIME(MIN.) =   0.11   Tc(MIN.) =   89.04
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P503XXCE.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     1954.61   18.51  0.30( 0.22) 0.74    1037.1   50320.00
      2     1958.52   19.18  0.30( 0.22) 0.74    1065.7   50240.00
      3     1953.83   20.19  0.30( 0.22) 0.74    1103.3   50330.00
      4     1953.14   23.39  0.30( 0.22) 0.74    1204.8   50280.00
      5     1934.70   24.58  0.30( 0.22) 0.74    1235.7   50300.00
      6     1911.74   25.74  0.30( 0.22) 0.74    1257.1   50220.00
      7     1820.38   28.97  0.30( 0.22) 0.74    1290.9   50260.00
      8     1712.34   32.40  0.30( 0.22) 0.74    1298.6   50200.00
    TOTAL AREA(ACRES) =     1298.6

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22544.81   16.95    2.769  0.30( 0.27) 0.91    3551.3   50110.00
      2    24134.71   21.23    2.364  0.30( 0.27) 0.91    4682.7   50100.00
      3    26430.80   30.19    1.884  0.30( 0.27) 0.91    6928.3   12603.00
      4    27586.04   34.14    1.783  0.30( 0.28) 0.93    8365.1     600.00
      5    31779.09   50.24    1.409  0.30( 0.29) 0.96   14489.6   40100.00
      6    34023.13   57.50    1.333  0.30( 0.29) 0.96   17293.7   11801.00
      7    36955.39   67.01    1.260  0.30( 0.29) 0.97   21590.5   11530.00
      8    39313.48   75.59    1.203  0.30( 0.29) 0.97   26596.2   11910.00
      9    41449.39   82.70    1.155  0.30( 0.29) 0.98   31177.8   11330.00
     10    42530.56   89.04    1.112  0.30( 0.29) 0.98   35608.8   11130.00
     11    42431.13   96.63    1.076  0.30( 0.29) 0.98   39602.8   12330.00
     12    42199.25  103.26    1.045  0.30( 0.29) 0.98   42946.0   12400.00
     13    41679.11  111.92    1.006  0.30( 0.29) 0.98   46314.7   12201.00
     14    41223.74  115.87    0.988  0.30( 0.29) 0.98   47399.4   12111.00
     15    40583.45  121.22    0.966  0.30( 0.29) 0.98   48768.9   12101.10
     16    40056.36  125.23    0.955  0.30( 0.29) 0.98   49617.9   10400.00
     17    38513.04  133.22    0.935  0.30( 0.29) 0.98   50933.1   12010.00
     18    37215.81  139.06    0.919  0.30( 0.29) 0.98   51246.8   10210.00
     19    36845.13  141.73    0.912  0.30( 0.29) 0.98   51357.7   12000.00
     20    33801.91  165.02    0.852  0.30( 0.29) 0.98   51979.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1954.61   18.51    2.603  0.30( 0.22) 0.74    1037.1   50320.00
      2     1958.52   19.18    2.532  0.30( 0.22) 0.74    1065.7   50240.00
      3     1953.83   20.19    2.432  0.30( 0.22) 0.74    1103.3   50330.00
      4     1953.14   23.39    2.221  0.30( 0.22) 0.74    1204.8   50280.00
      5     1934.70   24.58    2.142  0.30( 0.22) 0.74    1235.7   50300.00
```

```
     6     1911.74   25.74    2.082  0.30( 0.22) 0.74    1257.1   50220.00
     7     1820.38   28.97    1.936  0.30( 0.22) 0.74    1290.9   50260.00
     8     1712.34   32.40    1.827  0.30( 0.22) 0.74    1298.6   50200.00
  LONGEST FLOWPATH FROM NODE  50220.00 TO NODE  12902.00 =   17597.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24458.86   16.95    2.769  0.30( 0.26) 0.87    4500.7   50110.00
      2    25079.78   18.51    2.603  0.30( 0.26) 0.88    5001.3   50320.00
      3    25332.22   19.18    2.532  0.30( 0.26) 0.88    5206.9   50240.00
      4    25703.92   20.19    2.432  0.30( 0.26) 0.88    5512.2   50330.00
      5    26088.32   21.23    2.364  0.30( 0.26) 0.88    5818.8   50100.00
      6    26642.56   23.39    2.221  0.30( 0.26) 0.88    6430.0   50280.00
      7    26928.93   24.58    2.142  0.30( 0.26) 0.88    6759.1   50300.00
      8    27201.83   25.74    2.082  0.30( 0.26) 0.88    7069.8   50220.00
      9    27938.83   28.97    1.936  0.30( 0.27) 0.89    7913.7   50260.00
     10    28212.81   30.19    1.884  0.30( 0.27) 0.89    8222.0   12603.00
     11    28789.69   32.40    1.827  0.30( 0.27) 0.90    9031.0   50200.00
     12    29250.66   34.14    1.783  0.30( 0.27) 0.90    9663.7     600.00
     13    33044.60   50.24    1.409  0.30( 0.28) 0.94   15788.2   40100.00
     14    35208.01   57.50    1.333  0.30( 0.28) 0.95   18592.3   11801.00
     15    38062.42   67.01    1.260  0.30( 0.29) 0.96   22889.1   11530.00
     16    40359.21   75.59    1.203  0.30( 0.29) 0.96   27894.8   11910.00
     17    42444.30   82.70    1.155  0.30( 0.29) 0.97   32476.4   11330.00
     18    43480.11   89.04    1.112  0.30( 0.29) 0.97   36907.4   11130.00
     19    43341.54   96.63    1.076  0.30( 0.29) 0.97   40901.4   12330.00
     20    43077.33  103.26    1.045  0.30( 0.29) 0.97   44244.6   12400.00
     21    42515.00  111.92    1.006  0.30( 0.29) 0.97   47613.3   12201.00
     22    42040.40  115.87    0.988  0.30( 0.29) 0.97   48698.0   12111.00
     23    41376.57  121.22    0.966  0.30( 0.29) 0.97   50067.5   12101.10
     24    40838.37  125.23    0.955  0.30( 0.29) 0.98   50916.5   10400.00
     25    39272.89  133.22    0.935  0.30( 0.29) 0.98   52231.7   12010.00
     26    37959.47  139.06    0.919  0.30( 0.29) 0.98   52545.4   10210.00
     27    37581.37  141.73    0.912  0.30( 0.29) 0.98   52656.3   12000.00
     28    34473.54  165.02    0.852  0.30( 0.29) 0.98   53278.1   10100.00
    TOTAL AREA(ACRES) =     53278.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    43480.11  Tc(MIN.) =   89.042
  EFFECTIVE AREA(ACRES) =  36907.41  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    53278.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.83
  CHANNEL FLOW THRU SUBAREA(CFS) =   43480.11
  FLOW VELOCITY(FEET/SEC.) =   9.09   FLOW DEPTH(FEET) =  16.83
  TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =   90.68
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P504XXCE.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      159.82   13.14  0.30( 0.28) 0.94      70.7   50400.00
    TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    24458.86   18.90    2.561  0.30( 0.26) 0.87    4500.7   50110.00
      2    25079.78   20.45    2.415  0.30( 0.26) 0.88    5001.3   50320.00
      3    25332.22   21.12    2.371  0.30( 0.26) 0.88    5206.9   50240.00
      4    25703.92   22.12    2.305  0.30( 0.26) 0.88    5512.2   50330.00
      5    26088.32   23.15    2.237  0.30( 0.26) 0.88    5818.8   50100.00
      6    26642.56   25.30    2.101  0.30( 0.26) 0.88    6430.0   50280.00
      7    26928.93   26.49    2.048  0.30( 0.26) 0.88    6759.1   50300.00
      8    27201.83   27.63    1.996  0.30( 0.26) 0.88    7069.8   50220.00
      9    27938.83   30.85    1.867  0.30( 0.27) 0.89    7913.7   50260.00
     10    28212.81   32.06    1.836  0.30( 0.27) 0.89    8222.0   12603.00
     11    28789.69   34.26    1.779  0.30( 0.27) 0.90    9031.0   50200.00
     12    29250.66   35.99    1.735  0.30( 0.27) 0.90    9663.7     600.00
     13    33044.60   52.02    1.390  0.30( 0.28) 0.94   15788.2   40100.00
     14    35208.01   59.25    1.315  0.30( 0.28) 0.95   18592.3   11801.00
     15    38062.42   68.72    1.249  0.30( 0.29) 0.96   22889.1   11530.00
     16    40359.21   77.27    1.191  0.30( 0.29) 0.96   27894.8   11910.00
     17    42444.30   84.35    1.144  0.30( 0.29) 0.97   32476.4   11330.00
     18    43480.11   90.68    1.103  0.30( 0.29) 0.97   36907.4   11130.00
     19    43341.54   98.27    1.068  0.30( 0.29) 0.97   40901.4   12330.00
     20    43077.33  104.91    1.038  0.30( 0.29) 0.97   44244.6   12400.00
     21    42515.00  113.57    0.998  0.30( 0.29) 0.97   47613.3   12201.00
     22    42040.40  117.53    0.980  0.30( 0.29) 0.97   48698.0   12111.00
     23    41376.57  122.89    0.961  0.30( 0.29) 0.97   50067.5   12101.10
     24    40838.37  126.91    0.951  0.30( 0.29) 0.98   50916.5   10400.00
     25    39272.89  134.91    0.930  0.30( 0.29) 0.98   52231.7   12010.00
     26    37959.47  140.77    0.915  0.30( 0.29) 0.98   52545.4   10210.00
     27    37581.37  143.45    0.908  0.30( 0.29) 0.98   52656.3   12000.00
     28    34473.54  166.78    0.847  0.30( 0.29) 0.98   53278.1   10100.00
```

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	159.82	13.14	3.301	0.30(0.28)	0.94	70.7	50400.00

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22637.71	13.14	3.301	0.30(0.26)	0.88	3199.6	50400.00
2	24579.51	18.90	2.561	0.30(0.26)	0.88	4571.4	50110.00
3	25192.70	20.45	2.415	0.30(0.26)	0.88	5072.0	50320.00
4	25442.82	21.12	2.371	0.30(0.26)	0.88	5277.6	50240.00
5	25811.01	22.12	2.305	0.30(0.26)	0.88	5582.9	50330.00
6	26191.83	23.15	2.237	0.30(0.26)	0.88	5889.5	50100.00
7	26738.88	25.30	2.101	0.30(0.26)	0.88	6500.7	50280.00
8	27022.42	26.49	2.048	0.30(0.26)	0.88	6829.8	50300.00
9	27292.58	27.63	1.996	0.30(0.26)	0.88	7140.5	50220.00
10	28022.76	30.85	1.867	0.30(0.27)	0.89	7984.4	50260.00
11	28295.09	32.06	1.836	0.30(0.27)	0.89	8292.7	12603.00
12	28868.97	34.26	1.779	0.30(0.27)	0.90	9101.7	50200.00
13	29327.59	35.99	1.735	0.30(0.27)	0.90	9734.4	600.00
14	33103.27	52.02	1.390	0.30(0.28)	0.94	15858.9	40100.00
15	35262.71	59.25	1.315	0.30(0.28)	0.95	18663.0	11801.00
16	38113.61	68.72	1.249	0.30(0.29)	0.96	22959.8	11530.00
17	40407.37	77.27	1.191	0.30(0.29)	0.96	27965.5	11910.00
18	42489.95	84.35	1.144	0.30(0.29)	0.97	32547.1	11330.00
19	43523.59	90.68	1.103	0.30(0.29)	0.97	36978.1	11130.00
20	43383.19	98.27	1.068	0.30(0.29)	0.97	40972.1	12330.00
21	43117.38	104.91	1.038	0.30(0.29)	0.97	44315.3	12400.00
22	42552.95	113.57	0.998	0.30(0.29)	0.97	47684.0	12201.00
23	42077.39	117.53	0.980	0.30(0.29)	0.97	48768.7	12111.00
24	41412.57	122.89	0.961	0.30(0.29)	0.97	50138.2	12101.10
25	40873.81	126.91	0.951	0.30(0.29)	0.98	50987.2	10400.00
26	39307.23	134.91	0.930	0.30(0.29)	0.98	52302.4	12010.00
27	37993.01	140.77	0.915	0.30(0.29)	0.98	52616.1	10210.00
28	37614.54	143.45	0.908	0.30(0.29)	0.98	52727.0	12000.00
29	34503.50	166.78	0.847	0.30(0.29)	0.98	53348.8	10100.00

TOTAL AREA(ACRES) = 53348.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 43523.59 Tc(MIN.) = 90.685
EFFECTIVE AREA(ACRES) = 36978.11 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53348.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.15
CHANNEL FLOW THRU SUBAREA(CFS) = 43523.59
FLOW VELOCITY(FEET/SEC.) = 9.60 FLOW DEPTH(FEET) = 16.15
TRAVEL TIME(MIN.) = 1.33 Tc(MIN.) = 92.02
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 92.02
RAINFALL INTENSITY(INCH/HR) = 1.10
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 36978.11
TOTAL STREAM AREA(ACRES) = 53348.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 43523.59

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 19.26 RAINFALL INTENSITY(INCH/HR) = 2.52
EFFECTIVE AREA(ACRES) = 46.30
TOTAL AREA(ACRES) = 213.70 PEAK FLOW RATE(CFS) = 88.40
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 19.26
RAINFALL INTENSITY(INCH/HR) = 2.52
AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
EFFECTIVE STREAM AREA(ACRES) = 46.30
TOTAL STREAM AREA(ACRES) = 213.70

PEAK FLOW RATE(CFS) AT CONFLUENCE = 88.40

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22637.71	14.78	3.014	0.30(0.26)	0.88	3199.6	50400.00
1	24579.51	20.50	2.412	0.30(0.26)	0.88	4571.4	50110.00
1	25192.70	22.03	2.311	0.30(0.26)	0.88	5072.0	50320.00
1	25442.82	22.69	2.267	0.30(0.26)	0.88	5277.6	50240.00
1	25811.01	23.69	2.202	0.30(0.26)	0.88	5582.9	50330.00
1	26191.83	24.71	2.134	0.30(0.26)	0.88	5889.5	50100.00
1	26738.88	26.85	2.031	0.30(0.26)	0.88	6500.7	50280.00
1	27022.42	28.03	1.978	0.30(0.26)	0.88	6829.8	50300.00
1	27292.58	29.17	1.926	0.30(0.26)	0.88	7140.5	50220.00
1	28022.76	32.37	1.828	0.30(0.27)	0.89	7984.4	50260.00
1	28295.09	33.58	1.797	0.30(0.27)	0.89	8292.7	12603.00
1	28868.97	35.77	1.741	0.30(0.27)	0.90	9101.7	50200.00
1	29327.59	37.50	1.696	0.30(0.27)	0.90	9734.4	600.00
1	33103.27	53.47	1.375	0.30(0.28)	0.94	15858.9	40100.00
1	35262.71	60.67	1.302	0.30(0.28)	0.95	18663.0	11801.00
1	38113.61	70.11	1.239	0.30(0.29)	0.96	22959.8	11530.00
1	40407.37	78.63	1.182	0.30(0.29)	0.96	27965.5	11910.00
1	42489.95	85.69	1.135	0.30(0.29)	0.97	32547.1	11330.00
1	43523.59	92.02	1.097	0.30(0.29)	0.97	36978.1	11130.00
1	43383.19	99.60	1.062	0.30(0.29)	0.97	40972.1	12330.00
1	43117.38	106.25	1.032	0.30(0.29)	0.97	44315.3	12400.00
1	42552.95	114.92	0.992	0.30(0.29)	0.97	47684.0	12201.00
1	42077.39	118.87	0.974	0.30(0.29)	0.97	48768.7	12111.00
1	41412.57	124.24	0.958	0.30(0.29)	0.97	50138.2	12101.10
1	40873.81	128.27	0.948	0.30(0.29)	0.98	50987.2	10400.00
1	39307.23	136.29	0.927	0.30(0.29)	0.98	52302.4	12010.00
1	37993.01	142.16	0.911	0.30(0.29)	0.98	52616.1	10210.00
1	37614.54	144.84	0.904	0.30(0.29)	0.98	52727.0	12000.00
1	34503.50	168.21	0.844	0.30(0.29)	0.98	53348.8	10100.00
2	88.40	19.26	2.523	0.30(0.13)	0.43	46.3	12904.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22719.44	14.78	3.014	0.30(0.26)	0.87	3235.1	50400.00
2	24248.56	19.26	2.523	0.30(0.26)	0.87	4321.4	12904.00
3	24663.80	20.50	2.412	0.30(0.26)	0.87	4617.7	50110.00
4	25273.26	22.03	2.311	0.30(0.26)	0.87	5118.3	50320.00
5	25521.77	22.69	2.267	0.30(0.26)	0.87	5323.9	50240.00
6	25887.53	23.69	2.202	0.30(0.26)	0.87	5629.2	50330.00
7	26265.85	24.71	2.134	0.30(0.26)	0.88	5935.8	50100.00
8	26809.11	26.85	2.031	0.30(0.26)	0.88	6547.0	50280.00
9	27090.69	28.03	1.978	0.30(0.26)	0.88	6876.1	50300.00
10	27358.94	29.17	1.926	0.30(0.26)	0.88	7186.8	50220.00
11	28085.48	32.37	1.828	0.30(0.27)	0.88	8030.7	50260.00
12	28356.66	33.58	1.797	0.30(0.27)	0.89	8339.0	12603.00
13	28928.47	35.77	1.741	0.30(0.27)	0.89	9148.0	50200.00
14	29385.46	37.50	1.696	0.30(0.27)	0.90	9780.7	600.00
15	33149.27	53.47	1.375	0.30(0.28)	0.94	15905.2	40100.00
16	35306.03	60.67	1.302	0.30(0.28)	0.95	18709.3	11801.00

17	38154.60	70.11	1.239	0.30(0.29)	0.95	23006.1	11530.00
18	40446.25	78.63	1.182	0.30(0.29)	0.96	28011.8	11910.00
19	42527.09	85.69	1.135	0.30(0.29)	0.97	32593.4	11330.00
20	43559.32	92.02	1.097	0.30(0.29)	0.97	37024.4	11130.00
21	43417.64	99.60	1.062	0.30(0.29)	0.97	41018.4	12330.00
22	43150.71	106.25	1.032	0.30(0.29)	0.97	44361.6	12400.00
23	42584.82	114.92	0.992	0.30(0.29)	0.97	47730.3	12201.00
24	42108.60	118.87	0.974	0.30(0.29)	0.97	48815.0	12111.00
25	41443.18	124.24	0.958	0.30(0.29)	0.97	50184.5	12101.10
26	40904.03	128.27	0.948	0.30(0.29)	0.97	51033.5	10400.00
27	39336.68	136.29	0.927	0.30(0.29)	0.98	52348.7	12010.00
28	38021.89	142.16	0.911	0.30(0.29)	0.98	52662.4	10210.00
29	37643.17	144.84	0.904	0.30(0.29)	0.98	52773.3	12000.00
30	34529.88	168.21	0.844	0.30(0.29)	0.98	53395.1	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 43559.32 Tc(MIN.) = 92.02
EFFECTIVE AREA(ACRES) = 37024.41 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53562.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 92.02
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.097
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.80	0.30	1.000	65
COMMERCIAL	B	1.20	0.30	0.100	56
COMMERCIAL	B	1.50	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	3.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.641
SUBAREA AREA(ACRES) = 6.80 SUBAREA RUNOFF(CFS) = 5.54
EFFECTIVE AREA(ACRES) = 37031.21 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53569.3 PEAK FLOW RATE(CFS) = 43559.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 92.02
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.097
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	3.60	0.30	1.000	69
PUBLIC PARK	B	15.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	20.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.941
SUBAREA AREA(ACRES) = 38.70 SUBAREA RUNOFF(CFS) = 28.36
EFFECTIVE AREA(ACRES) = 37069.91 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53608.0 PEAK FLOW RATE(CFS) = 43559.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 53608.0 TC(MIN.) = 92.02
EFFECTIVE AREA(ACRES) = 37069.91 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.970
PEAK FLOW RATE(CFS) = 43559.32

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22719.44	14.78	3.014	0.30(0.26)	0.87	3280.6	50400.00
2	24248.56	19.26	2.523	0.30(0.26)	0.87	4366.9	12904.00
3	24663.80	20.50	2.412	0.30(0.26)	0.87	4663.2	50110.00
4	25273.26	22.03	2.311	0.30(0.26)	0.87	5163.8	50320.00
5	25521.77	22.69	2.267	0.30(0.26)	0.87	5369.4	50240.00
6	25887.53	23.69	2.202	0.30(0.26)	0.87	5674.7	50330.00
7	26265.85	24.71	2.134	0.30(0.26)	0.88	5981.3	50100.00
8	26809.11	26.85	2.031	0.30(0.26)	0.88	6592.5	50280.00
9	27090.69	28.03	1.978	0.30(0.26)	0.88	6921.6	50300.00
10	27358.94	29.17	1.926	0.30(0.26)	0.88	7232.3	50220.00
11	28085.48	32.37	1.828	0.30(0.27)	0.88	8076.2	50260.00
12	28356.66	33.58	1.797	0.30(0.27)	0.89	8384.5	12603.00
13	28928.47	35.77	1.741	0.30(0.27)	0.89	9193.5	50200.00
14	29385.46	37.50	1.696	0.30(0.27)	0.90	9826.2	600.00
15	33149.27	53.47	1.375	0.30(0.28)	0.94	15950.7	40100.00
16	35306.03	60.67	1.302	0.30(0.28)	0.94	18754.8	11801.00
17	38154.60	70.11	1.239	0.30(0.29)	0.95	23051.6	11530.00
18	40446.25	78.63	1.182	0.30(0.29)	0.96	28057.3	11910.00
19	42527.09	85.69	1.135	0.30(0.29)	0.97	32638.9	11330.00
20	43559.32	92.02	1.097	0.30(0.29)	0.97	37069.9	11130.00
21	43417.64	99.60	1.062	0.30(0.29)	0.97	41063.9	12330.00
22	43150.71	106.25	1.032	0.30(0.29)	0.97	44407.1	12400.00
23	42584.82	114.92	0.992	0.30(0.29)	0.97	47775.8	12201.00
24	42108.60	118.87	0.974	0.30(0.29)	0.97	48860.5	12111.00
25	41443.18	124.24	0.958	0.30(0.29)	0.97	50230.0	12101.10
26	40904.03	128.27	0.948	0.30(0.29)	0.97	51079.0	10400.00
27	39336.68	136.29	0.927	0.30(0.29)	0.98	52394.2	12010.00
28	38021.89	142.16	0.911	0.30(0.29)	0.98	52707.9	10210.00
29	37643.17	144.84	0.904	0.30(0.29)	0.98	52818.8	12000.00
30	34529.88	168.21	0.844	0.30(0.29)	0.98	53440.6	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133C COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                               *
* 100-YR EV JULY 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RU00EV33.DAT
  TIME/DATE OF STUDY: 13:03 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.875
   2)   10.00;  3.789
   3)   15.00;  2.933
   4)   20.00;  2.419
   5)   25.00;  2.096
   6)   30.00;  1.872
   7)   40.00;  1.617
   8)   50.00;  1.400
   9)   60.00;  1.290
  10)   90.00;  1.088
  11)  120.00;  0.951
  12)  180.00;  0.795
  13)  360.00;  0.588
  14) 1200.00;  0.256
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =   7
------------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   59.66   RAINFALL INTENSITY(INCH/HR) =  1.29
  EFFECTIVE AREA(ACRES) =  2982.70
  TOTAL AREA(ACRES) =  4924.40        PEAK FLOW RATE(CFS) =   2529.80
  AREA-AVERAGED Fm(INCH/HR) =   0.25  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.82
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

******************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.60      0.30     1.000    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  COMMERCIAL                 B       22.60      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2552.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.78
  AVERAGE FLOW DEPTH(FEET) =   3.85   TRAVEL TIME(MIN.) =   3.92
  Tc(MIN.) =   63.58
  SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   45.14
  EFFECTIVE AREA(ACRES) =   3027.90     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    2783.01
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.04
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.04   FLOW VELOCITY(FEET/SEC.) =  11.09
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  COMMERCIAL                 B        7.40      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
  SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   16.14
  EFFECTIVE AREA(ACRES) =   3044.40   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    2799.16

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    6.92
  EFFECTIVE AREA(ACRES) =   3052.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    2806.07
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   19.13
  EFFECTIVE AREA(ACRES) =   3074.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    2825.20

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.266
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =   13.04
  EFFECTIVE AREA(ACRES) =   3089.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    2838.24

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
```

```
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.356
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      4.02
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      4.02

******************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.224
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       6.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.09
  AVERAGE FLOW DEPTH(FEET) =   0.54   TRAVEL TIME(MIN.) =   0.32
  Tc(MIN.) =    8.96
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    4.59
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       8.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.61   FLOW VELOCITY(FEET/SEC.) =   7.66
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.
```



```
******************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.36
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.30
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =   0.41
  Tc(MIN.) =    9.37
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    7.77
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =      15.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =   8.85
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.757
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.52
```

```
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   0.82
  Tc(MIN.) =   10.19
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =   11.20
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      25.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.12   FLOW VELOCITY(FEET/SEC.) =   6.81
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.641
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.08
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   0.68
  Tc(MIN.) =   10.86
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   19.24
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      44.20

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   7.45
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.521
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.19
  AVERAGE FLOW DEPTH(FEET) =   1.56   TRAVEL TIME(MIN.) =   0.70
  Tc(MIN.) =   11.57
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   31.31
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      73.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.69   FLOW VELOCITY(FEET/SEC.) =   8.64
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.297
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      94.29
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.89
  AVERAGE FLOW DEPTH(FEET) =   2.00   TRAVEL TIME(MIN.) =   1.31
  Tc(MIN.) =   12.87
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   40.73
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =     109.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.11   FLOW VELOCITY(FEET/SEC.) =   8.20
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.163
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     133.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.00
  AVERAGE FLOW DEPTH(FEET) =   2.35   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =   13.66
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   47.15
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     151.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.48   FLOW VELOCITY(FEET/SEC.) =   8.25
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     169.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.10
  AVERAGE FLOW DEPTH(FEET) =   2.49   TRAVEL TIME(MIN.) =   0.95
  Tc(MIN.) =   14.61
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   35.47
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     178.58

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.54   FLOW VELOCITY(FEET/SEC.) =   9.24
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.000
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   79.69
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     258.27

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     267.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.60
  AVERAGE FLOW DEPTH(FEET) =   3.05   TRAVEL TIME(MIN.) =   2.47
  Tc(MIN.) =   17.08
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   18.08
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     258.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.01   FLOW VELOCITY(FEET/SEC.) =   9.51
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.720
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   47.48
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     297.03

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.375
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     313.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.56
  AVERAGE FLOW DEPTH(FEET) =   3.50   TRAVEL TIME(MIN.) =   3.60
  Tc(MIN.) =   20.67
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   33.83
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     297.03
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.42   FLOW VELOCITY(FEET/SEC.) =   8.45
```

```
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      297.03   20.67    2.375  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2838.24   63.58    1.266  0.30( 0.25) 0.82    3089.3   13222.00
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2223.13   20.67    2.375  0.30( 0.25) 0.84    1159.1   31100.00
      2     2976.49   63.58    1.266  0.30( 0.25) 0.83    3243.8   13222.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2976.49  Tc(MIN.) =   63.578
  EFFECTIVE AREA(ACRES) =   3243.80  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
```



```
  "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
  NATURAL POOR COVER
  "BARREN"                   B        0.90      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2980.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.84
  AVERAGE FLOW DEPTH(FEET) =   5.67   TRAVEL TIME(MIN.) =   2.43
  Tc(MIN.) =   66.00
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    8.03
  EFFECTIVE AREA(ACRES) =   3253.20     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    2976.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.67   FLOW VELOCITY(FEET/SEC.) =   7.84
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13302.00 =    7532.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   66.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       13.80      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        2.60      0.30     1.000    86
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   24.38
  EFFECTIVE AREA(ACRES) =   3281.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    2976.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   66.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
  COMMERCIAL                 B        0.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.74
  EFFECTIVE AREA(ACRES) =   3284.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    2976.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   66.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.10      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.80      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   17.26
  EFFECTIVE AREA(ACRES) =   3304.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    2977.32

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   66.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.250
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       34.60      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       11.60      0.30     1.000    79
  APARTMENTS                 B        0.40      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.80      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   65.38
  EFFECTIVE AREA(ACRES) =   3381.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    3042.69

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   66.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.250
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       46.40      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.10      0.30     0.200    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       60.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =   97.96
  EFFECTIVE AREA(ACRES) =   3495.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    3140.66

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
```

```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.23
 CHANNEL FLOW THRU SUBAREA(CFS) =    3140.66
 FLOW VELOCITY(FEET/SEC.) =   9.14   FLOW DEPTH(FEET) =   5.23
 TRAVEL TIME(MIN.) =   4.00   Tc(MIN.) =   70.00
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13303.00 =    9726.05 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.80      0.30     1.000    86
 COMMERCIAL                 B        1.40      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        2.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.20      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
 SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    6.65
 EFFECTIVE AREA(ACRES) =   3503.20   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5444.9       PEAK FLOW RATE(CFS) =    3140.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.40      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
 COMMERCIAL                 B        3.60      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        4.00      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.781
```



```
 SUBAREA AREA(ACRES) =   14.80      SUBAREA RUNOFF(CFS) =   13.16
 EFFECTIVE AREA(ACRES) =   3518.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5459.7       PEAK FLOW RATE(CFS) =    3140.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       14.60      0.30     1.000    66
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        6.30      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   24.60      SUBAREA RUNOFF(CFS) =   20.43
 EFFECTIVE AREA(ACRES) =   3542.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5484.3       PEAK FLOW RATE(CFS) =    3140.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.50      0.30     1.000    86
 COMMERCIAL                 B        0.30      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        1.60      0.30     1.000    79
 NATURAL POOR COVER
 "BARREN"                   B       31.90      0.30     1.000    86
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.990
 SUBAREA AREA(ACRES) =   35.30      SUBAREA RUNOFF(CFS) =   29.41
 EFFECTIVE AREA(ACRES) =   3577.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5519.6       PEAK FLOW RATE(CFS) =    3140.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   70.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    9.20
  EFFECTIVE AREA(ACRES) =   3588.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    3140.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   70.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.223
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    9.89
  EFFECTIVE AREA(ACRES) =   3600.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    3144.65
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3147.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.63
  AVERAGE FLOW DEPTH(FEET) =   6.05   TRAVEL TIME(MIN.) =   2.02
  Tc(MIN.) =   72.03
  SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    5.48
  EFFECTIVE AREA(ACRES) =   3606.70     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.05   FLOW VELOCITY(FEET/SEC.) =   7.63
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13304.00 =   10651.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   72.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
```

```
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =     7.10      SUBAREA RUNOFF(CFS) =     5.81
  EFFECTIVE AREA(ACRES) =   3613.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   72.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        7.80      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        9.40      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   18.66
  EFFECTIVE AREA(ACRES) =   3636.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   72.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.209
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
```



```
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =     3.40      SUBAREA RUNOFF(CFS) =     2.79
  EFFECTIVE AREA(ACRES) =   3640.00   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.70      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3148.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.00
  AVERAGE FLOW DEPTH(FEET) =   4.87   TRAVEL TIME(MIN.) =   4.94
  Tc(MIN.) =   76.97
  SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =     7.25
  EFFECTIVE AREA(ACRES) =   3649.20     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.87   FLOW VELOCITY(FEET/SEC.) =   9.99
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   76.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   14.34
  EFFECTIVE AREA(ACRES) =   3667.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   76.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       18.40      0.30     1.000    86
  NATURAL FAIR COVER
  "MEADOWS"                  B        1.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       26.60      0.30     1.000    86
  COMMERCIAL                 B        3.90      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   42.88
  EFFECTIVE AREA(ACRES) =   3720.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
------------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   76.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       14.00      0.30     1.000    86
  COMMERCIAL                 B        4.30      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        5.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        2.70      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   22.80
  EFFECTIVE AREA(ACRES) =   3748.20   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   76.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =   20.46
  EFFECTIVE AREA(ACRES) =   3773.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   76.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    8.99
  EFFECTIVE AREA(ACRES) =   3784.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    3144.65
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   76.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.176
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    7.08
  EFFECTIVE AREA(ACRES) =   3793.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    3148.02

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A00EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)    NODE
      1     1221.20   13.34  0.30( 0.13) 0.43     436.8     120.00
      2     1221.18   13.34  0.30( 0.13) 0.43     436.8     110.00
      3     1039.13   20.29  0.30( 0.13) 0.43     504.5     100.00
      4      976.70   22.82  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     2468.01   35.17    1.740  0.30( 0.26) 0.88     1708.6    31100.00
      2     3148.02   76.97    1.176  0.30( 0.25) 0.85     3793.3    13222.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     1221.20   13.34    3.218  0.30( 0.13) 0.43     436.8     120.00
      2     1221.18   13.34    3.218  0.30( 0.13) 0.43     436.8     110.00
      3     1039.13   20.29    2.401  0.30( 0.13) 0.43     504.5     100.00
      4      976.70   22.82    2.237  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     3093.98   13.34    3.218  0.30( 0.21) 0.70     1084.7     120.00
      2     3094.00   13.34    3.218  0.30( 0.21) 0.70     1084.8     110.00
      3     3099.60   20.29    2.401  0.30( 0.22) 0.73     1490.1     100.00
      4     3116.90   22.82    2.237  0.30( 0.22) 0.74     1618.8     150.00
      5     3214.43   35.17    1.740  0.30( 0.23) 0.78     2218.8    31100.00
      6     3632.74   76.97    1.176  0.30( 0.24) 0.80     4303.5    13222.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3632.74  Tc(MIN.) =   76.969
  EFFECTIVE AREA(ACRES) =   4303.50  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
==============================================================================

******************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
```

```
 CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.88
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.40      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        9.20      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.00      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        2.40      0.30     1.000    86
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        4.10      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3639.64
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.56
 AVERAGE FLOW DEPTH(FEET) =   4.87   TRAVEL TIME(MIN.) =   6.36
 Tc(MIN.) =   83.32
 SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =   13.79
 EFFECTIVE AREA(ACRES) =   4321.90     AREA-AVERAGED Fm(INCH/HR) =   0.24
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
 TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    3632.74
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.87

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.87   FLOW VELOCITY(FEET/SEC.) =  11.54
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13306.00 =   18026.13 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   83.32
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                    B       19.20      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       20.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
 NATURAL FAIR COVER
```



```
 "GRASS"                    B        4.30      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   37.18
 EFFECTIVE AREA(ACRES) =   4371.50   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    3632.74
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   83.32
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.60
 EFFECTIVE AREA(ACRES) =   4372.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    3632.74
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   83.32
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                B        0.10      0.30     0.850    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 PUBLIC PARK                B        0.40      0.30     0.850    56
 NATURAL FAIR COVER
 "GRASS"                    B        0.40      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
 SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.99
 EFFECTIVE AREA(ACRES) =   4373.60   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    3632.74
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   83.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    6.06
  EFFECTIVE AREA(ACRES) =   4381.20   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   83.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
  COMMERCIAL                 B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   40.07
  EFFECTIVE AREA(ACRES) =   4428.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   83.32
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.133
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   43.61
  EFFECTIVE AREA(ACRES) =   4486.98   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.80
  CHANNEL FLOW THRU SUBAREA(CFS) =    3632.74
  FLOW VELOCITY(FEET/SEC.) =  11.74   FLOW DEPTH(FEET) =   4.80
  TRAVEL TIME(MIN.) =   2.19   Tc(MIN.) =   85.52
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13307.00 =   19569.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.118
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        3.70      0.30     1.000    86
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        3.20      0.30     1.000    69
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    5.79
  EFFECTIVE AREA(ACRES) =   4494.68   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.118
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    4.49
  EFFECTIVE AREA(ACRES) =   4500.78   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.76
  CHANNEL FLOW THRU SUBAREA(CFS) =    3632.74
  FLOW VELOCITY(FEET/SEC.) =   9.38   FLOW DEPTH(FEET) =   5.76
  TRAVEL TIME(MIN.) =   1.64   Tc(MIN.) =   87.16
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13308.00 =   20494.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.00      0.30     1.000    65
  COMMERCIAL                 B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    7.68
  EFFECTIVE AREA(ACRES) =   4510.28   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                 B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  COMMERCIAL                 B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   65.16
  EFFECTIVE AREA(ACRES) =   4585.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
```

```
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.90      0.30     1.000    79
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       13.20      0.30     1.000    65
  APARTMENTS                 B        0.50      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
  SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =   11.48
  EFFECTIVE AREA(ACRES) =   4601.48   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    3632.74
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       33.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B       17.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       16.80      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.60      0.30     0.200    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        1.50      0.30     0.400    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       10.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
  SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   67.01
  EFFECTIVE AREA(ACRES) =   4681.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    3661.95

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  SCHOOL                     B        0.30      0.30     0.600    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```



```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.76
  EFFECTIVE AREA(ACRES) =   4682.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    3662.70

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.53
  EFFECTIVE AREA(ACRES) =   4684.98   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    3664.23

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   87.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.107
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  PUBLIC PARK                B        1.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.20      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    8.50
  EFFECTIVE AREA(ACRES) =   4696.58   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    3672.73
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1    22719.44   14.78  0.30( 0.26) 0.87    3280.6   50400.00
      2    24663.80   20.50  0.30( 0.26) 0.87    4663.2   50110.00
      3    26265.85   24.71  0.30( 0.26) 0.88    5981.3   50100.00
      4    27358.94   29.17  0.30( 0.26) 0.88    7232.3   50220.00
      5    29385.46   37.50  0.30( 0.27) 0.90    9826.2     600.00
      6    33149.27   53.47  0.30( 0.28) 0.94   15950.7   40100.00
      7    35306.03   60.67  0.30( 0.28) 0.94   18754.8   11801.00
      8    38154.60   70.11  0.30( 0.29) 0.95   23051.6   11530.00
      9    40446.25   78.63  0.30( 0.29) 0.96   28057.3   11910.00
     10    42527.09   85.69  0.30( 0.29) 0.97   32638.9   11330.00
     11    43559.32   92.02  0.30( 0.29) 0.97   37069.9   11130.00
     12    43417.64   99.60  0.30( 0.29) 0.97   41063.9   12330.00
     13    43150.71  106.25  0.30( 0.29) 0.97   44407.1   12400.00
     14    42584.82  114.92  0.30( 0.29) 0.97   47775.8   12201.00
     15    42108.60  118.87  0.30( 0.29) 0.97   48860.5   12111.00
     16    41443.18  124.24  0.30( 0.29) 0.97   50230.0   12101.10
     17    40904.03  128.27  0.30( 0.29) 0.97   51079.0   10400.00
     18    39336.68  136.29  0.30( 0.29) 0.98   52394.2   12010.00
     19    38021.89  142.16  0.30( 0.29) 0.98   52707.9   10210.00
     20    34529.88  168.21  0.30( 0.29) 0.98   53440.6   10100.00
    TOTAL AREA(ACRES) =    53440.6

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1    22719.44   14.78  0.30( 0.26) 0.87    3280.6   50400.00
      2    24663.80   20.50  0.30( 0.26) 0.87    4663.2   50110.00
      3    26265.85   24.71  0.30( 0.26) 0.88    5981.3   50100.00
      4    27358.94   29.17  0.30( 0.26) 0.88    7232.3   50220.00
      5    29385.46   37.50  0.30( 0.27) 0.90    9826.2     600.00
      6    33149.27   53.47  0.30( 0.28) 0.94   15950.7   40100.00
      7    35306.03   60.67  0.30( 0.28) 0.94   18754.8   11801.00
      8    38154.60   70.11  0.30( 0.29) 0.95   23051.6   11530.00
      9    40446.25   78.63  0.30( 0.29) 0.96   28057.3   11910.00
     10    42527.09   85.69  0.30( 0.29) 0.97   32638.9   11330.00
     11    43559.32   92.02  0.30( 0.29) 0.97   37069.9   11130.00
```



```
     12    43417.64   99.60  0.30( 0.29) 0.97   41063.9   12330.00
     13    43150.71  106.25  0.30( 0.29) 0.97   44407.1   12400.00
     14    42584.82  114.92  0.30( 0.29) 0.97   47775.8   12201.00
     15    42108.60  118.87  0.30( 0.29) 0.97   48860.5   12111.00
     16    41443.18  124.24  0.30( 0.29) 0.97   50230.0   12101.10
     17    40904.03  128.27  0.30( 0.29) 0.97   51079.0   10400.00
     18    39336.68  136.29  0.30( 0.29) 0.98   52394.2   12010.00
     19    38021.89  142.16  0.30( 0.29) 0.98   52707.9   10210.00
     20    34529.88  168.21  0.30( 0.29) 0.98   53440.6   10100.00
    TOTAL AREA(ACRES) =    53440.6

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    213.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.52   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.96
  CHANNEL FLOW THRU SUBAREA(CFS) =   43559.32
  FLOW VELOCITY(FEET/SEC.) =   7.80   FLOW DEPTH(FEET) =  18.96
  TRAVEL TIME(MIN.) =   2.97   Tc(MIN.) =   94.99
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118087.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22719.44   18.39    2.584  0.30( 0.26) 0.87    3280.6   50400.00
      2    24663.80   24.02    2.159  0.30( 0.26) 0.87    4663.2   50110.00
      3    26265.85   28.17    1.954  0.30( 0.26) 0.88    5981.3   50100.00
      4    27358.94   32.59    1.806  0.30( 0.26) 0.88    7232.3   50220.00
      5    29385.46   40.84    1.599  0.30( 0.27) 0.90    9826.2     600.00
      6    33149.27   56.69    1.326  0.30( 0.28) 0.94   15950.7   40100.00
      7    35306.03   63.84    1.264  0.30( 0.28) 0.94   18754.8   11801.00
      8    38154.60   73.20    1.201  0.30( 0.29) 0.95   23051.6   11530.00
      9    40446.25   81.67    1.144  0.30( 0.29) 0.96   28057.3   11910.00
     10    42527.09   88.68    1.097  0.30( 0.29) 0.97   32638.9   11330.00
     11    43559.32   94.99    1.065  0.30( 0.29) 0.97   37069.9   11130.00
     12    43417.64  102.58    1.031  0.30( 0.29) 0.97   41063.9   12330.00
     13    43150.71  109.22    1.000  0.30( 0.29) 0.97   44407.1   12400.00
     14    42584.82  117.91    0.961  0.30( 0.29) 0.97   47775.8   12201.00
     15    42108.60  121.87    0.946  0.30( 0.29) 0.97   48860.5   12111.00
     16    41443.18  127.26    0.932  0.30( 0.29) 0.97   50230.0   12101.10
     17    40904.03  131.29    0.922  0.30( 0.29) 0.97   51079.0   10400.00
     18    39336.68  139.35    0.901  0.30( 0.29) 0.98   52394.2   12010.00
     19    38021.89  145.25    0.885  0.30( 0.29) 0.98   52707.9   10210.00
     20    34529.88  171.39    0.817  0.30( 0.29) 0.98   53440.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118087.91 FEET.
```

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3093.98	24.06	2.157	0.30(0.22)	0.72	1477.8	120.00
2	3094.00	24.06	2.157	0.30(0.22)	0.72	1477.9	110.00
3	3099.60	31.00	1.847	0.30(0.22)	0.74	1883.2	100.00
4	3116.90	33.52	1.782	0.30(0.22)	0.74	2011.9	150.00
5	3214.43	45.76	1.492	0.30(0.23)	0.78	2611.9	31100.00
6	3672.72	87.16	1.107	0.30(0.24)	0.79	4696.6	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25605.56	18.39	2.584	0.30(0.25)	0.83	4410.5	50400.00
2	27756.89	24.02	2.159	0.30(0.25)	0.83	6138.9	50110.00
3	27771.06	24.06	2.157	0.30(0.25)	0.83	6151.9	120.00
4	27771.54	24.06	2.157	0.30(0.25)	0.83	6152.4	110.00
5	29363.18	28.17	1.954	0.30(0.25)	0.84	7699.4	50100.00
6	30065.11	31.00	1.847	0.30(0.25)	0.85	8665.2	100.00
7	30469.47	32.59	1.806	0.30(0.26)	0.85	9196.7	50220.00
8	30703.39	33.52	1.782	0.30(0.26)	0.85	9535.4	150.00
9	32560.69	40.84	1.599	0.30(0.26)	0.87	12196.9	600.00
10	33768.51	45.76	1.492	0.30(0.27)	0.89	14339.6	31100.00
11	36484.70	56.69	1.326	0.30(0.27)	0.91	19113.0	40100.00
12	38720.54	63.84	1.264	0.30(0.28)	0.92	22276.8	11801.00
13	41672.78	73.20	1.201	0.30(0.28)	0.93	27045.2	11530.00
14	44058.19	81.67	1.144	0.30(0.28)	0.94	32477.3	11910.00
15	45747.73	87.16	1.107	0.30(0.28)	0.94	36340.1	13222.00
16	46156.43	88.68	1.097	0.30(0.28)	0.94	37335.5	11330.00
17	47054.91	94.99	1.065	0.30(0.28)	0.95	41766.5	11130.00
18	46766.74	102.58	1.031	0.30(0.29)	0.95	45760.5	12330.00
19	46371.50	109.22	1.000	0.30(0.29)	0.96	49103.6	12400.00
20	45638.02	117.91	0.961	0.30(0.29)	0.96	52472.4	12201.00
21	45100.80	121.87	0.946	0.30(0.29)	0.96	53557.1	12111.00
22	44376.21	127.26	0.932	0.30(0.29)	0.96	54926.6	12101.10
23	43792.73	131.29	0.922	0.30(0.29)	0.96	55775.6	10400.00
24	42136.83	139.35	0.901	0.30(0.29)	0.96	57090.8	12010.00
25	40757.19	145.25	0.885	0.30(0.29)	0.96	57404.5	10210.00
26	36977.85	171.39	0.817	0.30(0.29)	0.96	58137.2	10100.00

TOTAL AREA(ACRES) = 60078.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 47054.91 Tc(MIN.) = 94.989
EFFECTIVE AREA(ACRES) = 41766.49 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 60078.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60078.9 TC(MIN.) = 94.99
EFFECTIVE AREA(ACRES) = 41766.49 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.950
PEAK FLOW RATE(CFS) = 47054.91

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE

1	25605.56	18.39	2.584	0.30(0.25)	0.83	4410.5	50400.00
2	27756.89	24.02	2.159	0.30(0.25)	0.83	6138.9	50110.00
3	27771.06	24.06	2.157	0.30(0.25)	0.83	6151.9	120.00
4	27771.54	24.06	2.157	0.30(0.25)	0.83	6152.4	110.00
5	29363.18	28.17	1.954	0.30(0.25)	0.84	7699.4	50100.00
6	30065.11	31.00	1.847	0.30(0.25)	0.85	8665.2	100.00
7	30469.47	32.59	1.806	0.30(0.26)	0.85	9196.7	50220.00
8	30703.39	33.52	1.782	0.30(0.26)	0.85	9535.4	150.00
9	32560.69	40.84	1.599	0.30(0.26)	0.87	12196.9	600.00
10	33768.51	45.76	1.492	0.30(0.27)	0.89	14339.6	31100.00
11	36484.70	56.69	1.326	0.30(0.27)	0.91	19113.0	40100.00
12	38720.54	63.84	1.264	0.30(0.28)	0.92	22276.8	11801.00
13	41672.78	73.20	1.201	0.30(0.28)	0.93	27045.2	11530.00
14	44058.19	81.67	1.144	0.30(0.28)	0.94	32477.3	11910.00
15	45747.73	87.16	1.107	0.30(0.28)	0.94	36340.1	13222.00
16	46156.43	88.68	1.097	0.30(0.28)	0.94	37335.5	11330.00
17	47054.91	94.99	1.065	0.30(0.28)	0.95	41766.5	11130.00
18	46766.74	102.58	1.031	0.30(0.29)	0.95	45760.5	12330.00
19	46371.50	109.22	1.000	0.30(0.29)	0.96	49103.6	12400.00
20	45638.02	117.91	0.961	0.30(0.29)	0.96	52472.4	12201.00
21	45100.80	121.87	0.946	0.30(0.29)	0.96	53557.1	12111.00
22	44376.21	127.26	0.932	0.30(0.29)	0.96	54926.6	12101.10
23	43792.73	131.29	0.922	0.30(0.29)	0.96	55775.6	10400.00
24	42136.83	139.35	0.901	0.30(0.29)	0.96	57090.8	12010.00
25	40757.19	145.25	0.885	0.30(0.29)	0.96	57404.5	10210.00
26	36977.85	171.39	0.817	0.30(0.29)	0.96	58137.2	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 100-YR EV JULY 2023 ROKAMOTO                                         *
 ***********************************************************************

  FILE NAME: RU00EV34.DAT
  TIME/DATE OF STUDY: 13:03 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.846
   2)   10.00;  3.774
   3)   15.00;  2.924
   4)   20.00;  2.413
   5)   25.00;  2.091
   6)   30.00;  1.869
   7)   40.00;  1.613
   8)   50.00;  1.397
   9)   60.00;  1.286
  10)   90.00;  1.084
  11)  120.00;  0.947
  12)  180.00;  0.791
  13)  360.00;  0.584
  14) 1200.00;  0.255
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25605.56   18.39  0.30( 0.25) 0.83    4410.5   50400.00
      2    27771.54   24.06  0.30( 0.25) 0.83    6152.4     110.00
      3    30703.39   33.52  0.30( 0.26) 0.85    9535.4     150.00
      4    32560.69   40.84  0.30( 0.26) 0.87   12196.9     600.00
      5    33768.51   45.76  0.30( 0.27) 0.89   14339.6   31100.00
      6    36484.70   56.69  0.30( 0.27) 0.91   19113.0   40100.00
      7    38720.54   63.84  0.30( 0.28) 0.92   22276.8   11801.00
      8    41672.78   73.20  0.30( 0.28) 0.93   27045.2   11530.00
      9    44058.19   81.67  0.30( 0.28) 0.94   32477.3   11910.00
     10    46156.43   88.68  0.30( 0.28) 0.94   37335.5   11330.00
     11    47054.91   94.99  0.30( 0.28) 0.95   41766.5   11130.00
     12    46766.74  102.58  0.30( 0.29) 0.95   45760.5   12330.00
     13    46371.50  109.22  0.30( 0.29) 0.96   49103.6   12400.00
     14    45638.02  117.91  0.30( 0.29) 0.96   52472.4   12201.00
     15    45100.80  121.87  0.30( 0.29) 0.96   53557.1   12111.00
     16    44376.21  127.26  0.30( 0.29) 0.96   54926.6   12101.10
     17    43792.73  131.29  0.30( 0.29) 0.96   55775.6   10400.00
     18    42136.83  139.35  0.30( 0.29) 0.96   57090.8   12010.00
     19    40757.19  145.25  0.30( 0.29) 0.96   57404.5   10210.00
     20    36977.85  171.39  0.30( 0.29) 0.96   58137.2   10100.00
   TOTAL AREA(ACRES) =    58137.2

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25605.56   18.39  0.30( 0.25) 0.83    4410.5   50400.00
      2    27771.54   24.06  0.30( 0.25) 0.83    6152.4     110.00
      3    30703.39   33.52  0.30( 0.26) 0.85    9535.4     150.00
      4    32560.69   40.84  0.30( 0.26) 0.87   12196.9     600.00
      5    33768.51   45.76  0.30( 0.27) 0.89   14339.6   31100.00
      6    36484.70   56.69  0.30( 0.27) 0.91   19113.0   40100.00
      7    38720.54   63.84  0.30( 0.28) 0.92   22276.8   11801.00
      8    41672.78   73.20  0.30( 0.28) 0.93   27045.2   11530.00
      9    44058.19   81.67  0.30( 0.28) 0.94   32477.3   11910.00
     10    46156.43   88.68  0.30( 0.28) 0.94   37335.5   11330.00
     11    47054.91   94.99  0.30( 0.28) 0.95   41766.5   11130.00
     12    46766.74  102.58  0.30( 0.29) 0.95   45760.5   12330.00
     13    46371.50  109.22  0.30( 0.29) 0.96   49103.6   12400.00
```

```
    14    45638.02  117.91  0.30( 0.29) 0.96   52472.4   12201.00
    15    45100.80  121.87  0.30( 0.29) 0.96   53557.1   12111.00
    16    44376.21  127.26  0.30( 0.29) 0.96   54926.6   12101.10
    17    43792.73  131.29  0.30( 0.29) 0.96   55775.6   10400.00
    18    42136.83  139.35  0.30( 0.29) 0.96   57090.8   12010.00
    19    40757.19  145.25  0.30( 0.29) 0.96   57404.5   10210.00
    20    36977.85  171.39  0.30( 0.29) 0.96   58137.2   10100.00
   TOTAL AREA(ACRES) =     58137.2

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.77
  CHANNEL FLOW THRU SUBAREA(CFS) =   47054.91
  FLOW VELOCITY(FEET/SEC.) =  15.45   FLOW DEPTH(FEET) =  11.77
  TRAVEL TIME(MIN.) =   0.67   Tc(MIN.) =   95.66
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P505XXCE.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      282.54   17.03  0.30( 0.29) 0.96     146.4   50500.00
    TOTAL AREA(ACRES) =      146.4

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25605.56   19.21    2.493  0.30( 0.25) 0.83    4410.5   50400.00
      2    27771.54   24.85    2.100  0.30( 0.25) 0.83    6152.4     110.00
      3    30703.39   34.29    1.759  0.30( 0.26) 0.85    9535.4     150.00
      4    32560.69   41.60    1.578  0.30( 0.26) 0.87   12196.9     600.00
      5    33768.51   46.51    1.472  0.30( 0.27) 0.89   14339.6   31100.00
      6    36484.70   57.42    1.315  0.30( 0.27) 0.91   19113.0   40100.00
      7    38720.54   64.55    1.255  0.30( 0.28) 0.92   22276.8   11801.00
      8    41672.78   73.90    1.192  0.30( 0.28) 0.93   27045.2   11530.00
      9    44058.19   82.35    1.135  0.30( 0.28) 0.94   32477.3   11910.00
     10    46156.43   89.36    1.088  0.30( 0.28) 0.94   37335.5   11330.00
     11    47054.91   95.66    1.058  0.30( 0.28) 0.95   41766.5   11130.00
     12    46766.74  103.25    1.023  0.30( 0.29) 0.95   45760.5   12330.00
```



```
    13    46371.50  109.90    0.993  0.30( 0.29) 0.96   49103.6   12400.00
    14    45638.02  118.59    0.953  0.30( 0.29) 0.96   52472.4   12201.00
    15    45100.80  122.56    0.940  0.30( 0.29) 0.96   53557.1   12111.00
    16    44376.21  127.94    0.926  0.30( 0.29) 0.96   54926.6   12101.10
    17    43792.73  131.98    0.916  0.30( 0.29) 0.96   55775.6   10400.00
    18    42136.83  140.05    0.895  0.30( 0.29) 0.96   57090.8   12010.00
    19    40757.19  145.95    0.880  0.30( 0.29) 0.96   57404.5   10210.00
    20    36977.85  172.12    0.811  0.30( 0.29) 0.96   58137.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      282.54   17.03    2.717  0.30( 0.29) 0.96     146.4   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    5416.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25234.12   17.03    2.717  0.30( 0.25) 0.84    4055.1   50500.00
      2    25862.11   19.21    2.493  0.30( 0.25) 0.84    4556.9   50400.00
      3    27982.39   24.85    2.100  0.30( 0.25) 0.84    6298.8     110.00
      4    30874.56   34.29    1.759  0.30( 0.26) 0.86    9681.8     150.00
      5    32710.84   41.60    1.578  0.30( 0.26) 0.88   12343.3     600.00
      6    33906.31   46.51    1.472  0.30( 0.27) 0.89   14486.0   31100.00
      7    36604.16   57.42    1.315  0.30( 0.27) 0.91   19259.4   40100.00
      8    38833.10   64.55    1.255  0.30( 0.28) 0.92   22423.2   11801.00
      9    41778.02   73.90    1.192  0.30( 0.28) 0.93   27191.6   11530.00
     10    44156.81   82.35    1.135  0.30( 0.28) 0.94   32623.7   11910.00
     11    46249.57   89.36    1.088  0.30( 0.28) 0.94   37481.9   11330.00
     12    47144.54   95.66    1.058  0.30( 0.28) 0.95   41912.9   11130.00
     13    46852.34  103.25    1.023  0.30( 0.29) 0.95   45906.9   12330.00
     14    46453.56  109.90    0.993  0.30( 0.29) 0.96   49250.0   12400.00
     15    45715.47  118.59    0.953  0.30( 0.29) 0.96   52618.8   12201.00
     16    45176.73  122.56    0.940  0.30( 0.29) 0.96   53703.5   12111.00
     17    44450.51  127.94    0.926  0.30( 0.29) 0.96   55073.0   12101.10
     18    43865.80  131.98    0.916  0.30( 0.29) 0.96   55922.0   10400.00
     19    42207.47  140.05    0.895  0.30( 0.29) 0.96   57237.2   12010.00
     20    40826.04  145.95    0.880  0.30( 0.29) 0.96   57550.9   10210.00
     21    37038.79  172.12    0.811  0.30( 0.29) 0.96   58283.6   10100.00
    TOTAL AREA(ACRES) =     58283.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    47144.54  Tc(MIN.) =   95.661
  EFFECTIVE AREA(ACRES) =  41912.89  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    58283.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.62
  CHANNEL FLOW THRU SUBAREA(CFS) =   47144.54
  FLOW VELOCITY(FEET/SEC.) =  15.71   FLOW DEPTH(FEET) =  11.62
  TRAVEL TIME(MIN.) =   0.42   Tc(MIN.) =   96.08
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P506XXCE.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       92.51   17.87  0.30( 0.29) 0.97      49.5   50600.00
    TOTAL AREA(ACRES) =       49.5

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25234.12   17.54    2.664  0.30( 0.25) 0.84    4055.1   50500.00
      2    25862.11   19.72    2.441  0.30( 0.25) 0.84    4556.9   50400.00
      3    27982.39   25.35    2.075  0.30( 0.25) 0.84    6298.8     110.00
      4    30874.56   34.77    1.747  0.30( 0.26) 0.86    9681.8     150.00
      5    32710.84   42.07    1.568  0.30( 0.26) 0.88   12343.3     600.00
      6    33906.31   46.98    1.462  0.30( 0.27) 0.89   14486.0   31100.00
      7    36604.16   57.88    1.310  0.30( 0.27) 0.91   19259.4   40100.00
      8    38833.10   65.00    1.252  0.30( 0.28) 0.92   22423.2   11801.00
      9    41778.02   74.33    1.189  0.30( 0.28) 0.93   27191.6   11530.00
     10    44156.81   82.78    1.133  0.30( 0.28) 0.94   32623.7   11910.00
     11    46249.57   89.78    1.085  0.30( 0.28) 0.94   37481.9   11330.00
     12    47144.54   96.08    1.056  0.30( 0.28) 0.95   41912.9   11130.00
     13    46852.34  103.67    1.022  0.30( 0.29) 0.95   45906.9   12330.00
     14    46453.56  110.32    0.991  0.30( 0.29) 0.96   49250.0   12400.00
     15    45715.47  119.01    0.952  0.30( 0.29) 0.96   52618.8   12201.00
     16    45176.73  122.98    0.939  0.30( 0.29) 0.96   53703.5   12111.00
     17    44450.51  128.37    0.925  0.30( 0.29) 0.96   55073.0   12101.10
     18    43865.80  132.41    0.915  0.30( 0.29) 0.96   55922.0   10400.00
     19    42207.47  140.48    0.894  0.30( 0.29) 0.96   57237.2   12010.00
     20    40826.04  146.39    0.878  0.30( 0.29) 0.96   57550.9   10210.00
     21    37038.79  172.57    0.810  0.30( 0.29) 0.96   58283.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       92.51   17.87    2.631  0.30( 0.29) 0.97      49.5   50600.00
  LONGEST FLOWPATH FROM NODE  50600.00 TO NODE  13404.00 =    4378.00 FEET.

  ** PEAK FLOW RATE TABLE **
```



```
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25326.22   17.54    2.664  0.30( 0.25) 0.84    4103.7   50500.00
      2    25421.86   17.87    2.631  0.30( 0.25) 0.84    4180.7   50600.00
      3    25947.14   19.72    2.441  0.30( 0.25) 0.84    4606.4   50400.00
      4    28052.96   25.35    2.075  0.30( 0.25) 0.84    6348.3     110.00
      5    30932.15   34.77    1.747  0.30( 0.26) 0.86    9731.3     150.00
      6    32761.37   42.07    1.568  0.30( 0.26) 0.88   12392.8     600.00
      7    33952.65   46.98    1.462  0.30( 0.27) 0.89   14535.5   31100.00
      8    36644.46   57.88    1.310  0.30( 0.27) 0.91   19308.9   40100.00
      9    38871.15   65.00    1.252  0.30( 0.28) 0.92   22472.7   11801.00
     10    41813.59   74.33    1.189  0.30( 0.28) 0.93   27241.1   11530.00
     11    44190.12   82.78    1.133  0.30( 0.28) 0.94   32673.2   11910.00
     12    46281.02   89.78    1.085  0.30( 0.28) 0.94   37531.4   11330.00
     13    47174.83   96.08    1.056  0.30( 0.28) 0.95   41962.4   11130.00
     14    46881.27  103.67    1.022  0.30( 0.29) 0.95   45956.4   12330.00
     15    46481.29  110.32    0.991  0.30( 0.29) 0.96   49299.5   12400.00
     16    45741.63  119.01    0.952  0.30( 0.29) 0.96   52668.3   12201.00
     17    45202.40  122.98    0.939  0.30( 0.29) 0.96   53753.0   12111.00
     18    44475.63  128.37    0.925  0.30( 0.29) 0.96   55122.5   12101.10
     19    43890.51  132.41    0.915  0.30( 0.29) 0.96   55971.5   10400.00
     20    42231.34  140.48    0.894  0.30( 0.29) 0.96   57286.7   12010.00
     21    40849.31  146.39    0.878  0.30( 0.29) 0.96   57600.4   10210.00
     22    37059.37  172.57    0.810  0.30( 0.29) 0.96   58333.1   10100.00
    TOTAL AREA(ACRES) =     58333.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    47174.83  Tc(MIN.) =   96.080
  EFFECTIVE AREA(ACRES) =  41962.39  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    58333.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13406.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    207.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1601.97   CHANNEL SLOPE =  0.0075
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.42
  CHANNEL FLOW THRU SUBAREA(CFS) =   47174.83
  FLOW VELOCITY(FEET/SEC.) =  17.96   FLOW DEPTH(FEET) =  10.42
  TRAVEL TIME(MIN.) =   1.49   Tc(MIN.) =   97.57
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.049
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.60      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.10      SUBAREA RUNOFF(CFS) =   13.56
  EFFECTIVE AREA(ACRES) =  41982.49   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58353.2       PEAK FLOW RATE(CFS) =   47174.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.57
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.049
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        2.00      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        7.10      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =   10.12
  EFFECTIVE AREA(ACRES) =  41997.49   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58368.2       PEAK FLOW RATE(CFS) =   47174.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.49
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.038
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        7.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.30      0.30     1.000    65
  COMMERCIAL                B        0.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.40      0.30     1.000    66
  COMMERCIAL                B        0.30      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   47179.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.96
  AVERAGE FLOW DEPTH(FEET) =  11.49   TRAVEL TIME(MIN.) =   2.57
  Tc(MIN.) =  100.13
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    8.40
  EFFECTIVE AREA(ACRES) =  42009.89     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =    58380.6         PEAK FLOW RATE(CFS) =   47174.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.49   FLOW VELOCITY(FEET/SEC.) =  15.96
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P00EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      842.59    9.80  0.30( 0.11) 0.38     246.8     429.00
      2      890.71   11.26  0.30( 0.11) 0.38     283.5     425.00
      3      905.71   11.71  0.30( 0.11) 0.38     294.8     400.00
      4      943.25   13.11  0.30( 0.11) 0.38     330.1     300.00
      5     1001.68   18.01  0.30( 0.11) 0.38     440.3     210.00
      6      980.97   20.12  0.30( 0.11) 0.38     468.0     410.00
      7      972.01   21.00  0.30( 0.11) 0.38     479.3     200.00
      8      969.62   21.61  0.30( 0.11) 0.38     486.7     230.00
      9      947.95   22.69  0.30( 0.11) 0.37     491.2     220.50
    TOTAL AREA(ACRES) =      491.2

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

```
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    25326.22   22.51    2.251  0.30( 0.25) 0.84    4151.2   50500.00
     2    25421.86   22.84    2.230  0.30( 0.25) 0.84    4228.2   50600.00
     3    25947.14   24.65    2.113  0.30( 0.25) 0.84    4653.9   50400.00
     4    28052.96   30.15    1.865  0.30( 0.25) 0.84    6395.8     110.00
     5    30932.15   39.42    1.628  0.30( 0.26) 0.86    9778.8     150.00
     6    32761.37   46.63    1.470  0.30( 0.26) 0.88   12440.3     600.00
     7    33952.65   51.49    1.381  0.30( 0.27) 0.89   14583.0   31100.00
     8    36644.46   62.28    1.271  0.30( 0.27) 0.91   19356.4   40100.00
     9    38871.15   69.31    1.223  0.30( 0.28) 0.92   22520.2   11801.00
    10    41813.59   78.55    1.161  0.30( 0.28) 0.93   27288.6   11530.00
    11    44190.12   86.92    1.105  0.30( 0.28) 0.94   32720.7   11910.00
    12    46281.02   93.86    1.066  0.30( 0.28) 0.94   37578.9   11330.00
    13    47174.83  100.13    1.038  0.30( 0.28) 0.95   42009.9   11130.00
    14    46881.27  107.73    1.003  0.30( 0.29) 0.95   46003.9   12330.00
    15    46481.29  114.40    0.973  0.30( 0.29) 0.96   49347.0   12400.00
    16    45741.63  123.10    0.939  0.30( 0.29) 0.96   52715.8   12201.00
    17    45202.40  127.09    0.929  0.30( 0.29) 0.96   53800.5   12111.00
    18    44475.63  132.50    0.914  0.30( 0.29) 0.96   55170.0   12101.10
    19    43890.51  136.56    0.904  0.30( 0.29) 0.96   56019.0   10400.00
    20    42231.34  144.68    0.883  0.30( 0.29) 0.96   57334.2   12010.00
    21    40849.31  150.64    0.867  0.30( 0.29) 0.96   57647.9   10210.00
    22    37059.37  176.96    0.799  0.30( 0.29) 0.96   58380.6   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      842.59    9.80    3.857  0.30( 0.11) 0.38     246.8     429.00
     2      890.71   11.26    3.559  0.30( 0.11) 0.38     283.5     425.00
     3      905.71   11.71    3.483  0.30( 0.11) 0.38     294.8     400.00
     4      943.25   13.11    3.245  0.30( 0.11) 0.38     330.1     300.00
     5     1001.68   18.01    2.616  0.30( 0.11) 0.38     440.3     210.00
     6      980.97   20.12    2.406  0.30( 0.11) 0.38     468.0     410.00
     7      972.01   21.00    2.349  0.30( 0.11) 0.38     479.3     200.00
     8      969.62   21.61    2.309  0.30( 0.11) 0.38     486.7     230.00
     9      947.95   22.69    2.240  0.30( 0.11) 0.37     491.2     220.50
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13408.00 =   11903.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    20722.62    9.80    3.857  0.30( 0.24) 0.78    2054.0     429.00
     2    21853.68   11.26    3.559  0.30( 0.24) 0.78    2360.9     425.00
     3    22199.89   11.71    3.483  0.30( 0.24) 0.78    2454.7     400.00
     4    23025.84   13.11    3.245  0.30( 0.24) 0.78    2747.7     300.00
     5    24964.05   18.01    2.616  0.30( 0.24) 0.79    3761.6     210.00
     6    25358.91   20.12    2.406  0.30( 0.24) 0.79    4177.7     410.00
     7    25748.01   21.00    2.349  0.30( 0.24) 0.79    4351.9     200.00
     8    25989.36   21.61    2.309  0.30( 0.24) 0.79    4472.5     230.00
     9    26277.86   22.51    2.251  0.30( 0.24) 0.79    4641.6   50500.00
```



```
    10    26328.10   22.69    2.240  0.30( 0.24) 0.79    4685.8     220.50
    11    26365.73   22.84    2.230  0.30( 0.24) 0.79    4719.4   50600.00
    12    26838.90   24.65    2.113  0.30( 0.24) 0.79    5145.1   50400.00
    13    28834.03   30.15    1.865  0.30( 0.24) 0.81    6887.0     110.00
    14    31607.54   39.42    1.628  0.30( 0.25) 0.83   10270.0     150.00
    15    33366.26   46.63    1.470  0.30( 0.26) 0.86   12931.5     600.00
    16    34517.77   51.49    1.381  0.30( 0.26) 0.87   15074.2   31100.00
    17    37160.64   62.28    1.271  0.30( 0.27) 0.90   19847.6   40100.00
    18    39366.21   69.31    1.223  0.30( 0.27) 0.91   23011.4   11801.00
    19    42280.93   78.55    1.161  0.30( 0.28) 0.92   27779.8   11530.00
    20    44632.33   86.92    1.105  0.30( 0.28) 0.93   33211.9   11910.00
    21    46706.14   93.86    1.066  0.30( 0.28) 0.94   38070.1   11330.00
    22    47587.19  100.13    1.038  0.30( 0.28) 0.94   42501.1   11130.00
    23    47278.15  107.73    1.003  0.30( 0.28) 0.95   46495.1   12330.00
    24    46864.62  114.40    0.973  0.30( 0.29) 0.95   49838.2   12400.00
    25    46109.96  123.10    0.939  0.30( 0.29) 0.95   53207.0   12201.00
    26    45566.11  127.09    0.929  0.30( 0.29) 0.95   54291.7   12111.00
    27    44833.07  132.50    0.914  0.30( 0.29) 0.95   55661.2   12101.10
    28    44243.25  136.56    0.904  0.30( 0.29) 0.95   56510.2   10400.00
    29    42574.67  144.68    0.883  0.30( 0.29) 0.96   57825.4   12010.00
    30    41185.73  150.64    0.867  0.30( 0.29) 0.96   58139.1   10210.00
    31    37365.30  176.96    0.799  0.30( 0.29) 0.96   58871.8   10100.00
   TOTAL AREA(ACRES) =     58871.8

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    47587.19  Tc(MIN.) =  100.134
 EFFECTIVE AREA(ACRES) =  42501.09  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
 TOTAL AREA(ACRES) =    58871.8
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P507XXCE.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      374.22   22.05  0.30( 0.30) 0.99     231.4   50700.00
   TOTAL AREA(ACRES) =      231.4

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	20722.62	9.80	3.857	0.30(0.24)	0.78	2054.0	429.00
2	21853.68	11.26	3.559	0.30(0.24)	0.78	2360.9	425.00
3	22199.89	11.71	3.483	0.30(0.24)	0.78	2454.7	400.00
4	23025.84	13.11	3.245	0.30(0.24)	0.78	2747.7	300.00
5	24964.05	18.01	2.616	0.30(0.24)	0.79	3761.6	210.00
6	25358.91	20.12	2.406	0.30(0.24)	0.79	4177.7	410.00
7	25748.01	21.00	2.349	0.30(0.24)	0.79	4351.9	200.00
8	25989.36	21.61	2.309	0.30(0.24)	0.79	4472.5	230.00
9	26277.86	22.51	2.251	0.30(0.24)	0.79	4641.6	50500.00
10	26328.10	22.69	2.240	0.30(0.24)	0.79	4685.8	220.50
11	26365.73	22.84	2.230	0.30(0.24)	0.79	4719.4	50600.00
12	26838.90	24.65	2.113	0.30(0.24)	0.79	5145.1	50400.00
13	28834.03	30.15	1.865	0.30(0.24)	0.81	6887.0	110.00
14	31607.54	39.42	1.628	0.30(0.25)	0.83	10270.0	150.00
15	33366.26	46.63	1.470	0.30(0.26)	0.86	12931.5	600.00
16	34517.77	51.49	1.381	0.30(0.26)	0.87	15074.2	31100.00
17	37160.64	62.28	1.271	0.30(0.27)	0.90	19847.6	40100.00
18	39366.21	69.31	1.223	0.30(0.27)	0.91	23011.4	11801.00
19	42280.93	78.55	1.161	0.30(0.28)	0.92	27779.8	11530.00
20	44632.33	86.92	1.105	0.30(0.28)	0.93	33211.9	11910.00
21	46706.14	93.86	1.066	0.30(0.28)	0.94	38070.1	11330.00
22	47587.19	100.13	1.038	0.30(0.28)	0.94	42501.1	11130.00
23	47278.15	107.73	1.003	0.30(0.28)	0.95	46495.1	12330.00
24	46864.62	114.40	0.973	0.30(0.29)	0.95	49838.2	12400.00
25	46109.96	123.10	0.939	0.30(0.29)	0.95	53207.0	12201.00
26	45566.11	127.09	0.929	0.30(0.29)	0.95	54291.7	12111.00
27	44833.07	132.50	0.914	0.30(0.29)	0.95	55661.2	12101.10
28	44243.25	136.56	0.904	0.30(0.29)	0.95	56510.2	10400.00
29	42574.67	144.68	0.883	0.30(0.29)	0.96	57825.4	12010.00
30	41185.73	150.64	0.867	0.30(0.29)	0.96	58139.1	10210.00
31	37365.30	176.96	0.799	0.30(0.29)	0.96	58871.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	374.22	22.05	2.281	0.30(0.30)	0.99	231.4	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7683.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21021.02	9.80	3.857	0.30(0.24)	0.79	2156.8	429.00
2	22167.97	11.26	3.559	0.30(0.24)	0.79	2479.2	425.00
3	22519.05	11.71	3.483	0.30(0.24)	0.79	2577.6	400.00
4	23356.44	13.11	3.245	0.30(0.24)	0.79	2885.3	300.00
5	25321.36	18.01	2.616	0.30(0.24)	0.80	3950.5	210.00
6	25721.73	20.12	2.406	0.30(0.24)	0.80	4388.8	410.00
7	26116.55	21.00	2.349	0.30(0.24)	0.80	4572.2	200.00
8	26361.36	21.61	2.309	0.30(0.24)	0.80	4699.3	230.00
9	26504.58	22.05	2.281	0.30(0.24)	0.80	4786.6	50700.00
10	26646.52	22.51	2.251	0.30(0.24)	0.80	4873.0	50500.00
11	26694.53	22.69	2.240	0.30(0.24)	0.80	4917.2	220.50
12	26730.43	22.84	2.230	0.30(0.24)	0.80	4950.8	50600.00
13	27181.55	24.65	2.113	0.30(0.24)	0.80	5376.5	50400.00
14	29129.84	30.15	1.865	0.30(0.24)	0.81	7118.4	110.00
15	31858.62	39.42	1.628	0.30(0.25)	0.84	10501.4	150.00
16	33587.52	46.63	1.470	0.30(0.26)	0.86	13162.9	600.00

17	34722.20	51.49	1.381	0.30(0.26)	0.87	15305.6	31100.00
18	37344.36	62.28	1.271	0.30(0.27)	0.90	20079.0	40100.00
19	39540.99	69.31	1.223	0.30(0.27)	0.91	23242.8	11801.00
20	42443.98	78.55	1.161	0.30(0.28)	0.92	28011.2	11530.00
21	44784.75	86.92	1.105	0.30(0.28)	0.93	33443.3	11910.00
22	46851.33	93.86	1.066	0.30(0.28)	0.94	38301.5	11330.00
23	47726.98	100.13	1.038	0.30(0.28)	0.94	42732.5	11130.00
24	47411.40	107.73	1.003	0.30(0.28)	0.95	46726.5	12330.00
25	46992.12	114.40	0.973	0.30(0.29)	0.95	50069.6	12400.00
26	46231.12	123.10	0.939	0.30(0.29)	0.95	53438.4	12201.00
27	45685.32	127.09	0.929	0.30(0.29)	0.95	54523.1	12111.00
28	44949.62	132.50	0.914	0.30(0.29)	0.95	55892.6	12101.10
29	44357.81	136.56	0.904	0.30(0.29)	0.95	56741.6	10400.00
30	42685.25	144.68	0.883	0.30(0.29)	0.96	58056.8	12010.00
31	41293.39	150.64	0.867	0.30(0.29)	0.96	58370.5	10210.00
32	37460.05	176.96	0.799	0.30(0.29)	0.96	59103.2	10100.00

TOTAL AREA(ACRES) = 59103.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 47726.98 Tc(MIN.) = 100.134
EFFECTIVE AREA(ACRES) = 42732.49 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59103.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.02
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.032
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	2.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47728.06
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.83
AVERAGE FLOW DEPTH(FEET) = 13.02 TRAVEL TIME(MIN.) = 1.15
Tc(MIN.) = 101.28
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 2.18
EFFECTIVE AREA(ACRES) = 42735.79 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59106.5 PEAK FLOW RATE(CFS) = 47726.98
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.02

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.02   FLOW VELOCITY(FEET/SEC.) =  13.83
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     2775.64   27.02  0.30( 0.27) 0.90    1487.3     110.00
      2     2878.61   29.40  0.30( 0.27) 0.90    1661.9     100.00
      3     2888.47   30.54  0.30( 0.27) 0.90    1737.8     100.00
      4     2912.70   33.54  0.30( 0.27) 0.91    1918.1     130.00
      5     3088.56   46.09  0.30( 0.28) 0.93    2647.7   20100.00
      6     3029.46   51.26  0.30( 0.28) 0.93    2828.9   13600.00
      7     2905.42   85.17  0.30( 0.28) 0.93    3796.8   13510.00
      8     2757.26   93.58  0.30( 0.28) 0.93    3859.7   13500.00
    TOTAL AREA(ACRES) =     3859.7

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21021.02   11.29    3.554  0.30( 0.24) 0.79    2160.1     429.00
      2    22167.97   12.73    3.309  0.30( 0.24) 0.79    2482.5     425.00
      3    22519.05   13.17    3.234  0.30( 0.24) 0.79    2580.9     400.00
      4    23356.44   14.55    3.000  0.30( 0.24) 0.79    2888.6     300.00
      5    25321.36   19.42    2.473  0.30( 0.24) 0.80    3953.8     210.00
      6    25721.73   21.52    2.315  0.30( 0.24) 0.80    4392.1     410.00
      7    26116.55   22.39    2.259  0.30( 0.24) 0.80    4575.5     200.00
      8    26361.36   23.00    2.220  0.30( 0.24) 0.80    4702.6     230.00
      9    26504.58   23.44    2.192  0.30( 0.24) 0.80    4789.9   50700.00
     10    26646.52   23.89    2.162  0.30( 0.24) 0.80    4876.3   50500.00
     11    26694.53   24.08    2.151  0.30( 0.24) 0.80    4920.5     220.50
     12    26730.43   24.22    2.141  0.30( 0.24) 0.80    4954.1   50600.00
     13    27181.55   26.03    2.045  0.30( 0.24) 0.80    5379.8   50400.00
     14    29129.84   31.50    1.831  0.30( 0.24) 0.81    7121.7     110.00
     15    31858.62   40.72    1.597  0.30( 0.25) 0.84   10504.7     150.00
     16    33587.52   47.92    1.442  0.30( 0.26) 0.86   13166.2     600.00
     17    34722.20   52.76    1.366  0.30( 0.26) 0.87   15308.9   31100.00
     18    37344.36   63.52    1.262  0.30( 0.27) 0.90   20082.3   40100.00
     19    39540.99   70.53    1.215  0.30( 0.27) 0.91   23246.1   11801.00
```



```
     20    42443.98   79.74    1.153  0.30( 0.28) 0.92   28014.5   11530.00
     21    44784.75   88.09    1.097  0.30( 0.28) 0.93   33446.6   11910.00
     22    46851.33   95.02    1.061  0.30( 0.28) 0.94   38304.8   11330.00
     23    47726.98  101.28    1.032  0.30( 0.28) 0.94   42735.8   11130.00
     24    47411.40  108.88    0.998  0.30( 0.28) 0.95   46729.8   12330.00
     25    46992.12  115.55    0.967  0.30( 0.29) 0.95   50072.9   12400.00
     26    46231.12  124.26    0.936  0.30( 0.29) 0.95   53441.7   12201.00
     27    45685.32  128.25    0.926  0.30( 0.29) 0.95   54526.4   12111.00
     28    44949.62  133.67    0.911  0.30( 0.29) 0.95   55895.9   12101.10
     29    44357.81  137.73    0.901  0.30( 0.29) 0.95   56744.9   10400.00
     30    42685.25  145.87    0.880  0.30( 0.29) 0.96   58060.1   12010.00
     31    41293.39  151.84    0.864  0.30( 0.29) 0.96   58373.8   10210.00
     32    37460.05  178.19    0.796  0.30( 0.29) 0.96   59106.5   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2775.64   27.02    2.001  0.30( 0.27) 0.90    1487.3     110.00
    2     2878.61   29.40    1.896  0.30( 0.27) 0.90    1661.9     100.00
    3     2888.47   30.54    1.855  0.30( 0.27) 0.90    1737.8     100.00
    4     2912.70   33.54    1.778  0.30( 0.27) 0.91    1918.1     130.00
    5     3088.56   46.09    1.481  0.30( 0.28) 0.93    2647.7   20100.00
    6     3029.46   51.26    1.383  0.30( 0.28) 0.93    2828.9   13600.00
    7     2905.42   85.17    1.117  0.30( 0.28) 0.93    3796.8   13510.00
    8     2757.26   93.58    1.068  0.30( 0.28) 0.93    3859.7   13500.00
LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    23222.18   11.29    3.554  0.30( 0.25) 0.82    2781.8     429.00
    2    24464.66   12.73    3.309  0.30( 0.25) 0.82    3183.3     425.00
    3    24836.59   13.17    3.234  0.30( 0.25) 0.82    3305.9     400.00
    4    25714.10   14.55    3.000  0.30( 0.25) 0.82    3689.6     300.00
    5    27859.09   19.42    2.473  0.30( 0.25) 0.82    5022.5     210.00
    6    28332.98   21.52    2.315  0.30( 0.25) 0.82    5576.2     410.00
    7    28759.14   22.39    2.259  0.30( 0.25) 0.82    5807.9     200.00
    8    29022.31   23.00    2.220  0.30( 0.25) 0.82    5968.6     230.00
    9    29176.89   23.44    2.192  0.30( 0.25) 0.82    6079.8   50700.00
   10    29329.18   23.89    2.162  0.30( 0.25) 0.82    6191.3   50500.00
   11    29380.89   24.08    2.151  0.30( 0.25) 0.82    6245.6     220.50
   12    29419.48   24.22    2.141  0.30( 0.25) 0.82    6287.0   50600.00
   13    29923.16   26.03    2.045  0.30( 0.25) 0.82    6812.2   50400.00
   14    30312.32   27.02    2.001  0.30( 0.25) 0.83    7184.6     110.00
   15    31260.88   29.40    1.896  0.30( 0.25) 0.83    8115.2     100.00
   16    31678.68   30.54    1.855  0.30( 0.25) 0.83    8555.8     100.00
   17    32026.01   31.50    1.831  0.30( 0.25) 0.83    8916.8     110.00
   18    32647.47   33.54    1.778  0.30( 0.25) 0.84    9789.7     130.00
   19    34871.97   40.72    1.597  0.30( 0.26) 0.85   12840.3     150.00
   20    36236.94   46.09    1.481  0.30( 0.26) 0.87   15137.9   20100.00
   21    36655.19   47.92    1.442  0.30( 0.26) 0.87   15878.0     600.00
   22    37400.88   51.26    1.383  0.30( 0.26) 0.88   17475.4   13600.00
   23    37746.19   52.76    1.366  0.30( 0.26) 0.88   18180.6   31100.00
   24    40328.98   63.52    1.262  0.30( 0.27) 0.90   23261.1   40100.00
   25    42499.96   70.53    1.215  0.30( 0.27) 0.91   26625.1   11801.00
   26    45369.27   79.74    1.153  0.30( 0.28) 0.92   31656.3   11530.00
   27    46870.84   85.17    1.117  0.30( 0.28) 0.93   35342.0   13510.00
```

```
     28    47638.68   88.09    1.097  0.30( 0.28) 0.93   37265.3   11910.00
     29    49181.27   93.58    1.068  0.30( 0.28) 0.94   41159.9   13500.00
     30    49585.71   95.02    1.061  0.30( 0.28) 0.94   42164.5   11330.00
     31    50361.16  101.28    1.032  0.30( 0.28) 0.94   46595.5   11130.00
     32    49924.05  108.88    0.998  0.30( 0.28) 0.95   50589.4   12330.00
     33    49398.21  115.55    0.967  0.30( 0.28) 0.95   53932.6   12400.00
     34    48527.25  124.26    0.936  0.30( 0.29) 0.95   57301.4   12201.00
     35    47945.13  128.25    0.926  0.30( 0.29) 0.95   58386.1   12111.00
     36    47160.13  133.67    0.911  0.30( 0.29) 0.95   59755.5   12101.10
     37    46531.35  137.73    0.901  0.30( 0.29) 0.95   60604.6   10400.00
     38    44784.72  145.87    0.880  0.30( 0.29) 0.95   61919.8   12010.00
     39    43338.52  151.84    0.864  0.30( 0.29) 0.95   62233.5   10210.00
     40    39265.30  178.19    0.796  0.30( 0.29) 0.95   62966.2   10100.00
    TOTAL AREA(ACRES) =     62966.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    50361.16  Tc(MIN.) =  101.283
  EFFECTIVE AREA(ACRES) =  46595.47  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =    62966.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.82
  CHANNEL FLOW THRU SUBAREA(CFS) =   50361.16
  FLOW VELOCITY(FEET/SEC.) =  20.60   FLOW DEPTH(FEET) =   9.82
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  101.42
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101b.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      683.96   36.50  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
```



```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23222.18   11.47    3.524  0.30( 0.25) 0.82    2781.8     429.00
      2    24464.66   12.91    3.280  0.30( 0.25) 0.82    3183.3     425.00
      3    24836.59   13.35    3.205  0.30( 0.25) 0.82    3305.9     400.00
      4    25714.10   14.73    2.971  0.30( 0.25) 0.82    3689.6     300.00
      5    27859.09   19.58    2.456  0.30( 0.25) 0.82    5022.5     210.00
      6    28332.98   21.68    2.305  0.30( 0.25) 0.82    5576.2     410.00
      7    28759.14   22.56    2.248  0.30( 0.25) 0.82    5807.9     200.00
      8    29022.31   23.17    2.209  0.30( 0.25) 0.82    5968.6     230.00
      9    29176.89   23.60    2.181  0.30( 0.25) 0.82    6079.8   50700.00
     10    29329.18   24.06    2.152  0.30( 0.25) 0.82    6191.3   50500.00
     11    29380.89   24.24    2.140  0.30( 0.25) 0.82    6245.6     220.50
     12    29419.48   24.38    2.131  0.30( 0.25) 0.82    6287.0   50600.00
     13    29923.16   26.19    2.038  0.30( 0.25) 0.82    6812.2   50400.00
     14    30312.32   27.19    1.994  0.30( 0.25) 0.83    7184.6     110.00
     15    31260.88   29.56    1.889  0.30( 0.25) 0.83    8115.2     100.00
     16    31678.68   30.70    1.851  0.30( 0.25) 0.83    8555.8     100.00
     17    32026.01   31.66    1.827  0.30( 0.25) 0.83    8916.8     110.00
     18    32647.47   33.70    1.774  0.30( 0.25) 0.84    9789.7     130.00
     19    34871.97   40.88    1.594  0.30( 0.26) 0.85   12840.3     150.00
     20    36236.94   46.24    1.478  0.30( 0.26) 0.87   15137.9   20100.00
     21    36655.19   48.07    1.439  0.30( 0.26) 0.87   15878.0     600.00
     22    37400.88   51.41    1.381  0.30( 0.26) 0.88   17475.4   13600.00
     23    37746.19   52.91    1.365  0.30( 0.26) 0.88   18180.6   31100.00
     24    40328.98   63.66    1.261  0.30( 0.27) 0.90   23261.1   40100.00
     25    42499.96   70.68    1.214  0.30( 0.27) 0.91   26625.1   11801.00
     26    45369.27   79.88    1.152  0.30( 0.28) 0.92   31656.3   11530.00
     27    46870.84   85.31    1.116  0.30( 0.28) 0.93   35342.0   13510.00
     28    47638.68   88.23    1.096  0.30( 0.28) 0.93   37265.3   11910.00
     29    49181.27   93.72    1.067  0.30( 0.28) 0.94   41159.9   13500.00
     30    49585.71   95.15    1.060  0.30( 0.28) 0.94   42164.5   11330.00
     31    50361.16  101.42    1.032  0.30( 0.28) 0.94   46595.5   11130.00
     32    49924.05  109.02    0.997  0.30( 0.28) 0.95   50589.4   12330.00
     33    49398.21  115.69    0.967  0.30( 0.28) 0.95   53932.6   12400.00
     34    48527.25  124.40    0.936  0.30( 0.29) 0.95   57301.4   12201.00
     35    47945.13  128.39    0.925  0.30( 0.29) 0.95   58386.1   12111.00
     36    47160.13  133.81    0.911  0.30( 0.29) 0.95   59755.5   12101.10
     37    46531.35  137.87    0.901  0.30( 0.29) 0.95   60604.6   10400.00
     38    44784.72  146.01    0.879  0.30( 0.29) 0.95   61919.8   12010.00
     39    43338.52  151.98    0.864  0.30( 0.29) 0.95   62233.5   10210.00
     40    39265.30  178.34    0.795  0.30( 0.29) 0.95   62966.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     683.96   36.50    1.703  0.30( 0.30) 0.98     591.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	23715.28	11.47	3.524	0.30(0.25)	0.83	2967.5	429.00
2	24977.53	12.91	3.280	0.30(0.25)	0.83	3392.3	425.00
3	25353.63	13.35	3.205	0.30(0.25)	0.83	3522.0	400.00
4	26238.60	14.73	2.971	0.30(0.25)	0.83	3928.1	300.00
5	28422.34	19.58	2.456	0.30(0.25)	0.83	5339.5	210.00
6	28913.04	21.68	2.305	0.30(0.25)	0.83	5927.3	410.00
7	29345.69	22.56	2.248	0.30(0.25)	0.83	6173.1	200.00
8	29612.60	23.17	2.209	0.30(0.25)	0.83	6343.7	230.00
9	29769.46	23.60	2.181	0.30(0.25)	0.83	6461.9	50700.00
10	29923.80	24.06	2.152	0.30(0.25)	0.83	6580.8	50500.00
11	29976.22	24.24	2.140	0.30(0.25)	0.83	6638.0	220.50
12	30015.33	24.38	2.131	0.30(0.25)	0.83	6681.7	50600.00
13	30530.89	26.19	2.038	0.30(0.25)	0.83	7236.2	50400.00
14	30927.17	27.19	1.994	0.30(0.25)	0.83	7624.7	110.00
15	31887.94	29.56	1.889	0.30(0.25)	0.84	8593.8	100.00
16	32314.65	30.70	1.851	0.30(0.25)	0.84	9052.9	100.00
17	32671.44	31.66	1.827	0.30(0.25)	0.84	9429.3	110.00
18	33311.11	33.70	1.774	0.30(0.25)	0.84	10335.4	130.00
19	34200.38	36.50	1.703	0.30(0.25)	0.85	11572.4	10100.00
20	35503.23	40.88	1.594	0.30(0.26)	0.86	13431.3	150.00
21	36811.89	46.24	1.478	0.30(0.26)	0.87	15728.9	20100.00
22	37210.97	48.07	1.439	0.30(0.26)	0.88	16469.0	600.00
23	37928.77	51.41	1.381	0.30(0.26)	0.88	18066.4	13600.00
24	38266.01	52.91	1.365	0.30(0.27)	0.89	18771.6	31100.00
25	40798.55	63.66	1.261	0.30(0.27)	0.91	23852.1	40100.00
26	42946.60	70.68	1.214	0.30(0.27)	0.91	27216.1	11801.00
27	45785.77	79.88	1.152	0.30(0.28)	0.92	32247.3	11530.00
28	47269.59	85.31	1.116	0.30(0.28)	0.93	35933.0	13510.00
29	48027.86	88.23	1.096	0.30(0.28)	0.93	37856.3	11910.00
30	49556.41	93.72	1.067	0.30(0.28)	0.94	41750.9	13500.00
31	49957.67	95.15	1.060	0.30(0.28)	0.94	42755.5	11330.00
32	50719.22	101.42	1.032	0.30(0.28)	0.94	47186.5	11130.00
33	50265.23	109.02	0.997	0.30(0.28)	0.95	51180.4	12330.00
34	49724.61	115.69	0.967	0.30(0.28)	0.95	54523.6	12400.00
35	48838.52	124.40	0.936	0.30(0.29)	0.95	57892.4	12201.00
36	48251.36	128.39	0.925	0.30(0.29)	0.95	58977.1	12111.00
37	47459.51	133.81	0.911	0.30(0.29)	0.95	60346.5	12101.10
38	46825.59	137.87	0.901	0.30(0.29)	0.95	61195.6	10400.00
39	45068.68	146.01	0.879	0.30(0.29)	0.95	62510.8	12010.00
40	43614.93	151.98	0.864	0.30(0.29)	0.95	62824.5	10210.00
41	39508.41	178.34	0.795	0.30(0.29)	0.96	63557.2	10100.00

TOTAL AREA(ACRES) = 63557.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 50719.22 Tc(MIN.) = 101.420
EFFECTIVE AREA(ACRES) = 47186.47 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63557.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 173.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0151

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.90
CHANNEL FLOW THRU SUBAREA(CFS) = 50719.22
FLOW VELOCITY(FEET/SEC.) = 23.31 FLOW DEPTH(FEET) = 8.90
TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 101.61
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: P508XXCE.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	213.71	21.83	0.30(0.30)	0.99	131.3	50800.00

TOTAL AREA(ACRES) = 131.3

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23715.28	11.71	3.483	0.30(0.25)	0.83	2967.5	429.00
2	24977.53	13.15	3.239	0.30(0.25)	0.83	3392.3	425.00
3	25353.63	13.58	3.165	0.30(0.25)	0.83	3522.0	400.00
4	26238.60	14.96	2.931	0.30(0.25)	0.83	3928.1	300.00
5	28422.34	19.81	2.432	0.30(0.25)	0.83	5339.5	210.00
6	28913.04	21.91	2.290	0.30(0.25)	0.83	5927.3	410.00
7	29345.69	22.78	2.234	0.30(0.25)	0.83	6173.1	200.00
8	29612.60	23.39	2.195	0.30(0.25)	0.83	6343.7	230.00
9	29769.46	23.82	2.167	0.30(0.25)	0.83	6461.9	50700.00
10	29923.80	24.28	2.137	0.30(0.25)	0.83	6580.8	50500.00
11	29976.22	24.46	2.126	0.30(0.25)	0.83	6638.0	220.50
12	30015.33	24.60	2.117	0.30(0.25)	0.83	6681.7	50600.00
13	30530.89	26.41	2.028	0.30(0.25)	0.83	7236.2	50400.00
14	30927.17	27.40	1.984	0.30(0.25)	0.83	7624.7	110.00
15	31887.94	29.78	1.879	0.30(0.25)	0.84	8593.8	100.00
16	32314.65	30.92	1.845	0.30(0.25)	0.84	9052.9	100.00
17	32671.44	31.87	1.821	0.30(0.25)	0.84	9429.3	110.00
18	33311.11	33.91	1.769	0.30(0.25)	0.84	10335.4	130.00
19	34200.38	36.72	1.697	0.30(0.25)	0.85	11572.4	10100.00
20	35503.23	41.09	1.590	0.30(0.26)	0.86	13431.3	150.00
21	36811.89	46.45	1.474	0.30(0.26)	0.87	15728.9	20100.00
22	37210.97	48.27	1.434	0.30(0.26)	0.88	16469.0	600.00
23	37928.77	51.62	1.379	0.30(0.26)	0.88	18066.4	13600.00

24	38266.01	53.11	1.362	0.30(0.27)	0.89	18771.6	31100.00
25	40798.55	63.86	1.260	0.30(0.27)	0.91	23852.1	40100.00
26	42946.60	70.87	1.213	0.30(0.27)	0.91	27216.1	11801.00
27	45785.77	80.07	1.151	0.30(0.28)	0.92	32247.3	11530.00
28	47269.59	85.50	1.114	0.30(0.28)	0.93	35933.0	13510.00
29	48027.86	88.42	1.095	0.30(0.28)	0.93	37856.3	11910.00
30	49556.41	93.91	1.066	0.30(0.28)	0.94	41750.9	13500.00
31	49957.67	95.34	1.060	0.30(0.28)	0.94	42755.5	11330.00
32	50719.22	101.61	1.031	0.30(0.28)	0.94	47186.5	11130.00
33	50265.23	109.21	0.996	0.30(0.28)	0.95	51180.4	12330.00
34	49724.61	115.88	0.966	0.30(0.28)	0.95	54523.6	12400.00
35	48838.52	124.59	0.935	0.30(0.29)	0.95	57892.4	12201.00
36	48251.36	128.58	0.925	0.30(0.29)	0.95	58977.1	12111.00
37	47459.51	134.00	0.911	0.30(0.29)	0.95	60346.5	12101.10
38	46825.59	138.07	0.900	0.30(0.29)	0.95	61195.6	10400.00
39	45068.68	146.21	0.879	0.30(0.29)	0.95	62510.8	12010.00
40	43614.93	152.18	0.863	0.30(0.29)	0.95	62824.5	10210.00
41	39508.41	178.55	0.795	0.30(0.29)	0.96	63557.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	213.71	21.83	2.295	0.30(0.30)	0.99	131.3	50800.00

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23898.10	11.71	3.483	0.30(0.25)	0.83	3038.0	429.00
2	25167.02	13.15	3.239	0.30(0.25)	0.83	3471.4	425.00
3	25544.48	13.58	3.165	0.30(0.25)	0.83	3603.7	400.00
4	26431.64	14.96	2.931	0.30(0.25)	0.83	4018.0	300.00
5	28629.60	19.81	2.432	0.30(0.25)	0.83	5458.7	210.00
6	29108.35	21.83	2.295	0.30(0.25)	0.83	6036.5	50800.00
7	29126.21	21.91	2.290	0.30(0.25)	0.83	6058.6	410.00
8	29552.84	22.78	2.234	0.30(0.25)	0.83	6304.4	200.00
9	29815.56	23.39	2.195	0.30(0.25)	0.83	6475.0	230.00
10	29969.43	23.82	2.167	0.30(0.25)	0.83	6593.2	50700.00
11	30120.63	24.28	2.137	0.30(0.25)	0.83	6712.1	50500.00
12	30171.80	24.46	2.126	0.30(0.25)	0.83	6769.3	220.50
13	30209.93	24.60	2.117	0.30(0.25)	0.83	6813.0	50600.00
14	30716.07	26.41	2.028	0.30(0.25)	0.84	7367.5	50400.00
15	31107.62	27.40	1.984	0.30(0.25)	0.84	7756.0	110.00
16	32057.14	29.78	1.879	0.30(0.25)	0.84	8725.1	100.00
17	32480.27	30.92	1.845	0.30(0.25)	0.84	9184.2	100.00
18	32834.45	31.87	1.821	0.30(0.25)	0.84	9560.6	110.00
19	33468.53	33.91	1.769	0.30(0.25)	0.85	10466.7	130.00
20	34350.13	36.72	1.697	0.30(0.26)	0.85	11703.7	10100.00
21	35641.48	41.09	1.590	0.30(0.26)	0.86	13562.6	150.00
22	36937.77	46.45	1.474	0.30(0.26)	0.87	15860.2	20100.00
23	37332.63	48.27	1.434	0.30(0.26)	0.88	16600.3	600.00
24	38044.52	51.62	1.379	0.30(0.26)	0.88	18197.7	13600.00
25	38379.99	53.11	1.362	0.30(0.27)	0.89	18902.9	31100.00
26	40901.57	63.86	1.260	0.30(0.27)	0.91	23983.4	40100.00
27	43044.57	70.87	1.213	0.30(0.27)	0.91	27347.4	11801.00
28	45877.12	80.07	1.151	0.30(0.28)	0.92	32378.6	11530.00
29	47357.03	85.50	1.114	0.30(0.28)	0.93	36064.3	13510.00

30	48113.20	88.42	1.095	0.30(0.28)	0.93	37987.6	11910.00
31	49638.71	93.91	1.066	0.30(0.28)	0.94	41882.2	13500.00
32	50039.27	95.34	1.060	0.30(0.28)	0.94	42886.8	11330.00
33	50797.76	101.61	1.031	0.30(0.28)	0.94	47317.8	11130.00
34	50340.06	109.21	0.996	0.30(0.28)	0.95	51311.7	12330.00
35	49796.18	115.88	0.966	0.30(0.28)	0.95	54654.9	12400.00
36	48906.80	124.59	0.935	0.30(0.29)	0.95	58023.7	12201.00
37	48318.53	128.58	0.925	0.30(0.29)	0.95	59108.4	12111.00
38	47525.17	134.00	0.911	0.30(0.29)	0.95	60477.8	12101.10
39	46890.12	138.07	0.900	0.30(0.29)	0.95	61326.9	10400.00
40	45130.96	146.21	0.879	0.30(0.29)	0.95	62642.1	12010.00
41	43675.54	152.18	0.863	0.30(0.29)	0.95	62955.8	10210.00
42	39561.70	178.55	0.795	0.30(0.29)	0.96	63688.5	10100.00

TOTAL AREA(ACRES) = 63688.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 50797.76 Tc(MIN.) = 101.606
EFFECTIVE AREA(ACRES) = 47317.77 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63688.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 63688.5 TC(MIN.) = 101.61
EFFECTIVE AREA(ACRES) = 47317.77 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.944
PEAK FLOW RATE(CFS) = 50797.76

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23898.10	11.71	3.483	0.30(0.25)	0.83	3038.0	429.00
2	25167.02	13.15	3.239	0.30(0.25)	0.83	3471.4	425.00
3	25544.48	13.58	3.165	0.30(0.25)	0.83	3603.7	400.00
4	26431.64	14.96	2.931	0.30(0.25)	0.83	4018.0	300.00
5	28629.60	19.81	2.432	0.30(0.25)	0.83	5458.7	210.00
6	29108.35	21.83	2.295	0.30(0.25)	0.83	6036.5	50800.00
7	29126.21	21.91	2.290	0.30(0.25)	0.83	6058.6	410.00
8	29552.84	22.78	2.234	0.30(0.25)	0.83	6304.4	200.00
9	29815.56	23.39	2.195	0.30(0.25)	0.83	6475.0	230.00
10	29969.43	23.82	2.167	0.30(0.25)	0.83	6593.2	50700.00
11	30120.63	24.28	2.137	0.30(0.25)	0.83	6712.1	50500.00
12	30171.80	24.46	2.126	0.30(0.25)	0.83	6769.3	220.50
13	30209.93	24.60	2.117	0.30(0.25)	0.83	6813.0	50600.00
14	30716.07	26.41	2.028	0.30(0.25)	0.84	7367.5	50400.00
15	31107.62	27.40	1.984	0.30(0.25)	0.84	7756.0	110.00
16	32057.14	29.78	1.879	0.30(0.25)	0.84	8725.1	100.00
17	32480.27	30.92	1.845	0.30(0.25)	0.84	9184.2	100.00
18	32834.45	31.87	1.821	0.30(0.25)	0.84	9560.6	110.00
19	33468.53	33.91	1.769	0.30(0.25)	0.85	10466.7	130.00
20	34350.13	36.72	1.697	0.30(0.26)	0.85	11703.7	10100.00
21	35641.48	41.09	1.590	0.30(0.26)	0.86	13562.6	150.00
22	36937.77	46.45	1.474	0.30(0.26)	0.87	15860.2	20100.00
23	37332.63	48.27	1.434	0.30(0.26)	0.88	16600.3	600.00
24	38044.52	51.62	1.379	0.30(0.26)	0.88	18197.7	13600.00
25	38379.99	53.11	1.362	0.30(0.27)	0.89	18902.9	31100.00
26	40901.57	63.86	1.260	0.30(0.27)	0.91	23983.4	40100.00
27	43044.57	70.87	1.213	0.30(0.27)	0.91	27347.4	11801.00

28	45877.12	80.07	1.151	0.30(	0.28)	0.92	32378.6	11530.00
29	47357.03	85.50	1.114	0.30(	0.28)	0.93	36064.3	13510.00
30	48113.20	88.42	1.095	0.30(	0.28)	0.93	37987.6	11910.00
31	49638.71	93.91	1.066	0.30(	0.28)	0.94	41882.2	13500.00
32	50039.27	95.34	1.060	0.30(	0.28)	0.94	42886.8	11330.00
33	50797.76	101.61	1.031	0.30(	0.28)	0.94	47317.8	11130.00
34	50340.06	109.21	0.996	0.30(	0.28)	0.95	51311.7	12330.00
35	49796.18	115.88	0.966	0.30(	0.28)	0.95	54654.9	12400.00
36	48906.80	124.59	0.935	0.30(	0.29)	0.95	58023.7	12201.00
37	48318.53	128.58	0.925	0.30(	0.29)	0.95	59108.4	12111.00
38	47525.17	134.00	0.911	0.30(	0.29)	0.95	60477.8	12101.10
39	46890.12	138.07	0.900	0.30(	0.29)	0.95	61326.9	10400.00
40	45130.96	146.21	0.879	0.30(	0.29)	0.95	62642.1	12010.00
41	43675.54	152.18	0.863	0.30(	0.29)	0.95	62955.8	10210.00
42	39561.70	178.55	0.795	0.30(	0.29)	0.96	63688.5	10100.00

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 100-YR EV MAY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU00EV36.DAT
  TIME/DATE OF STUDY: 12:44 05/11/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.785
   2)   10.00;  3.744
   3)   15.00;  2.904
   4)   20.00;  2.401
   5)   25.00;  2.083
   6)   30.00;  1.861
   7)   40.00;  1.606
   8)   50.00;  1.392
   9)   60.00;  1.279
  10)   90.00;  1.075
  11)  120.00;  0.938
  12)  180.00;  0.782
  13)  360.00;  0.577
  14) 1200.00;  0.251
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.577
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    65   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.00
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =     10.00

************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.288
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.06
  AVERAGE FLOW DEPTH(FEET) =   0.45   TRAVEL TIME(MIN.) =   1.72
  Tc(MIN.) =   12.71
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   20.04
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      29.15
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   4.67
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.898
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.52
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =   15.06
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   72.39
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      97.74
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.25   FLOW VELOCITY(FEET/SEC.) =   6.28
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.597
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.62
  AVERAGE FLOW DEPTH(FEET) =   1.43   TRAVEL TIME(MIN.) =   2.99
  Tc(MIN.) =   18.05
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   48.30
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =     134.74
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.52   FLOW VELOCITY(FEET/SEC.) =   6.82
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.384
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     154.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.47
  AVERAGE FLOW DEPTH(FEET) =   1.77   TRAVEL TIME(MIN.) =   2.22
  Tc(MIN.) =   20.27
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   39.84
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =     162.06
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.82   FLOW VELOCITY(FEET/SEC.) =   6.53
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X00.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1365.67   51.63  0.30( 0.28) 0.95    1517.0   13510.00
      2     1241.97   59.58  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1365.67   51.63  0.30( 0.28) 0.95    1517.0   13510.00
      2     1241.97   59.58  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.344
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1378.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.05
```



```
  AVERAGE FLOW DEPTH(FEET) =   2.76   TRAVEL TIME(MIN.) =   2.63
  Tc(MIN.) =   54.26
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   24.90
  EFFECTIVE AREA(ACRES) =   1543.46     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =    1471.93
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.87   FLOW VELOCITY(FEET/SEC.) =  13.31
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1471.93   54.26    1.344  0.30( 0.28) 0.95    1543.5   13510.00
      2     1416.51   62.30    1.263  0.30( 0.28) 0.95    1606.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1471.93  Tc(MIN.) =   54.26
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1543.46

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   54.26
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.344
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.36
  EFFECTIVE AREA(ACRES) =   1544.91   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =    1473.29

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1473.29   54.26    1.344  0.30( 0.28) 0.95    1544.9   13510.00
      2     1417.77   62.30    1.263  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1      162.06   20.27    2.384  0.30( 0.30) 1.00       86.4   13600.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1     1252.52   20.27    2.384  0.30( 0.29) 0.95      663.4   13600.00
     2     1554.47   54.26    1.344  0.30( 0.29) 0.95     1631.3   13510.00
     3     1492.69   62.30    1.263  0.30( 0.28) 0.95     1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1554.47  Tc(MIN.) =   54.262
 EFFECTIVE AREA(ACRES) =   1631.31  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1694.2
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.324
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.39      0.30     1.000     -
 USER-DEFINED               -       16.30      0.30     1.000     -
 USER-DEFINED               -        4.08      0.30     1.000     -
 USER-DEFINED               -       12.36      0.30     1.000     -
 USER-DEFINED               -       11.23      0.30     1.000     -
 USER-DEFINED               -        5.16      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1579.60
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
 AVERAGE FLOW DEPTH(FEET) =   3.02   TRAVEL TIME(MIN.) =   1.72
 Tc(MIN.) =   55.98
 SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   50.27
 EFFECTIVE AREA(ACRES) =   1685.83     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =    1576.17
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.02   FLOW VELOCITY(FEET/SEC.) =  13.38
```



```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1     1279.42   22.10    2.267  0.30( 0.29) 0.96      717.9   13600.00
     2     1576.17   55.98    1.324  0.30( 0.29) 0.95     1685.8   13510.00
     3     1521.30   64.04    1.252  0.30( 0.28) 0.95     1748.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1576.17  Tc(MIN.) =   55.98
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1685.83

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   55.98
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.324
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.93      0.30     1.000     -
 USER-DEFINED               -        0.45      0.30     1.000     -
 USER-DEFINED               -        3.98      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   53.81
 EFFECTIVE AREA(ACRES) =   1744.19   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =    1629.97

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P201XXCE.DNA
 MEMORY BANK #  3 DEFINED AS FOLLOWS:
  STREAM        Q      Tc       Fp(Fm)     Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.)  (INCH/HR)          (ACRES)     NODE
     1      262.78   16.94  0.30( 0.26) 0.85      133.8   20100.00
   TOTAL AREA(ACRES) =      133.8

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1     1382.76   22.10    2.267  0.30( 0.29) 0.96      776.3   13600.00
     2     1629.97   55.98    1.324  0.30( 0.29) 0.95     1744.2   13510.00
     3     1571.28   64.04    1.252  0.30( 0.29) 0.95     1807.1   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.
```

```
 ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      262.78   16.94    2.709  0.30( 0.26) 0.85     133.8   20100.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1559.13   16.94    2.709  0.30( 0.28) 0.94     728.9   20100.00
     2     1598.27   22.10    2.267  0.30( 0.28) 0.95     910.1   13600.00
     3     1744.43   55.98    1.324  0.30( 0.28) 0.95    1878.0   13510.00
     4     1677.93   64.04    1.252  0.30( 0.28) 0.94    1940.9   13500.00
   TOTAL AREA(ACRES) =      1940.9

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1744.43  Tc(MIN.) =   55.984
 EFFECTIVE AREA(ACRES) =   1877.99  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1940.9
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.06
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1774.04
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.37
 AVERAGE FLOW DEPTH(FEET) =   4.06   TRAVEL TIME(MIN.) =   4.81
 Tc(MIN.) =   60.80
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   59.22
 EFFECTIVE AREA(ACRES) =   1945.57     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =    1744.43
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.02
```



```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.02   FLOW VELOCITY(FEET/SEC.) =  10.31
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1559.13   21.89    2.280  0.30( 0.28) 0.95     796.5   20100.00
     2     1598.27   27.02    1.993  0.30( 0.28) 0.95     977.7   13600.00
     3     1744.43   60.80    1.274  0.30( 0.28) 0.95    1945.6   13510.00
     4     1689.13   68.91    1.218  0.30( 0.28) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1744.43  Tc(MIN.) =   60.80
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1945.57

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   60.80
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   91.75
 EFFECTIVE AREA(ACRES) =   2050.27   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =    1823.72

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   60.80
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.274
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    7.04
 EFFECTIVE AREA(ACRES) =   2058.30   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =    1830.76
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -       24.24      0.30     1.000     -
  USER-DEFINED               -        1.34      0.30     1.000     -
  USER-DEFINED               -       74.98      0.30     1.000     -
  USER-DEFINED               -      101.12      0.30     1.000     -
  USER-DEFINED               -       16.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1923.70
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.06
  AVERAGE FLOW DEPTH(FEET) =   4.42   TRAVEL TIME(MIN.) =   4.66
  Tc(MIN.) =   65.46
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =  185.87
  EFFECTIVE AREA(ACRES) =   2277.55     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1957.90
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.46   FLOW VELOCITY(FEET/SEC.) =  10.12
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1748.35   26.64    2.010  0.30( 0.29) 0.96    1128.5   20100.00
      2     1800.72   31.75    1.816  0.30( 0.29) 0.96    1309.6   13600.00
      3     1957.90   65.46    1.242  0.30( 0.29) 0.96    2277.5   13510.00
      4     1896.24   73.61    1.186  0.30( 0.29) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1957.90  Tc(MIN.) =   65.46
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2277.55

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.46
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =  182.64
  EFFECTIVE AREA(ACRES) =   2492.98   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    2140.54

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.242
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   14.18
  EFFECTIVE AREA(ACRES) =   2509.70   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    2154.71

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.17      0.30     1.000     -
  USER-DEFINED               -        9.19      0.30     1.000     -
  USER-DEFINED               -       67.57      0.30     1.000     -
  USER-DEFINED               -       35.19      0.30     1.000     -
```

```
  USER-DEFINED               -       30.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2214.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.20
  AVERAGE FLOW DEPTH(FEET) =   4.53   TRAVEL TIME(MIN.) =   4.34
  Tc(MIN.) =   69.79
  SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =  119.09
  EFFECTIVE AREA(ACRES) =   2654.71     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =    2207.20
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.53   FLOW VELOCITY(FEET/SEC.) =  11.19
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2105.66   30.99    1.836  0.30( 0.29) 0.97    1505.6   20100.00
      2     2147.48   36.09    1.706  0.30( 0.29) 0.97    1686.8   13600.00
      3     2207.20   69.79    1.212  0.30( 0.29) 0.96    2654.7   13510.00
      4     2124.26   78.00    1.157  0.30( 0.29) 0.96    2717.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2207.20  Tc(MIN.) =   69.79
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2654.71

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   69.79
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.212
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       20.65      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  USER-DEFINED               -        8.45      0.30     1.000     -
  USER-DEFINED               -       96.93      0.30     1.000     -
  USER-DEFINED               -       13.19      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =  117.27
  EFFECTIVE AREA(ACRES) =   2797.51   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =    2324.47

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2290.20   30.99    1.836  0.30( 0.29) 0.97    1648.4   20100.00
```



```
      2     2328.15   36.09    1.706  0.30( 0.29) 0.97    1829.6   13600.00
      3     2324.47   69.79    1.212  0.30( 0.29) 0.96    2797.5   13510.00
      4     2234.36   78.00    1.157  0.30( 0.29) 0.96    2860.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2328.15  Tc(MIN.) =   36.09
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1829.61

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.706
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       42.54      0.30     1.000     -
  USER-DEFINED               -       16.96      0.30     1.000     -
  USER-DEFINED               -       80.60      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        2.00      0.30     1.000     -
  USER-DEFINED               -        3.11      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =  185.69
  EFFECTIVE AREA(ACRES) =   1976.38   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     3007.2       PEAK FLOW RATE(CFS) =    2513.83

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       23.73      0.30     1.000     -
  USER-DEFINED               -        0.27      0.30     1.000     -
  USER-DEFINED               -       19.87      0.30     1.000     -
  USER-DEFINED               -        6.40      0.30     1.000     -
  USER-DEFINED               -        3.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2546.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
  AVERAGE FLOW DEPTH(FEET) =   4.40   TRAVEL TIME(MIN.) =   1.98
  Tc(MIN.) =   38.07
```

```
 SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   66.23
 EFFECTIVE AREA(ACRES) =   2030.68     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
 TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    2513.83
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.37

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.37   FLOW VELOCITY(FEET/SEC.) =  13.35
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2493.08   32.97    1.785  0.30( 0.29) 0.98    1849.5   20100.00
     2     2513.83   38.07    1.655  0.30( 0.29) 0.98    2030.7   13600.00
     3     2452.94   71.79    1.199  0.30( 0.29) 0.97    2998.6   13510.00
     4     2351.50   80.02    1.143  0.30( 0.29) 0.96    3061.5   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2513.83  Tc(MIN.) =   38.07
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    2030.68

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.07
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.67      0.30     1.000     -
 USER-DEFINED               -        9.52      0.30     1.000     -
 USER-DEFINED               -        0.71      0.30     1.000     -
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -       39.42      0.30     1.000     -
 USER-DEFINED               -        0.62      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   62.40
 EFFECTIVE AREA(ACRES) =   2081.84   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    2552.71

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   38.07
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.655
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
 USER-DEFINED               -        0.11      0.30     1.000     -
 USER-DEFINED               -        0.77      0.30     1.000     -
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -        2.69      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    4.62
 EFFECTIVE AREA(ACRES) =   2085.63   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    2557.33

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2557.45   32.97    1.785  0.30( 0.29) 0.98    1904.5   20100.00
     2     2557.33   38.07    1.655  0.30( 0.29) 0.98    2085.6   13600.00
     3     2497.40   71.79    1.199  0.30( 0.29) 0.97    3053.5   13510.00
     4     2393.19   80.02    1.143  0.30( 0.29) 0.97    3116.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2557.45  Tc(MIN.) =   32.97
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1904.47

****************************************************************************
 FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: 2P00EVAA.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      589.23   13.84  0.30( 0.11) 0.36     173.5     110.00
     2      590.10   16.35  0.30( 0.11) 0.38     204.6     100.00
     3      582.95   17.51  0.30( 0.11) 0.38     213.9     100.00
     4      519.41   20.54  0.30( 0.12) 0.40     221.1     130.00
   TOTAL AREA(ACRES) =      221.1

****************************************************************************
 FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
 FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
 DEPTH OF FLOW IN 114.0 INCH PIPE IS  84.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  45.37
 ESTIMATED PIPE DIAMETER(INCH) = 114.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =    2557.45
 PIPE TRAVEL TIME(MIN.) =   0.32    Tc(MIN.) =   33.29
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2557.45   33.29    1.777  0.30( 0.29) 0.98    1904.5   20100.00
      2     2557.33   38.39    1.647  0.30( 0.29) 0.98    2085.6   13600.00
      3     2497.40   72.12    1.197  0.30( 0.29) 0.97    3053.5   13510.00
      4     2393.19   80.35    1.141  0.30( 0.29) 0.97    3116.4   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      589.23   13.84    3.099  0.30( 0.11) 0.36     173.5     110.00
      2      590.10   16.35    2.768  0.30( 0.11) 0.38     204.6     100.00
      3      582.95   17.51    2.651  0.30( 0.11) 0.38     213.9     100.00
      4      519.41   20.54    2.367  0.30( 0.12) 0.40     221.1     130.00
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2599.41   13.84    3.099  0.30( 0.26) 0.87     965.1     110.00
      2     2684.89   16.35    2.768  0.30( 0.26) 0.87    1139.7     100.00
      3     2720.74   17.51    2.651  0.30( 0.26) 0.87    1215.6     100.00
      4     2724.10   20.54    2.367  0.30( 0.27) 0.89    1395.9     130.00
      5     2940.50   33.29    1.777  0.30( 0.28) 0.92    2125.6   20100.00
      6     2910.30   38.39    1.647  0.30( 0.28) 0.92    2306.7   13600.00
      7     2746.24   72.12    1.197  0.30( 0.28) 0.93    3274.6   13510.00
      8     2629.09   80.35    1.141  0.30( 0.28) 0.93    3337.5   13500.00
    TOTAL AREA(ACRES) =      3337.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2940.50  Tc(MIN.) =   33.293
  EFFECTIVE AREA(ACRES) =   2125.57  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3337.5
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.11      0.30     1.000    86
  AGRICULTURAL POOR COVER
```



```
  "FALLOW"                   B        0.44      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.49      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        1.70      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.09      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.57      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   32.44
  EFFECTIVE AREA(ACRES) =   2149.97   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    2940.50
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       12.39      0.30     1.000    65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.30      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.19      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       28.71      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.17      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   64.82
  EFFECTIVE AREA(ACRES) =   2198.73   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    2970.22

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.22      0.30     1.000     -
  USER-DEFINED             -        9.23      0.30     1.000     -
  USER-DEFINED             -        0.54      0.30     1.000     -
  USER-DEFINED             -        5.66      0.30     1.000     -
  USER-DEFINED             -        3.66      0.30     1.000     -
  USER-DEFINED             -        0.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2983.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.83
  AVERAGE FLOW DEPTH(FEET) =   5.81   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =   34.73
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   25.90
  EFFECTIVE AREA(ACRES) =   2218.71     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    2970.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.79

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.79   FLOW VELOCITY(FEET/SEC.) =  10.82
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2650.24   15.32    2.872  0.30( 0.26) 0.88    1058.2     110.00
      2     2734.78   17.82    2.621  0.30( 0.26) 0.88    1232.9     100.00
      3     2769.17   18.98    2.504  0.30( 0.26) 0.88    1308.7     100.00
      4     2775.60   22.00    2.274  0.30( 0.27) 0.89    1489.1     130.00
      5     2970.22   34.73    1.740  0.30( 0.28) 0.92    2218.7   20100.00
      6     2934.30   39.84    1.610  0.30( 0.28) 0.92    2399.9   13600.00
      7     2764.53   73.58    1.187  0.30( 0.28) 0.93    3367.8   13510.00
      8     2645.20   81.84    1.131  0.30( 0.28) 0.93    3430.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2970.22  Tc(MIN.) =   34.73
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2218.71

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        1.56      0.30     1.000     -
  USER-DEFINED             -        9.40      0.30     1.000     -
  USER-DEFINED             -        2.76      0.30     1.000     -
  USER-DEFINED             -       17.38      0.30     1.000     -
  USER-DEFINED             -        2.46      0.30     1.000     -
  USER-DEFINED             -        5.56      0.30     1.000     -
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   50.72
  EFFECTIVE AREA(ACRES) =   2257.83   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    2974.30

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.65      0.30     1.000     -
  USER-DEFINED             -        1.70      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    3.05
  EFFECTIVE AREA(ACRES) =   2260.18   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    2977.35

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        5.29      0.30     1.000     -
  USER-DEFINED             -       31.25      0.30     1.000     -
  USER-DEFINED             -        0.22      0.30     1.000     -
  USER-DEFINED             -        6.26      0.30     1.000     -
  USER-DEFINED             -        0.07      0.30     1.000     -
  USER-DEFINED             -        0.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   56.15
  EFFECTIVE AREA(ACRES) =   2303.49   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    3033.50

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.30     0.850     -
  USER-DEFINED               -        3.06      0.30     0.850     -
  USER-DEFINED               -       17.76      0.30     0.500     -
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   54.37
  EFFECTIVE AREA(ACRES) =   2342.65   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    3087.87

********************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   34.73
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.69
  EFFECTIVE AREA(ACRES) =   2343.18   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    3088.56

********************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        5.28      0.30     1.000     -
  USER-DEFINED               -        0.52      0.30     1.000     -
  USER-DEFINED               -        3.61      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
```



```
  USER-DEFINED               -        1.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3095.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.86
  AVERAGE FLOW DEPTH(FEET) =   5.58   TRAVEL TIME(MIN.) =   4.02
  Tc(MIN.) =   38.75
  SUBAREA AREA(ACRES) =    11.67      SUBAREA RUNOFF(CFS) =   14.05
  EFFECTIVE AREA(ACRES) =   2354.85    AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.57

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.57   FLOW VELOCITY(FEET/SEC.) =  11.86
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     2775.64   19.46    2.455  0.30( 0.26) 0.88    1194.4     110.00
      2     2878.61   21.92    2.279  0.30( 0.26) 0.88    1369.0     100.00
      3     2888.47   23.07    2.206  0.30( 0.27) 0.88    1444.9     100.00
      4     2912.70   26.09    2.035  0.30( 0.27) 0.89    1625.2     130.00
      5     3088.56   38.75    1.638  0.30( 0.28) 0.92    2354.8   20100.00
      6     3029.46   43.88    1.523  0.30( 0.28) 0.92    2536.0   13600.00
      7     2853.36   77.70    1.159  0.30( 0.28) 0.93    3503.9   13510.00
      8     2725.78   86.00    1.102  0.30( 0.28) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    3088.56  Tc(MIN.) =   38.75
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2354.85

********************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   38.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.30     1.000     -
  USER-DEFINED               -       23.04      0.30     1.000     -
  USER-DEFINED               -        1.18      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -       53.20      0.30     1.000     -
  USER-DEFINED               -        2.08      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =  105.92
  EFFECTIVE AREA(ACRES) =   2442.81   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    3088.56
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.01      0.30     1.000     -
  USER-DEFINED               -        0.18      0.30     1.000     -
  USER-DEFINED               -        0.38      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        7.73      0.30     1.000     -
  USER-DEFINED               -        4.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   15.52
  EFFECTIVE AREA(ACRES) =   2455.70   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.57      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.97      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.98      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.39      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.67      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =   15.15
  EFFECTIVE AREA(ACRES) =   2468.28   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.44      0.30     1.000    66
  PUBLIC PARK                B        2.65      0.30     0.850    56
  PUBLIC PARK                B        1.16      0.30     0.850    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.47      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.25      0.30     0.500    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
  SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   30.61
  EFFECTIVE AREA(ACRES) =   2493.49   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.75
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.638
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.08      0.30     1.000     -
  USER-DEFINED               -        6.75      0.30     1.000     -
  USER-DEFINED               -        0.02      0.30     1.000     -
  USER-DEFINED               -        0.93      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =   17.80
  EFFECTIVE AREA(ACRES) =   2508.27   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
```

```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.89
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        8.49      0.30     1.000     -
 USER-DEFINED               -       13.31      0.30     1.000     -
 USER-DEFINED               -        0.87      0.30     1.000     -
 USER-DEFINED               -       20.26      0.30     1.000     -
 USER-DEFINED               -        1.21      0.30     1.000     -
 USER-DEFINED               -        0.05      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3113.45
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.08
 AVERAGE FLOW DEPTH(FEET) =   5.89   TRAVEL TIME(MIN.) =   3.80
 Tc(MIN.) =   42.55
 SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =   49.77
 EFFECTIVE AREA(ACRES) =   2552.46     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =    3088.56
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.86

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.86   FLOW VELOCITY(FEET/SEC.) =  11.07
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
     1     2775.64   23.37    2.186  0.30( 0.27) 0.90    1392.0     110.00
     2     2878.61   25.79    2.048  0.30( 0.27) 0.90    1566.6     100.00
     3     2888.47   26.93    1.997  0.30( 0.27) 0.90    1642.5     100.00
     4     2912.70   29.94    1.863  0.30( 0.27) 0.91    1822.8     130.00
     5     3088.56   42.55    1.551  0.30( 0.28) 0.93    2552.5   20100.00
     6     3029.46   47.70    1.441  0.30( 0.28) 0.93    2733.6   13600.00
     7     2893.29   81.57    1.132  0.30( 0.28) 0.93    3701.5   13510.00
     8     2754.58   89.93    1.075  0.30( 0.28) 0.93    3764.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    3088.56  Tc(MIN.) =   42.55
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2552.46

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.55
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       12.56      0.30     1.000     -
 USER-DEFINED               -        0.81      0.30     1.000     -
```



```
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.11      0.30     1.000     -
 USER-DEFINED               -        0.59      0.30     1.000     -
 USER-DEFINED               -        3.04      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =   20.41
 EFFECTIVE AREA(ACRES) =   2570.58   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =    3088.56
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.55
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
 PUBLIC PARK                B        1.30      0.30     0.850    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
 PUBLIC PARK                B        1.70      0.30     0.850    56
 PUBLIC PARK                B        0.10      0.30     0.850    56
 PUBLIC PARK                B        2.90      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
 SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    7.26
 EFFECTIVE AREA(ACRES) =   2576.78   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =    3088.56
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   42.55
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.10      0.30     0.500    56
 CONDOMINIUMS               B        0.10      0.30     0.350    56
 PUBLIC PARK                B        6.90      0.30     0.850    56
 PUBLIC PARK                B        0.40      0.30     0.850    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
 SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    8.77
 EFFECTIVE AREA(ACRES) =   2584.28   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
```

```
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        2.55      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        0.01      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                  B        1.35      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                   B        0.44      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        0.67      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.06      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    6.85
  EFFECTIVE AREA(ACRES) =   2590.36   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.16      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.45      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.15      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.34      0.30     1.000    81
```



```
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B       18.46      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        4.13      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   39.07
  EFFECTIVE AREA(ACRES) =   2625.05   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   42.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.551
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        8.69      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.73      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.41      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        1.37      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.11      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =   16.12
  EFFECTIVE AREA(ACRES) =   2639.36   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    3088.56
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.13
  CHANNEL FLOW THRU SUBAREA(CFS) =    3088.56
  FLOW VELOCITY(FEET/SEC.) =  17.64   FLOW DEPTH(FEET) =   4.13
  TRAVEL TIME(MIN.) =   0.27   Tc(MIN.) =   42.82
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	2775.64	23.66	2.168	0.30(0.27)	0.90	1478.9	110.00
2	2878.61	26.07	2.036	0.30(0.27)	0.90	1653.5	100.00
3	2888.47	27.21	1.985	0.30(0.27)	0.90	1729.4	100.00
4	2912.70	30.22	1.855	0.30(0.27)	0.91	1909.7	130.00
5	3088.56	42.82	1.546	0.30(0.28)	0.93	2639.4	20100.00
6	3029.46	47.98	1.435	0.30(0.28)	0.93	2820.5	13600.00
7	2905.42	81.85	1.130	0.30(0.28)	0.93	3788.4	13510.00
8	2757.26	90.21	1.074	0.30(0.28)	0.93	3851.3	13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 3088.56 Tc(MIN.) = 42.82
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2639.36

****

FLOW PROCESS FROM NODE 13685.00 TO NODE 13410.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

==========

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.60
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.476
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.23	0.30	1.000	-
USER-DEFINED	-	1.52	0.30	1.000	-
USER-DEFINED	-	0.06	0.30	1.000	-
USER-DEFINED	-	0.13	0.30	1.000	-
USER-DEFINED	-	6.45	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3093.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.41
AVERAGE FLOW DEPTH(FEET) = 6.60 TRAVEL TIME(MIN.) = 3.27
Tc(MIN.) = 46.09
SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 8.88
EFFECTIVE AREA(ACRES) = 2647.75 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 3088.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.60 FLOW VELOCITY(FEET/SEC.) = 9.40
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	2775.64	27.02	1.993	0.30(0.27)		0.90	1487.3	110.00
2	2878.61	29.40	1.888	0.30(0.27)		0.90	1661.9	100.00
3	2888.47	30.54	1.847	0.30(0.27)		0.90	1737.8	100.00
4	2912.70	33.54	1.771	0.30(0.27)		0.91	1918.1	130.00
5	3088.56	46.09	1.476	0.30(0.28)		0.93	2647.7	20100.00
6	3029.46	51.26	1.378	0.30(0.28)		0.93	2828.9	13600.00
7	2905.42	85.17	1.108	0.30(0.28)		0.93	3796.8	13510.00
8	2757.26	93.58	1.059	0.30(0.28)		0.93	3859.7	13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 3088.56 Tc(MIN.) = 46.09
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2647.75

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 46.09
EFFECTIVE AREA(ACRES) = 2647.75 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.928
PEAK FLOW RATE(CFS) = 3088.56

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	2775.64	27.02	1.993	0.30(0.27)		0.90	1487.3	110.00
2	2878.61	29.40	1.888	0.30(0.27)		0.90	1661.9	100.00
3	2888.47	30.54	1.847	0.30(0.27)		0.90	1737.8	100.00
4	2912.70	33.54	1.771	0.30(0.27)		0.91	1918.1	130.00
5	3088.56	46.09	1.476	0.30(0.28)		0.93	2647.7	20100.00
6	3029.46	51.26	1.378	0.30(0.28)		0.93	2828.9	13600.00
7	2905.42	85.17	1.108	0.30(0.28)		0.93	3796.8	13510.00
8	2757.26	93.58	1.059	0.30(0.28)		0.93	3859.7	13500.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 100-YR EV JULY 2023 ROKAMOTO                                         *
 ***********************************************************************

  FILE NAME: RU00EV37.DAT
  TIME/DATE OF STUDY: 13:03 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.768
   2)   10.00;  3.736
   3)   15.00;  2.899
   4)   20.00;  2.397
   5)   25.00;  2.080
   6)   30.00;  1.859
   7)   40.00;  1.604
   8)   50.00;  1.391
   9)   60.00;  1.276
  10)   90.00;  1.073
  11)  120.00;  0.936
  12)  180.00;  0.780
  13)  360.00;  0.574
  14) 1200.00;  0.249
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    26431.64   14.96  0.30( 0.25) 0.83    4018.0     300.00
      2    28629.60   19.81  0.30( 0.25) 0.83    5458.7     210.00
      3    30209.93   24.60  0.30( 0.25) 0.83    6813.0   50600.00
      4    35641.48   41.09  0.30( 0.26) 0.86   13562.6     150.00
      5    37332.63   48.27  0.30( 0.26) 0.88   16600.3     600.00
      6    38379.99   53.11  0.30( 0.27) 0.89   18902.9   31100.00
      7    40901.57   63.86  0.30( 0.27) 0.91   23983.4   40100.00
      8    43044.57   70.87  0.30( 0.27) 0.91   27347.4   11801.00
      9    45877.12   80.07  0.30( 0.28) 0.92   32378.6   11530.00
     10    48113.20   88.42  0.30( 0.28) 0.93   37987.6   11910.00
     11    50039.27   95.34  0.30( 0.28) 0.94   42886.8   11330.00
     12    50797.76  101.61  0.30( 0.28) 0.94   47317.8   11130.00
     13    50340.06  109.21  0.30( 0.28) 0.95   51311.7   12330.00
     14    49796.18  115.88  0.30( 0.28) 0.95   54654.9   12400.00
     15    48906.80  124.59  0.30( 0.29) 0.95   58023.7   12201.00
     16    47525.17  134.00  0.30( 0.29) 0.95   60477.8   12101.10
     17    46890.12  138.07  0.30( 0.29) 0.95   61326.9   10400.00
     18    45130.96  146.21  0.30( 0.29) 0.95   62642.1   12010.00
     19    43675.54  152.18  0.30( 0.29) 0.95   62955.8   10210.00
     20    39561.70  178.55  0.30( 0.29) 0.96   63688.5   10100.00
   TOTAL AREA(ACRES) =    63688.5

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    26431.64   14.96  0.30( 0.25) 0.83    4018.0     300.00
      2    28629.60   19.81  0.30( 0.25) 0.83    5458.7     210.00
      3    30209.93   24.60  0.30( 0.25) 0.83    6813.0   50600.00
      4    35641.48   41.09  0.30( 0.26) 0.86   13562.6     150.00
      5    37332.63   48.27  0.30( 0.26) 0.88   16600.3     600.00
      6    38379.99   53.11  0.30( 0.27) 0.89   18902.9   31100.00
      7    40901.57   63.86  0.30( 0.27) 0.91   23983.4   40100.00
      8    43044.57   70.87  0.30( 0.27) 0.91   27347.4   11801.00
      9    45877.12   80.07  0.30( 0.28) 0.92   32378.6   11530.00
     10    48113.20   88.42  0.30( 0.28) 0.93   37987.6   11910.00
     11    50039.27   95.34  0.30( 0.28) 0.94   42886.8   11330.00
     12    50797.76  101.61  0.30( 0.28) 0.94   47317.8   11130.00
     13    50340.06  109.21  0.30( 0.28) 0.95   51311.7   12330.00
```

```
     14    49796.18  115.88  0.30( 0.28) 0.95   54654.9   12400.00
     15    48906.80  124.59  0.30( 0.29) 0.95   58023.7   12201.00
     16    47525.17  134.00  0.30( 0.29) 0.95   60477.8   12101.10
     17    46890.12  138.07  0.30( 0.29) 0.95   61326.9   10400.00
     18    45130.96  146.21  0.30( 0.29) 0.95   62642.1   12010.00
     19    43675.54  152.18  0.30( 0.29) 0.95   62955.8   10210.00
     20    39561.70  178.55  0.30( 0.29) 0.96   63688.5   10100.00
    TOTAL AREA(ACRES) =     63688.5

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.93
  CHANNEL FLOW THRU SUBAREA(CFS) =   50797.76
  FLOW VELOCITY(FEET/SEC.) =  12.39   FLOW DEPTH(FEET) =  14.93
  TRAVEL TIME(MIN.) =   2.54   Tc(MIN.) =  104.15
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      406.54   14.41  0.30( 0.29) 0.96     189.8   10230.00
      2      372.26   23.72  0.30( 0.29) 0.95     240.3   10200.00
      3      368.40   24.34  0.30( 0.29) 0.95     241.8   10250.00
      4      339.08   28.10  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    26431.64   18.08    2.590  0.30( 0.25) 0.83    4018.0     300.00
      2    28629.60   22.85    2.216  0.30( 0.25) 0.83    5458.7     210.00
      3    30209.93   27.60    1.965  0.30( 0.25) 0.83    6813.0   50600.00
```



```
      4    35641.48   43.93    1.520  0.30( 0.26) 0.86   13562.6     150.00
      5    37332.63   51.07    1.379  0.30( 0.26) 0.88   16600.3     600.00
      6    38379.99   55.88    1.323  0.30( 0.27) 0.89   18902.9   31100.00
      7    40901.57   66.58    1.231  0.30( 0.27) 0.91   23983.4   40100.00
      8    43044.57   73.55    1.184  0.30( 0.27) 0.91   27347.4   11801.00
      9    45877.12   82.70    1.122  0.30( 0.28) 0.92   32378.6   11530.00
     10    48113.20   91.01    1.068  0.30( 0.28) 0.93   37987.6   11910.00
     11    50039.27   97.90    1.037  0.30( 0.28) 0.94   42886.8   11330.00
     12    50797.76  104.15    1.008  0.30( 0.28) 0.94   47317.8   11130.00
     13    50340.06  111.76    0.974  0.30( 0.28) 0.95   51311.7   12330.00
     14    49796.18  118.44    0.943  0.30( 0.28) 0.95   54654.9   12400.00
     15    48906.80  127.17    0.917  0.30( 0.29) 0.95   58023.7   12201.00
     16    47525.17  136.60    0.893  0.30( 0.29) 0.95   60477.8   12101.10
     17    46890.12  140.67    0.882  0.30( 0.29) 0.95   61326.9   10400.00
     18    45130.96  148.84    0.861  0.30( 0.29) 0.95   62642.1   12010.00
     19    43675.54  154.85    0.845  0.30( 0.29) 0.95   62955.8   10210.00
     20    39561.70  181.29    0.779  0.30( 0.29) 0.96   63688.5   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      406.54   14.41    2.998  0.30( 0.29) 0.96     189.8   10230.00
    2      372.26   23.72    2.161  0.30( 0.29) 0.95     240.3   10200.00
    3      368.40   24.34    2.122  0.30( 0.29) 0.95     241.8   10250.00
    4      339.08   28.10    1.943  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    25145.31   14.41    2.998  0.30( 0.25) 0.84    3392.2   10230.00
    2    26824.67   18.08    2.590  0.30( 0.25) 0.84    4227.7     300.00
    3    29005.05   22.85    2.216  0.30( 0.25) 0.84    5694.3     210.00
    4    29290.03   23.72    2.161  0.30( 0.25) 0.84    5946.0   10200.00
    5    29493.90   24.34    2.122  0.30( 0.25) 0.84    6125.5   10250.00
    6    30552.95   27.60    1.965  0.30( 0.25) 0.84    7058.7   50600.00
    7    30717.04   28.10    1.943  0.30( 0.25) 0.84    7268.1   10220.00
    8    35894.08   43.93    1.520  0.30( 0.26) 0.86   13808.9     150.00
    9    37556.23   51.07    1.379  0.30( 0.26) 0.88   16846.5     600.00
   10    38592.26   55.88    1.323  0.30( 0.27) 0.89   19149.1   31100.00
   11    41095.04   66.58    1.231  0.30( 0.27) 0.91   24229.6   40100.00
   12    43228.40   73.55    1.184  0.30( 0.27) 0.91   27593.6   11801.00
   13    46048.28   82.70    1.122  0.30( 0.28) 0.92   32624.9   11530.00
   14    48273.30   91.01    1.068  0.30( 0.28) 0.93   38233.8   11910.00
   15    50192.93   97.90    1.037  0.30( 0.28) 0.94   43133.0   11330.00
   16    50945.58  104.15    1.008  0.30( 0.28) 0.94   47564.0   11130.00
   17    50480.77  111.76    0.974  0.30( 0.28) 0.95   51558.0   12330.00
   18    49930.64  118.44    0.943  0.30( 0.28) 0.95   54901.2   12400.00
   19    49035.99  127.17    0.917  0.30( 0.29) 0.95   58270.0   12201.00
   20    47649.35  136.60    0.893  0.30( 0.29) 0.95   60724.1   12101.10
   21    47012.13  140.67    0.882  0.30( 0.29) 0.95   61573.2   10400.00
   22    45248.62  148.84    0.861  0.30( 0.29) 0.95   62888.3   12010.00
   23    43790.01  154.85    0.845  0.30( 0.29) 0.95   63202.0   10210.00
   24    39662.47  181.29    0.779  0.30( 0.29) 0.96   63934.8   10100.00
  TOTAL AREA(ACRES) =     63934.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    50945.58  Tc(MIN.) =  104.150
  EFFECTIVE AREA(ACRES) =  47564.03  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    63934.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.32
  CHANNEL FLOW THRU SUBAREA(CFS) =   50945.58
  FLOW VELOCITY(FEET/SEC.) =  12.02   FLOW DEPTH(FEET) =  15.32
  TRAVEL TIME(MIN.) =   2.87   Tc(MIN.) =  107.02
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      810.21   17.74  0.30( 0.23) 0.76     399.5   10300.00
      2      813.53   18.53  0.30( 0.23) 0.76     413.0   10380.00
      3      800.95   20.83  0.30( 0.23) 0.76     438.9   10320.00
      4      771.92   23.06  0.30( 0.23) 0.76     451.6   10360.00
      5      728.08   25.86  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25145.31   17.99    2.599  0.30( 0.25) 0.84    3392.2   10230.00
      2    26824.67   21.58    2.297  0.30( 0.25) 0.84    4227.7     300.00
      3    29005.05   26.27    2.024  0.30( 0.25) 0.84    5694.3     210.00
      4    29290.03   27.13    1.986  0.30( 0.25) 0.84    5946.0   10200.00
      5    29493.90   27.74    1.959  0.30( 0.25) 0.84    6125.5   10250.00
```



```
      6    30552.95   30.96    1.835  0.30( 0.25) 0.84    7058.7   50600.00
      7    30717.04   31.46    1.822  0.30( 0.25) 0.84    7268.1   10220.00
      8    35894.08   47.12    1.452  0.30( 0.26) 0.86   13808.9     150.00
      9    37556.23   54.22    1.342  0.30( 0.26) 0.88   16846.5     600.00
     10    38592.26   59.01    1.287  0.30( 0.27) 0.89   19149.1   31100.00
     11    41095.04   69.65    1.211  0.30( 0.27) 0.91   24229.6   40100.00
     12    43228.40   76.56    1.164  0.30( 0.27) 0.91   27593.6   11801.00
     13    46048.28   85.66    1.102  0.30( 0.28) 0.92   32624.9   11530.00
     14    48273.30   93.93    1.055  0.30( 0.28) 0.93   38233.8   11910.00
     15    50192.93  100.78    1.024  0.30( 0.28) 0.94   43133.0   11330.00
     16    50945.58  107.02    0.995  0.30( 0.28) 0.94   47564.0   11130.00
     17    50480.77  114.64    0.960  0.30( 0.28) 0.95   51558.0   12330.00
     18    49930.64  121.32    0.933  0.30( 0.28) 0.95   54901.2   12400.00
     19    49035.99  130.07    0.910  0.30( 0.29) 0.95   58270.0   12201.00
     20    47649.35  139.52    0.885  0.30( 0.29) 0.95   60724.1   12101.10
     21    47012.13  143.61    0.875  0.30( 0.29) 0.95   61573.2   10400.00
     22    45248.62  151.82    0.853  0.30( 0.29) 0.95   62888.3   12010.00
     23    43790.01  157.85    0.838  0.30( 0.29) 0.95   63202.0   10210.00
     24    39662.47  184.39    0.775  0.30( 0.29) 0.96   63934.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      810.21   17.74    2.623  0.30( 0.23) 0.76     399.5   10300.00
      2      813.53   18.53    2.544  0.30( 0.23) 0.76     413.0   10380.00
      3      800.95   20.83    2.345  0.30( 0.23) 0.76     438.9   10320.00
      4      771.92   23.06    2.203  0.30( 0.23) 0.76     451.6   10360.00
      5      728.08   25.86    2.042  0.30( 0.23) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25873.70   17.74    2.623  0.30( 0.25) 0.83    3745.9   10300.00
      2    25956.54   17.99    2.599  0.30( 0.25) 0.83    3795.8   10230.00
      3    26214.56   18.53    2.544  0.30( 0.25) 0.83    3932.4   10380.00
      4    27272.70   20.83    2.345  0.30( 0.25) 0.83    4491.1   10320.00
      5    27615.77   21.58    2.297  0.30( 0.25) 0.83    4671.0     300.00
      6    28281.29   23.06    2.203  0.30( 0.25) 0.83    5139.9   10360.00
      7    29544.20   25.86    2.042  0.30( 0.25) 0.83    6028.0   10340.00
      8    29725.92   26.27    2.024  0.30( 0.25) 0.83    6155.1     210.00
      9    29995.70   27.13    1.986  0.30( 0.25) 0.83    6406.8   10200.00
     10    30188.67   27.74    1.959  0.30( 0.25) 0.83    6586.3   10250.00
     11    31197.80   30.96    1.835  0.30( 0.25) 0.83    7519.5   50600.00
     12    31356.79   31.46    1.822  0.30( 0.25) 0.84    7728.9   10220.00
     13    36385.39   47.12    1.452  0.30( 0.26) 0.86   14269.7     150.00
     14    38003.41   54.22    1.342  0.30( 0.26) 0.87   17307.3     600.00
     15    39017.34   59.01    1.287  0.30( 0.27) 0.88   19609.9   31100.00
     16    41489.33   69.65    1.211  0.30( 0.27) 0.90   24690.4   40100.00
     17    43603.88   76.56    1.164  0.30( 0.27) 0.91   28054.4   11801.00
     18    46399.05   85.66    1.102  0.30( 0.28) 0.92   33085.7   11530.00
     19    48605.07   93.93    1.055  0.30( 0.28) 0.93   38694.6   11910.00
     20    50512.13  100.78    1.024  0.30( 0.28) 0.94   43593.8   11330.00
     21    51253.33  107.02    0.995  0.30( 0.28) 0.94   48024.8   11130.00
     22    50774.55  114.64    0.960  0.30( 0.28) 0.95   52018.8   12330.00
     23    50213.21  121.32    0.933  0.30( 0.28) 0.95   55362.0   12400.00
     24    49309.42  130.07    0.910  0.30( 0.29) 0.95   58730.8   12201.00
```

```
    25    47912.90  139.52    0.885  0.30( 0.29) 0.95   61184.9   12101.10
    26    47271.42  143.61    0.875  0.30( 0.29) 0.95   62034.0   10400.00
    27    45499.34  151.82    0.853  0.30( 0.29) 0.95   63349.1   12010.00
    28    44034.43  157.85    0.838  0.30( 0.29) 0.95   63662.8   10210.00
    29    39881.74  184.39    0.775  0.30( 0.29) 0.95   64395.6   10100.00
   TOTAL AREA(ACRES) =     64395.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    51253.33  Tc(MIN.) =  107.018
  EFFECTIVE AREA(ACRES) =  48024.83  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    64395.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.91
  CHANNEL FLOW THRU SUBAREA(CFS) =   51253.33
  FLOW VELOCITY(FEET/SEC.) =  42.38   FLOW DEPTH(FEET) =   8.91
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  107.16
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104b.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       82.60   19.10  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    25873.70   17.92    2.606  0.30( 0.25) 0.83    3745.9   10300.00
```



```
    2    25956.54   18.16    2.581  0.30( 0.25) 0.83    3795.8   10230.00
    3    26214.56   18.71    2.526  0.30( 0.25) 0.83    3932.4   10380.00
    4    27272.70   21.00    2.333  0.30( 0.25) 0.83    4491.1   10320.00
    5    27615.77   21.76    2.286  0.30( 0.25) 0.83    4671.0     300.00
    6    28281.29   23.23    2.192  0.30( 0.25) 0.83    5139.9   10360.00
    7    29544.20   26.03    2.034  0.30( 0.25) 0.83    6028.0   10340.00
    8    29725.92   26.44    2.016  0.30( 0.25) 0.83    6155.1     210.00
    9    29995.70   27.30    1.979  0.30( 0.25) 0.83    6406.8   10200.00
   10    30188.67   27.91    1.951  0.30( 0.25) 0.83    6586.3   10250.00
   11    31197.80   31.12    1.830  0.30( 0.25) 0.83    7519.5   50600.00
   12    31356.79   31.62    1.818  0.30( 0.25) 0.84    7728.9   10220.00
   13    36385.39   47.28    1.449  0.30( 0.26) 0.86   14269.7     150.00
   14    38003.41   54.38    1.341  0.30( 0.26) 0.87   17307.3     600.00
   15    39017.34   59.16    1.286  0.30( 0.27) 0.88   19609.9   31100.00
   16    41489.33   69.80    1.210  0.30( 0.27) 0.90   24690.4   40100.00
   17    43603.88   76.72    1.163  0.30( 0.27) 0.91   28054.4   11801.00
   18    46399.05   85.80    1.101  0.30( 0.28) 0.92   33085.7   11530.00
   19    48605.07   94.07    1.054  0.30( 0.28) 0.93   38694.6   11910.00
   20    50512.13  100.92    1.023  0.30( 0.28) 0.94   43593.8   11330.00
   21    51253.33  107.16    0.995  0.30( 0.28) 0.94   48024.8   11130.00
   22    50774.55  114.78    0.960  0.30( 0.28) 0.95   52018.8   12330.00
   23    50213.21  121.46    0.932  0.30( 0.28) 0.95   55362.0   12400.00
   24    49309.42  130.21    0.909  0.30( 0.29) 0.95   58730.8   12201.00
   25    47912.90  139.67    0.885  0.30( 0.29) 0.95   61184.9   12101.10
   26    47271.42  143.76    0.874  0.30( 0.29) 0.95   62034.0   10400.00
   27    45499.34  151.97    0.853  0.30( 0.29) 0.95   63349.1   12010.00
   28    44034.43  158.00    0.837  0.30( 0.29) 0.95   63662.8   10210.00
   29    39881.74  184.55    0.775  0.30( 0.29) 0.95   64395.6   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       82.60   19.10    2.487  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    25955.28   17.92    2.606  0.30( 0.25) 0.83    3787.5   10300.00
    2    26038.37   18.16    2.581  0.30( 0.25) 0.83    3838.0   10230.00
    3    26296.88   18.71    2.526  0.30( 0.25) 0.83    3975.8   10380.00
    4    26476.89   19.10    2.487  0.30( 0.25) 0.83    4071.6   10400.00
    5    27349.65   21.00    2.333  0.30( 0.25) 0.83    4535.4   10320.00
    6    27690.96   21.76    2.286  0.30( 0.25) 0.83    4715.3     300.00
    7    28353.06   23.23    2.192  0.30( 0.25) 0.83    5184.2   10360.00
    8    29610.15   26.03    2.034  0.30( 0.25) 0.83    6072.3   10340.00
    9    29791.22   26.44    2.016  0.30( 0.25) 0.83    6199.4     210.00
   10    30059.61   27.30    1.979  0.30( 0.25) 0.83    6451.1   10200.00
   11    30251.58   27.91    1.951  0.30( 0.25) 0.83    6630.6   10250.00
   12    31256.26   31.12    1.830  0.30( 0.25) 0.83    7563.8   50600.00
   13    31414.79   31.62    1.818  0.30( 0.25) 0.83    7773.2   10220.00
   14    36429.84   47.28    1.449  0.30( 0.26) 0.86   14314.0     150.00
   15    38043.88   54.38    1.341  0.30( 0.26) 0.87   17351.6     600.00
   16    39055.78   59.16    1.286  0.30( 0.27) 0.88   19654.2   31100.00
   17    41524.98   69.80    1.210  0.30( 0.27) 0.90   24734.7   40100.00
   18    43637.82   76.72    1.163  0.30( 0.27) 0.91   28098.7   11801.00
   19    46430.72   85.80    1.101  0.30( 0.28) 0.92   33130.0   11530.00
```

20	48635.01	94.07	1.054	0.30(0.28)	0.93	38738.9	11910.00
21	50540.93	100.92	1.023	0.30(0.28)	0.94	43638.1	11330.00
22	51281.08	107.16	0.995	0.30(0.28)	0.94	48069.1	11130.00
23	50801.02	114.78	0.960	0.30(0.28)	0.95	52063.1	12330.00
24	50238.67	121.46	0.932	0.30(0.28)	0.95	55406.3	12400.00
25	49334.04	130.21	0.909	0.30(0.28)	0.95	58775.1	12201.00
26	47936.62	139.67	0.885	0.30(0.29)	0.95	61229.2	12101.10
27	47294.75	143.76	0.874	0.30(0.29)	0.95	62078.3	10400.00
28	45521.88	151.97	0.853	0.30(0.29)	0.95	63393.4	12010.00
29	44056.39	158.00	0.837	0.30(0.29)	0.95	63707.1	10210.00
30	39901.41	184.55	0.775	0.30(0.29)	0.95	64439.9	10100.00

TOTAL AREA(ACRES) = 64439.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51281.08 Tc(MIN.) = 107.161
EFFECTIVE AREA(ACRES) = 48069.13 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64439.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128872.66 FEET.

****
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 17.95
CHANNEL FLOW THRU SUBAREA(CFS) = 51281.08
FLOW VELOCITY(FEET/SEC.) = 16.63 FLOW DEPTH(FEET) = 17.95
TRAVEL TIME(MIN.) = 1.54 Tc(MIN.) = 108.70
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506105i.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	447.60	14.36	0.30(0.27)	0.90	208.7	10520.00
2	533.75	30.45	0.30(0.28)	0.93	403.6	10500.00

TOTAL AREA(ACRES) = 403.6

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25955.28	19.79	2.418	0.30(0.25)	0.83	3787.5	10300.00
2	26038.37	20.03	2.395	0.30(0.25)	0.83	3838.0	10230.00
3	26296.88	20.57	2.361	0.30(0.25)	0.83	3975.8	10380.00
4	26476.89	20.96	2.336	0.30(0.25)	0.83	4071.6	10400.00
5	27349.65	22.84	2.217	0.30(0.25)	0.83	4535.4	10320.00
6	27690.96	23.59	2.169	0.30(0.25)	0.83	4715.3	300.00
7	28353.06	25.05	2.078	0.30(0.25)	0.83	5184.2	10360.00
8	29610.15	27.83	1.955	0.30(0.25)	0.83	6072.3	10340.00
9	29791.22	28.23	1.937	0.30(0.25)	0.83	6199.4	210.00
10	30059.61	29.08	1.900	0.30(0.25)	0.83	6451.1	10200.00
11	30251.58	29.69	1.873	0.30(0.25)	0.83	6630.6	10250.00
12	31256.26	32.89	1.785	0.30(0.25)	0.83	7563.8	50600.00
13	31414.79	33.39	1.773	0.30(0.25)	0.83	7773.2	10220.00
14	36429.84	48.97	1.413	0.30(0.26)	0.86	14314.0	150.00
15	38043.88	56.05	1.321	0.30(0.26)	0.87	17351.6	600.00
16	39055.78	60.82	1.270	0.30(0.27)	0.88	19654.2	31100.00
17	41524.98	71.43	1.199	0.30(0.27)	0.90	24734.7	40100.00
18	43637.82	78.32	1.152	0.30(0.27)	0.91	28098.7	11801.00
19	46430.72	87.38	1.091	0.30(0.28)	0.92	33130.0	11530.00
20	48635.01	95.63	1.047	0.30(0.28)	0.93	38738.9	11910.00
21	50540.93	102.46	1.016	0.30(0.28)	0.94	43638.1	11330.00
22	51281.08	108.70	0.988	0.30(0.28)	0.94	48069.1	11130.00
23	50801.02	116.32	0.953	0.30(0.28)	0.95	52063.1	12330.00
24	50238.67	123.01	0.928	0.30(0.28)	0.95	55406.3	12400.00
25	49334.04	131.77	0.905	0.30(0.28)	0.95	58775.1	12201.00
26	47936.62	141.24	0.881	0.30(0.29)	0.95	61229.2	12101.10
27	47294.75	145.33	0.870	0.30(0.29)	0.95	62078.3	10400.00
28	45521.88	153.56	0.849	0.30(0.29)	0.95	63393.4	12010.00
29	44056.39	159.60	0.833	0.30(0.29)	0.95	63707.1	10210.00
30	39901.41	186.20	0.773	0.30(0.29)	0.95	64439.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	447.60	14.36	3.006	0.30(0.27)	0.90	208.7	10520.00
2	533.75	30.45	1.848	0.30(0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24387.78	14.36	3.006	0.30(0.25)	0.84	2957.8	10520.00
2	26431.94	19.79	2.418	0.30(0.25)	0.84	4061.9	10300.00
3	26516.32	20.03	2.395	0.30(0.25)	0.84	4115.3	10230.00
4	26777.73	20.57	2.361	0.30(0.25)	0.84	4259.7	10380.00
5	26959.79	20.96	2.336	0.30(0.25)	0.84	4360.2	10400.00
6	27842.64	22.84	2.217	0.30(0.25)	0.84	4846.8	10320.00
7	28187.96	23.59	2.169	0.30(0.25)	0.84	5035.8	300.00
8	28857.87	25.05	2.078	0.30(0.25)	0.84	5522.4	10360.00
9	30129.87	27.83	1.955	0.30(0.25)	0.84	6444.2	10340.00
10	30313.10	28.23	1.937	0.30(0.25)	0.84	6576.2	210.00

11	30586.04	29.08	1.900	0.30(0.25)	0.84	6838.1	10200.00
12	30781.28	29.69	1.873	0.30(0.25)	0.84	7025.0	10250.00
13	31022.75	30.45	1.848	0.30(0.25)	0.84	7254.7	10500.00
14	31768.83	32.89	1.785	0.30(0.25)	0.84	7967.4	50600.00
15	31923.06	33.39	1.773	0.30(0.25)	0.84	8176.8	10220.00
16	36815.78	48.97	1.413	0.30(0.26)	0.86	14717.6	150.00
17	38398.71	56.05	1.321	0.30(0.26)	0.88	17755.2	600.00
18	39393.27	60.82	1.270	0.30(0.27)	0.89	20057.8	31100.00
19	41838.07	71.43	1.199	0.30(0.27)	0.90	25138.3	40100.00
20	43935.04	78.32	1.152	0.30(0.27)	0.91	28502.3	11801.00
21	46707.10	87.38	1.091	0.30(0.28)	0.92	33533.6	11530.00
22	48896.62	95.63	1.047	0.30(0.28)	0.93	39142.5	11910.00
23	50791.93	102.46	1.016	0.30(0.28)	0.94	44041.7	11330.00
24	51522.40	108.70	0.988	0.30(0.28)	0.94	48472.7	11130.00
25	51030.50	116.32	0.953	0.30(0.28)	0.95	52466.7	12330.00
26	50459.77	123.01	0.928	0.30(0.28)	0.95	55809.9	12400.00
27	49547.41	131.77	0.905	0.30(0.28)	0.95	59178.7	12201.00
28	48141.61	141.24	0.881	0.30(0.29)	0.95	61632.8	12101.10
29	47496.12	145.33	0.870	0.30(0.29)	0.95	62481.9	10400.00
30	45715.98	153.56	0.849	0.30(0.29)	0.95	63797.0	12010.00
31	44245.14	159.60	0.833	0.30(0.29)	0.95	64110.7	10210.00
32	40069.72	186.20	0.773	0.30(0.29)	0.95	64843.5	10100.00

TOTAL AREA(ACRES) = 64843.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51522.40 Tc(MIN.) = 108.698
EFFECTIVE AREA(ACRES) = 48472.73 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 64843.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0097
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.25
CHANNEL FLOW THRU SUBAREA(CFS) = 51522.40
FLOW VELOCITY(FEET/SEC.) = 23.02 FLOW DEPTH(FEET) = 14.25
TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 108.85
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==

PEAK FLOWRATE TABLE FILE NAME: 0506106b.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.36	17.31	0.30(0.20)	0.67	36.9	10600.00

TOTAL AREA(ACRES) = 36.9

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24387.78	14.55	2.974	0.30(0.25)	0.84	2957.8	10520.00
2	26431.94	19.97	2.400	0.30(0.25)	0.84	4061.9	10300.00
3	26516.32	20.21	2.384	0.30(0.25)	0.84	4115.3	10230.00
4	26777.73	20.75	2.349	0.30(0.25)	0.84	4259.7	10380.00
5	26959.79	21.14	2.325	0.30(0.25)	0.84	4360.2	10400.00
6	27842.64	23.02	2.206	0.30(0.25)	0.84	4846.8	10320.00
7	28187.96	23.77	2.158	0.30(0.25)	0.84	5035.8	300.00
8	28857.87	25.22	2.070	0.30(0.25)	0.84	5522.4	10360.00
9	30129.87	28.01	1.947	0.30(0.25)	0.84	6444.2	10340.00
10	30313.10	28.41	1.929	0.30(0.25)	0.84	6576.2	210.00
11	30586.04	29.26	1.892	0.30(0.25)	0.84	6838.1	10200.00
12	30781.28	29.87	1.865	0.30(0.25)	0.84	7025.0	10250.00
13	31022.75	30.62	1.843	0.30(0.25)	0.84	7254.7	10500.00
14	31768.83	33.07	1.781	0.30(0.25)	0.84	7967.4	50600.00
15	31923.06	33.56	1.768	0.30(0.25)	0.84	8176.8	10220.00
16	36815.78	49.14	1.409	0.30(0.26)	0.86	14717.6	150.00
17	38398.71	56.22	1.320	0.30(0.26)	0.88	17755.2	600.00
18	39393.27	60.99	1.269	0.30(0.27)	0.89	20057.8	31100.00
19	41838.07	71.59	1.198	0.30(0.27)	0.90	25138.3	40100.00
20	43935.04	78.48	1.151	0.30(0.27)	0.91	28502.3	11801.00
21	46707.10	87.54	1.090	0.30(0.28)	0.92	33533.6	11530.00
22	48896.62	95.78	1.047	0.30(0.28)	0.93	39142.5	11910.00
23	50791.93	102.62	1.015	0.30(0.28)	0.94	44041.7	11330.00
24	51522.40	108.85	0.987	0.30(0.28)	0.94	48472.7	11130.00
25	51030.50	116.47	0.952	0.30(0.28)	0.95	52466.7	12330.00
26	50459.77	123.16	0.928	0.30(0.28)	0.95	55809.9	12400.00
27	49547.41	131.92	0.905	0.30(0.28)	0.95	59178.7	12201.00
28	48141.61	141.39	0.880	0.30(0.29)	0.95	61632.8	12101.10
29	47496.12	145.48	0.870	0.30(0.29)	0.95	62481.9	10400.00
30	45715.98	153.71	0.848	0.30(0.29)	0.95	63797.0	12010.00
31	44245.14	159.76	0.833	0.30(0.29)	0.95	64110.7	10210.00
32	40069.72	186.36	0.773	0.30(0.29)	0.95	64843.5	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.36	17.31	2.667	0.30(0.20)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	24457.13	14.55	2.974	0.30(0.25)	0.83	2988.9	10520.00
2	25501.41	17.31	2.667	0.30(0.25)	0.83	3556.6	10600.00
3	26497.35	19.97	2.400	0.30(0.25)	0.83	4098.8	10300.00
4	26581.24	20.21	2.384	0.30(0.25)	0.83	4152.2	10230.00
5	26841.63	20.75	2.349	0.30(0.25)	0.83	4296.6	10380.00
6	27022.97	21.14	2.325	0.30(0.25)	0.83	4397.1	10400.00
7	27902.27	23.02	2.206	0.30(0.25)	0.83	4883.7	10320.00
8	28246.18	23.77	2.158	0.30(0.25)	0.83	5072.7	300.00
9	28913.47	25.22	2.070	0.30(0.25)	0.83	5559.3	10360.00
10	30181.81	28.01	1.947	0.30(0.25)	0.84	6481.1	10340.00
11	30364.51	28.41	1.929	0.30(0.25)	0.84	6613.1	210.00
12	30636.33	29.26	1.892	0.30(0.25)	0.84	6875.0	10200.00
13	30830.77	29.87	1.865	0.30(0.25)	0.84	7061.9	10250.00
14	31071.60	30.62	1.843	0.30(0.25)	0.84	7291.6	10500.00
15	31815.83	33.07	1.781	0.30(0.25)	0.84	8004.3	50600.00
16	31969.67	33.56	1.768	0.30(0.25)	0.84	8213.7	10220.00
17	36851.73	49.14	1.409	0.30(0.26)	0.86	14754.5	150.00
18	38431.98	56.22	1.320	0.30(0.26)	0.87	17792.1	600.00
19	39425.05	60.99	1.269	0.30(0.27)	0.88	20094.7	31100.00
20	41867.71	71.59	1.198	0.30(0.27)	0.90	25175.2	40100.00
21	43963.30	78.48	1.151	0.30(0.27)	0.91	28539.2	11801.00
22	46733.53	87.54	1.090	0.30(0.28)	0.92	33570.5	11530.00
23	48921.78	95.78	1.047	0.30(0.28)	0.93	39179.4	11910.00
24	50816.16	102.62	1.015	0.30(0.28)	0.94	44078.6	11330.00
25	51545.78	108.85	0.987	0.30(0.28)	0.94	48509.6	11130.00
26	51052.84	116.47	0.952	0.30(0.28)	0.95	52503.6	12330.00
27	50481.39	123.16	0.928	0.30(0.28)	0.95	55846.8	12400.00
28	49568.35	131.92	0.905	0.30(0.28)	0.95	59215.6	12201.00
29	48161.82	141.39	0.880	0.30(0.29)	0.95	61669.7	12101.10
30	47516.01	145.48	0.870	0.30(0.29)	0.95	62518.8	10400.00
31	45735.23	153.71	0.848	0.30(0.29)	0.95	63833.9	12010.00
32	44263.93	159.76	0.833	0.30(0.29)	0.95	64147.6	10210.00
33	40086.73	186.36	0.773	0.30(0.29)	0.95	64880.4	10100.00

TOTAL AREA(ACRES) = 64880.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51545.78 Tc(MIN.) = 108.848
EFFECTIVE AREA(ACRES) = 48509.63 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64880.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 64880.4 TC(MIN.) = 108.85
EFFECTIVE AREA(ACRES) = 48509.63 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 51545.78

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)		Ap	Ae (ACRES)	HEADWATER NODE
1	24457.13	14.55	2.974	0.30(0.25)	0.83		2988.9	10520.00
2	25501.41	17.31	2.667	0.30(0.25)	0.83		3556.6	10600.00
3	26497.35	19.97	2.400	0.30(0.25)	0.83		4098.8	10300.00
4	26581.24	20.21	2.384	0.30(0.25)	0.83		4152.2	10230.00
5	26841.63	20.75	2.349	0.30(0.25)	0.83		4296.6	10380.00
6	27022.97	21.14	2.325	0.30(0.25)	0.83		4397.1	10400.00
7	27902.27	23.02	2.206	0.30(0.25)	0.83		4883.7	10320.00
8	28246.18	23.77	2.158	0.30(0.25)	0.83		5072.7	300.00
9	28913.47	25.22	2.070	0.30(0.25)	0.83		5559.3	10360.00
10	30181.81	28.01	1.947	0.30(0.25)	0.84		6481.1	10340.00
11	30364.51	28.41	1.929	0.30(0.25)	0.84		6613.1	210.00
12	30636.33	29.26	1.892	0.30(0.25)	0.84		6875.0	10200.00
13	30830.77	29.87	1.865	0.30(0.25)	0.84		7061.9	10250.00
14	31071.60	30.62	1.843	0.30(0.25)	0.84		7291.6	10500.00
15	31815.83	33.07	1.781	0.30(0.25)	0.84		8004.3	50600.00
16	31969.67	33.56	1.768	0.30(0.25)	0.84		8213.7	10220.00
17	36851.73	49.14	1.409	0.30(0.26)	0.86		14754.5	150.00
18	38431.98	56.22	1.320	0.30(0.26)	0.87		17792.1	600.00
19	39425.05	60.99	1.269	0.30(0.27)	0.88		20094.7	31100.00
20	41867.71	71.59	1.198	0.30(0.27)	0.90		25175.2	40100.00
21	43963.30	78.48	1.151	0.30(0.27)	0.91		28539.2	11801.00
22	46733.53	87.54	1.090	0.30(0.28)	0.92		33570.5	11530.00
23	48921.78	95.78	1.047	0.30(0.28)	0.93		39179.4	11910.00
24	50816.16	102.62	1.015	0.30(0.28)	0.94		44078.6	11330.00
25	51545.78	108.85	0.987	0.30(0.28)	0.94		48509.6	11130.00
26	51052.84	116.47	0.952	0.30(0.28)	0.95		52503.6	12330.00
27	50481.39	123.16	0.928	0.30(0.28)	0.95		55846.8	12400.00
28	49568.35	131.92	0.905	0.30(0.28)	0.95		59215.6	12201.00
29	48161.82	141.39	0.880	0.30(0.29)	0.95		61669.7	12101.10
30	47516.01	145.48	0.870	0.30(0.29)	0.95		62518.8	10400.00
31	45735.23	153.71	0.848	0.30(0.29)	0.95		63833.9	12010.00
32	44263.93	159.76	0.833	0.30(0.29)	0.95		64147.6	10210.00
33	40086.73	186.36	0.773	0.30(0.29)	0.95		64880.4	10100.00

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 100-YR EV JULY 2023 ROKAMOTO                                         *
 ************************************************************************

  FILE NAME: RU00EV38.DAT
  TIME/DATE OF STUDY: 13:03 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.750
   2)   10.00;  3.727
   3)   15.00;  2.893
   4)   20.00;  2.393
   5)   25.00;  2.078
   6)   30.00;  1.857
   7)   40.00;  1.601
   8)   50.00;  1.389
   9)   60.00;  1.274
  10)   90.00;  1.070
  11)  120.00;  0.933
  12)  180.00;  0.777
  13)  360.00;  0.572
  14) 1200.00;  0.248
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    27022.97   21.14  0.30( 0.25) 0.83    4397.1   10400.00
      2    28913.47   25.22  0.30( 0.25) 0.83    5559.3   10360.00
      3    31969.67   33.56  0.30( 0.25) 0.84    8213.7   10220.00
      4    36851.73   49.14  0.30( 0.26) 0.86   14754.5     150.00
      5    38431.98   56.22  0.30( 0.26) 0.87   17792.1     600.00
      6    39425.05   60.99  0.30( 0.27) 0.88   20094.7   31100.00
      7    41867.71   71.59  0.30( 0.27) 0.90   25175.2   40100.00
      8    43963.30   78.48  0.30( 0.27) 0.91   28539.2   11801.00
      9    46733.53   87.54  0.30( 0.28) 0.92   33570.5   11530.00
     10    48921.78   95.78  0.30( 0.28) 0.93   39179.4   11910.00
     11    50816.16  102.62  0.30( 0.28) 0.94   44078.6   11330.00
     12    51545.78  108.85  0.30( 0.28) 0.94   48509.6   11130.00
     13    51052.84  116.47  0.30( 0.28) 0.95   52503.6   12330.00
     14    50481.39  123.16  0.30( 0.28) 0.95   55846.8   12400.00
     15    49568.35  131.92  0.30( 0.28) 0.95   59215.6   12201.00
     16    48161.82  141.39  0.30( 0.29) 0.95   61669.7   12101.10
     17    47516.01  145.48  0.30( 0.29) 0.95   62518.8   10400.00
     18    45735.23  153.71  0.30( 0.29) 0.95   63833.9   12010.00
     19    44263.93  159.76  0.30( 0.29) 0.95   64147.6   10210.00
     20    40086.73  186.36  0.30( 0.29) 0.95   64880.4   10100.00
   TOTAL AREA(ACRES) =    64880.4

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    27022.97   21.14  0.30( 0.25) 0.83    4397.1   10400.00
      2    28913.47   25.22  0.30( 0.25) 0.83    5559.3   10360.00
      3    31969.67   33.56  0.30( 0.25) 0.84    8213.7   10220.00
      4    36851.73   49.14  0.30( 0.26) 0.86   14754.5     150.00
      5    38431.98   56.22  0.30( 0.26) 0.87   17792.1     600.00
      6    39425.05   60.99  0.30( 0.27) 0.88   20094.7   31100.00
      7    41867.71   71.59  0.30( 0.27) 0.90   25175.2   40100.00
      8    43963.30   78.48  0.30( 0.27) 0.91   28539.2   11801.00
      9    46733.53   87.54  0.30( 0.28) 0.92   33570.5   11530.00
     10    48921.78   95.78  0.30( 0.28) 0.93   39179.4   11910.00
     11    50816.16  102.62  0.30( 0.28) 0.94   44078.6   11330.00
     12    51545.78  108.85  0.30( 0.28) 0.94   48509.6   11130.00
     13    51052.84  116.47  0.30( 0.28) 0.95   52503.6   12330.00
```

```
     14    50481.39  123.16  0.30( 0.28) 0.95   55846.8   12400.00
     15    49568.35  131.92  0.30( 0.28) 0.95   59215.6   12201.00
     16    48161.82  141.39  0.30( 0.29) 0.95   61669.7   12101.10
     17    47516.01  145.48  0.30( 0.29) 0.95   62518.8   10400.00
     18    45735.23  153.71  0.30( 0.29) 0.95   63833.9   12010.00
     19    44263.93  159.76  0.30( 0.29) 0.95   64147.6   10210.00
     20    40086.73  186.36  0.30( 0.29) 0.95   64880.4   10100.00
    TOTAL AREA(ACRES) =     64880.4

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    140.00  DOWNSTREAM(FEET) =    137.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0032
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.979
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   51555.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.55
  AVERAGE FLOW DEPTH(FEET) =  18.89   TRAVEL TIME(MIN.) =   0.99
  Tc(MIN.) =  109.84
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =   19.37
  EFFECTIVE AREA(ACRES) =  48541.07     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    64911.8         PEAK FLOW RATE(CFS) =   51545.78
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 18.89   FLOW VELOCITY(FEET/SEC.) =  15.55
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  109.84
  RAINFALL INTENSITY(INCH/HR) =   0.98
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   48541.07
  TOTAL STREAM AREA(ACRES) =   64911.79
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   51545.78

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.345
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    65   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     15.29
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =     15.29

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.044
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      33.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.45
  AVERAGE FLOW DEPTH(FEET) =   0.48   TRAVEL TIME(MIN.) =   1.80
  Tc(MIN.) =   14.09
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   36.53
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4          PEAK FLOW RATE(CFS) =      50.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.60   FLOW VELOCITY(FEET/SEC.) =   7.49
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.27
  AVERAGE FLOW DEPTH(FEET) =   1.10   TRAVEL TIME(MIN.) =   2.16
  Tc(MIN.) =   16.25
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   40.90
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      86.15
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   5.60
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.500
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.96
  AVERAGE FLOW DEPTH(FEET) =   1.16   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =   18.93
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   56.24
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =     133.02
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.27

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.27   FLOW VELOCITY(FEET/SEC.) =   8.34
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.94
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     133.02
  PIPE TRAVEL TIME(MIN.) =   1.75    Tc(MIN.) =   20.69
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.350
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =  164.01
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     288.03

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.69
  RAINFALL INTENSITY(INCH/HR) =   2.35
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
  TOTAL STREAM AREA(ACRES) =     150.29
```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 288.03

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27022.97	22.33	2.246	0.30(0.25)	0.83	4428.5	10400.00
1	28913.47	26.39	2.016	0.30(0.25)	0.84	5590.7	10360.00
1	31969.67	34.70	1.737	0.30(0.25)	0.84	8245.1	10220.00
1	36851.73	50.23	1.386	0.30(0.26)	0.86	14785.9	150.00
1	38431.98	57.29	1.305	0.30(0.26)	0.88	17823.6	600.00
1	39425.05	62.06	1.260	0.30(0.27)	0.88	20126.2	31100.00
1	41867.71	72.64	1.188	0.30(0.27)	0.90	25206.7	40100.00
1	43963.30	79.52	1.141	0.30(0.27)	0.91	28570.7	11801.00
1	46733.53	88.56	1.080	0.30(0.28)	0.92	33601.9	11530.00
1	48921.78	96.79	1.039	0.30(0.28)	0.93	39210.9	11910.00
1	50816.16	103.61	1.008	0.30(0.28)	0.94	44110.1	11330.00
1	51545.78	109.84	0.979	0.30(0.28)	0.94	48541.1	11130.00
1	51052.84	117.47	0.945	0.30(0.28)	0.95	52535.0	12330.00
1	50481.39	124.16	0.922	0.30(0.28)	0.95	55878.2	12400.00
1	49568.35	132.92	0.899	0.30(0.28)	0.95	59247.0	12201.00
1	48161.82	142.40	0.875	0.30(0.29)	0.95	61701.1	12101.10
1	47516.01	146.50	0.864	0.30(0.29)	0.95	62550.2	10400.00
1	45735.23	154.74	0.843	0.30(0.29)	0.95	63865.4	12010.00
1	44263.93	160.80	0.827	0.30(0.29)	0.95	64179.1	10210.00
1	40086.73	187.42	0.769	0.30(0.29)	0.95	64911.8	10100.00
2	288.03	20.69	2.350	0.30(0.22)	0.73	150.3	13810.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26621.47	20.69	2.350	0.30(0.25)	0.83	4253.2	13810.00
2	27297.01	22.33	2.246	0.30(0.25)	0.83	4578.8	10400.00
3	29156.42	26.39	2.016	0.30(0.25)	0.83	5741.0	10360.00
4	32174.80	34.70	1.737	0.30(0.25)	0.84	8395.4	10220.00
5	37009.46	50.23	1.386	0.30(0.26)	0.86	14936.2	150.00
6	38578.72	57.29	1.305	0.30(0.26)	0.87	17973.9	600.00
7	39565.69	62.06	1.260	0.30(0.27)	0.88	20276.4	31100.00
8	41998.62	72.64	1.188	0.30(0.27)	0.90	25357.0	40100.00
9	44087.88	79.52	1.141	0.30(0.27)	0.91	28721.0	11801.00
10	46849.79	88.56	1.080	0.30(0.28)	0.92	33752.2	11530.00
11	49032.52	96.79	1.039	0.30(0.28)	0.93	39361.2	11910.00
12	50922.68	103.61	1.008	0.30(0.28)	0.94	44260.3	11330.00
13	51648.46	109.84	0.979	0.30(0.28)	0.94	48691.4	11130.00
14	51150.82	117.47	0.945	0.30(0.28)	0.94	52685.3	12330.00
15	50576.34	124.16	0.922	0.30(0.28)	0.95	56028.5	12400.00
16	49660.21	132.92	0.899	0.30(0.28)	0.95	59397.3	12201.00
17	48250.34	142.40	0.875	0.30(0.29)	0.95	61851.4	12101.10
18	47603.10	146.50	0.864	0.30(0.29)	0.95	62700.5	10400.00
19	45819.43	154.74	0.843	0.30(0.29)	0.95	64015.6	12010.00
20	44345.99	160.80	0.827	0.30(0.29)	0.95	64329.4	10210.00
21	40160.89	187.42	0.769	0.30(0.29)	0.95	65062.1	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51648.46 Tc(MIN.) = 109.84
EFFECTIVE AREA(ACRES) = 48691.36 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65062.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 19.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.973
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.60	0.30	0.683	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 51659.39
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.45
AVERAGE FLOW DEPTH(FEET) = 19.00 TRAVEL TIME(MIN.) = 1.36
Tc(MIN.) = 111.20
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 21.85
EFFECTIVE AREA(ACRES) = 48722.96 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65093.7 PEAK FLOW RATE(CFS) = 51648.46
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 19.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 19.00 FLOW VELOCITY(FEET/SEC.) = 15.45
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 111.20
RAINFALL INTENSITY(INCH/HR) = 0.97
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48722.96
TOTAL STREAM AREA(ACRES) = 65093.68
PEAK FLOW RATE(CFS) AT CONFLUENCE = 51648.46

****
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.083
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    65   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     12.68
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =     12.68

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.711
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.06
  AVERAGE FLOW DEPTH(FEET) =   0.70   TRAVEL TIME(MIN.) =   2.96
  Tc(MIN.) =   16.82
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   70.68
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      81.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.95   FLOW VELOCITY(FEET/SEC.) =   7.23
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```



```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.11
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.361
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     111.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.49
  AVERAGE FLOW DEPTH(FEET) =   1.08   TRAVEL TIME(MIN.) =   3.70
  Tc(MIN.) =   20.51
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   59.77
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     129.56
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.18   FLOW VELOCITY(FEET/SEC.) =   8.90
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.246
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     153.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.62
  AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   1.82
  Tc(MIN.) =   22.34
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   48.18
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =     170.51
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.48
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.48   FLOW VELOCITY(FEET/SEC.) =   8.91
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.02
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.058
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     245.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.82
  AVERAGE FLOW DEPTH(FEET) =   1.99   TRAVEL TIME(MIN.) =   3.11
  Tc(MIN.) =   25.45
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =  149.07
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     303.14
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.23   FLOW VELOCITY(FEET/SEC.) =   9.39
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.918
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     473.04
```



```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.90
  AVERAGE FLOW DEPTH(FEET) =   3.23   TRAVEL TIME(MIN.) =   3.18
  Tc(MIN.) =   28.63
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  339.58
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     618.49
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.71   FLOW VELOCITY(FEET/SEC.) =   9.59
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.42
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.766
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     709.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.58
  AVERAGE FLOW DEPTH(FEET) =   4.40   TRAVEL TIME(MIN.) =   4.91
  Tc(MIN.) =   33.54
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  182.13
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     742.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.50

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.50   FLOW VELOCITY(FEET/SEC.) =   8.69
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  69.0 INCH PIPE IS  51.9 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  35.42
  ESTIMATED PIPE DIAMETER(INCH) =  69.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     742.79
  PIPE TRAVEL TIME(MIN.) =   0.54    Tc(MIN.) =   34.08
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.08
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.752
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.97      0.30     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =    8.41
  EFFECTIVE AREA(ACRES) =    565.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      565.5       PEAK FLOW RATE(CFS) =     744.23

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   34.08
  RAINFALL INTENSITY(INCH/HR) =   1.75
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =     565.50
  TOTAL STREAM AREA(ACRES) =     565.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     744.23

  ** CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    26621.47   22.33    2.246  0.30( 0.25) 0.83    4284.8   13810.00
      1    27297.01   23.96    2.144  0.30( 0.25) 0.83    4610.4   10400.00
      1    29156.42   27.99    1.946  0.30( 0.25) 0.83    5772.6   10360.00
      1    32174.80   36.25    1.697  0.30( 0.25) 0.84    8427.0   10220.00
      1    37009.46   51.72    1.369  0.30( 0.26) 0.86   14967.8     150.00
      1    38578.72   58.77    1.288  0.30( 0.26) 0.87   18005.5     600.00
      1    39565.69   63.52    1.250  0.30( 0.26) 0.88   20308.0   31100.00
      1    41998.62   74.08    1.178  0.30( 0.27) 0.90   25388.6   40100.00
      1    44087.88   80.94    1.132  0.30( 0.27) 0.91   28752.6   11801.00
      1    46849.79   89.96    1.070  0.30( 0.28) 0.92   33783.8   11530.00
      1    49032.52   98.17    1.033  0.30( 0.28) 0.93   39392.8   11910.00
      1    50922.68  104.98    1.002  0.30( 0.28) 0.94   44291.9   11330.00
      1    51648.46  111.20    0.973  0.30( 0.28) 0.94   48723.0   11130.00
      1    51150.82  118.83    0.938  0.30( 0.28) 0.94   52716.9   12330.00
```



```
      1    50576.34  125.53    0.919  0.30( 0.28) 0.95   56060.1   12400.00
      1    49660.21  134.30    0.896  0.30( 0.28) 0.95   59428.9   12201.00
      1    48250.34  143.79    0.871  0.30( 0.29) 0.95   61883.0   12101.10
      1    47603.10  147.89    0.860  0.30( 0.29) 0.95   62732.1   10400.00
      1    45819.43  156.14    0.839  0.30( 0.29) 0.95   64047.2   12010.00
      1    44345.99  162.22    0.823  0.30( 0.29) 0.95   64361.0   10210.00
      1    40160.89  188.88    0.767  0.30( 0.29) 0.95   65093.7   10100.00
      2      744.23   34.08    1.752  0.30( 0.29) 0.97     565.5   13830.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    27273.66   22.33    2.246  0.30( 0.25) 0.84    4655.2   13810.00
      2    27960.08   23.96    2.144  0.30( 0.25) 0.84    5007.9   10400.00
      3    29848.42   27.99    1.946  0.30( 0.25) 0.84    6237.0   10360.00
      4    32127.26   34.08    1.752  0.30( 0.25) 0.84    8296.2   13830.00
      5    32890.79   36.25    1.697  0.30( 0.25) 0.84    8992.5   10220.00
      6    37558.62   51.72    1.369  0.30( 0.26) 0.86   15533.3     150.00
      7    39086.64   58.77    1.288  0.30( 0.26) 0.88   18571.0     600.00
      8    40054.23   63.52    1.250  0.30( 0.27) 0.89   20873.5   31100.00
      9    42450.60   74.08    1.178  0.30( 0.27) 0.90   25954.1   40100.00
     10    44516.13   80.94    1.132  0.30( 0.27) 0.91   29318.1   11801.00
     11    47246.84   89.96    1.070  0.30( 0.28) 0.92   34349.3   11530.00
     12    49410.43   98.17    1.033  0.30( 0.28) 0.93   39958.3   11910.00
     13    51284.77  104.98    1.002  0.30( 0.28) 0.94   44857.4   11330.00
     14    51996.08  111.20    0.973  0.30( 0.28) 0.94   49288.5   11130.00
     15    51480.71  118.83    0.938  0.30( 0.28) 0.94   53282.4   12330.00
     16    50896.19  125.53    0.919  0.30( 0.28) 0.95   56625.6   12400.00
     17    49968.46  134.30    0.896  0.30( 0.28) 0.95   59994.4   12201.00
     18    48546.04  143.79    0.871  0.30( 0.29) 0.95   62448.5   12101.10
     19    47893.36  147.89    0.860  0.30( 0.29) 0.95   63297.6   10400.00
     20    46098.77  156.14    0.839  0.30( 0.29) 0.95   64612.8   12010.00
     21    44617.30  162.22    0.823  0.30( 0.29) 0.95   64926.5   10210.00
     22    40403.52  188.88    0.767  0.30( 0.29) 0.95   65659.2   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   51996.08    Tc(MIN.) =   111.20
  EFFECTIVE AREA(ACRES) =   49288.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    65659.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132801.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    133.00  DOWNSTREAM(FEET) =    130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   654.44   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  17.36
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.970
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        6.61      0.30     0.975     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   51998.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.68
 AVERAGE FLOW DEPTH(FEET) =  17.36   TRAVEL TIME(MIN.) =   0.62
 Tc(MIN.) =  111.82
 SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    4.03
 EFFECTIVE AREA(ACRES) =  49295.07     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    65665.8         PEAK FLOW RATE(CFS) =   51996.08
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  17.36

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 17.36   FLOW VELOCITY(FEET/SEC.) =  17.67
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  111.82
 RAINFALL INTENSITY(INCH/HR) =   0.97
 AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.94
 EFFECTIVE STREAM AREA(ACRES) =   49295.07
 TOTAL STREAM AREA(ACRES) =   65665.80
 PEAK FLOW RATE(CFS) AT CONFLUENCE =   51996.08

****************************************************************************
 FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
 ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.371
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    65   12.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =     13.68
```



```
 TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =     13.68

****************************************************************************
 FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.38
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.160
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        4.02      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.85
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.63
 AVERAGE FLOW DEPTH(FEET) =   0.38   TRAVEL TIME(MIN.) =   1.26
 Tc(MIN.) =   13.40
 SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =   10.35
 EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      23.09
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.43   FLOW VELOCITY(FEET/SEC.) =   4.94
 LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
 CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.60
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.873
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -        7.17      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.40
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.76
 AVERAGE FLOW DEPTH(FEET) =   0.59   TRAVEL TIME(MIN.) =   1.80
 Tc(MIN.) =   15.20
```

```
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =   16.60
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      37.38
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   5.06
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.738
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.49
  AVERAGE FLOW DEPTH(FEET) =   0.71   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   16.55
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =   14.84
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      50.26
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.77

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.77   FLOW VELOCITY(FEET/SEC.) =   5.69
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.487
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.38
  AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   2.51
  Tc(MIN.) =   19.06
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   35.74
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      80.82
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.00   FLOW VELOCITY(FEET/SEC.) =   6.72
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     115.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.50
  AVERAGE FLOW DEPTH(FEET) =   1.39   TRAVEL TIME(MIN.) =   3.15
  Tc(MIN.) =   22.21
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   69.40
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =     141.59
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   6.92
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  30.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.77
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     141.59
  PIPE TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =   24.07
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.136
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   75.19
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     208.37

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   24.07
  RAINFALL INTENSITY(INCH/HR) =   2.14
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     208.37

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    27273.66   23.07    2.200  0.30( 0.25) 0.84    4661.8   13810.00
      1    27960.08   24.69    2.097  0.30( 0.25) 0.84    5014.5   10400.00
      1    29848.42   28.71    1.914  0.30( 0.25) 0.84    6243.6   10360.00
      1    32127.26   34.79    1.734  0.30( 0.25) 0.84    8302.8   13830.00
      1    32890.79   36.95    1.679  0.30( 0.25) 0.85    8999.1   10220.00
      1    37558.62   52.40    1.361  0.30( 0.26) 0.86   15539.9     150.00
      1    39086.64   59.44    1.280  0.30( 0.26) 0.88   18577.6     600.00
```



```
      1    40054.23   64.19    1.246  0.30( 0.27) 0.89   20880.1   31100.00
      1    42450.60   74.74    1.174  0.30( 0.27) 0.90   25960.7   40100.00
      1    44516.13   81.59    1.127  0.30( 0.27) 0.91   29324.7   11801.00
      1    47246.84   90.59    1.067  0.30( 0.28) 0.92   34355.9   11530.00
      1    49410.43   98.80    1.030  0.30( 0.28) 0.93   39964.9   11910.00
      1    51284.77  105.60    0.999  0.30( 0.28) 0.94   44864.1   11330.00
      1    51996.08  111.82    0.970  0.30( 0.28) 0.94   49295.1   11130.00
      1    51480.71  119.45    0.936  0.30( 0.28) 0.94   53289.0   12330.00
      1    50896.19  126.15    0.917  0.30( 0.28) 0.95   56632.2   12400.00
      1    49968.46  134.92    0.894  0.30( 0.28) 0.95   60001.0   12201.00
      1    48546.04  144.42    0.870  0.30( 0.29) 0.95   62455.1   12101.10
      1    47893.36  148.52    0.859  0.30( 0.29) 0.95   63304.2   10400.00
      1    46098.77  156.78    0.837  0.30( 0.29) 0.95   64619.4   12010.00
      1    44617.30  162.86    0.822  0.30( 0.29) 0.95   64933.1   10210.00
      1    40403.52  189.55    0.766  0.30( 0.29) 0.95   65665.8   10100.00
      2      208.37   24.07    2.136  0.30( 0.26) 0.86     123.2   13850.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    27480.07   23.07    2.200  0.30( 0.25) 0.84    4779.9   13810.00
      2    27905.27   24.07    2.136  0.30( 0.25) 0.84    5002.5   13850.00
      3    28164.10   24.69    2.097  0.30( 0.25) 0.84    5137.7   10400.00
      4    30032.09   28.71    1.914  0.30( 0.25) 0.84    6366.8   10360.00
      5    32291.03   34.79    1.734  0.30( 0.25) 0.84    8426.1   13830.00
      6    33048.43   36.95    1.679  0.30( 0.25) 0.85    9122.4   10220.00
      7    37681.04   52.40    1.361  0.30( 0.26) 0.86   15663.2     150.00
      8    39200.08   59.44    1.280  0.30( 0.26) 0.88   18700.8     600.00
      9    40163.79   64.19    1.246  0.30( 0.27) 0.89   21003.4   31100.00
     10    42552.21   74.74    1.174  0.30( 0.27) 0.90   26083.9   40100.00
     11    44612.57   81.59    1.127  0.30( 0.27) 0.91   29447.9   11801.00
     12    47336.63   90.59    1.067  0.30( 0.28) 0.92   34479.1   11530.00
     13    49496.07   98.80    1.030  0.30( 0.28) 0.93   40088.1   11910.00
     14    51366.97  105.60    0.999  0.30( 0.28) 0.94   44987.3   11330.00
     15    52075.13  111.82    0.970  0.30( 0.28) 0.94   49418.3   11130.00
     16    51555.89  119.45    0.936  0.30( 0.28) 0.94   53412.3   12330.00
     17    50969.32  126.15    0.917  0.30( 0.28) 0.95   56755.4   12400.00
     18    50039.07  134.92    0.894  0.30( 0.28) 0.95   60124.2   12201.00
     19    48613.90  144.42    0.870  0.30( 0.29) 0.95   62578.4   12101.10
     20    47960.04  148.52    0.859  0.30( 0.29) 0.95   63427.4   10400.00
     21    46163.07  156.78    0.837  0.30( 0.29) 0.95   64742.6   12010.00
     22    44679.84  162.86    0.822  0.30( 0.29) 0.95   65056.3   10210.00
     23    40459.91  189.55    0.766  0.30( 0.29) 0.95   65789.0   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   52075.13    Tc(MIN.) =   111.82
  EFFECTIVE AREA(ACRES) =   49418.29   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    65789.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.969
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   52076.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  27.28
  AVERAGE FLOW DEPTH(FEET) =  12.67   TRAVEL TIME(MIN.) =   0.37
  Tc(MIN.) =  112.19
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    2.94
  EFFECTIVE AREA(ACRES) =  49423.18     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65793.9         PEAK FLOW RATE(CFS) =   52075.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.67   FLOW VELOCITY(FEET/SEC.) =  27.28
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  112.19
  RAINFALL INTENSITY(INCH/HR) =   0.97
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49423.18
  TOTAL STREAM AREA(ACRES) =   65793.91
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   52075.13

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
```



```
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.823
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    65   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     16.62
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =     16.62

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.555
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.16
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   2.67
  Tc(MIN.) =   18.38
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   26.41
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      41.27
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.63   FLOW VELOCITY(FEET/SEC.) =   5.81
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.315
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       32.99      0.30     0.923     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.56
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.11
 AVERAGE FLOW DEPTH(FEET) =   0.98   TRAVEL TIME(MIN.) =   2.86
 Tc(MIN.) =   21.24
 SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   60.51
 EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      97.38
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.17

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   6.74
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.16
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.133
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       30.94      0.30     0.900     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     123.34
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.74
 AVERAGE FLOW DEPTH(FEET) =   1.15   TRAVEL TIME(MIN.) =   2.89
 Tc(MIN.) =   24.13
 SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   51.87
 EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =     140.50
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.23   FLOW VELOCITY(FEET/SEC.) =   9.14
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
----------------------------------------------------------------------------
```



```
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
 CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.08
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.010
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       73.67      0.30     0.930     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.03
 AVERAGE FLOW DEPTH(FEET) =   3.05   TRAVEL TIME(MIN.) =   2.41
 Tc(MIN.) =   26.54
 SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =  114.76
 EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     245.95
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.41

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.41   FLOW VELOCITY(FEET/SEC.) =   4.28
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
 FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
 DEPTH OF FLOW IN  54.0 INCH PIPE IS  41.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.95
 ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     245.95
 PIPE TRAVEL TIME(MIN.) =   1.63    Tc(MIN.) =   28.17
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   28.17
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.938
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       34.90      0.30     0.743     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 53.86
EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 289.56

****
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 28.17
RAINFALL INTENSITY(INCH/HR) = 1.94
AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.90
EFFECTIVE STREAM AREA(ACRES) = 192.83
TOTAL STREAM AREA(ACRES) = 192.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 289.56

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27480.07	23.52	2.171	0.30(0.25)	0.84	4784.8	13810.00
1	27905.27	24.52	2.108	0.30(0.25)	0.84	5007.4	13850.00
1	28164.10	25.14	2.072	0.30(0.25)	0.84	5142.6	10400.00
1	30032.09	29.15	1.894	0.30(0.25)	0.84	6371.7	10360.00
1	32291.03	35.22	1.723	0.30(0.25)	0.84	8431.0	13830.00
1	33048.43	37.38	1.668	0.30(0.25)	0.85	9127.3	10220.00
1	37681.04	52.81	1.357	0.30(0.26)	0.86	15668.0	150.00
1	39200.08	59.84	1.276	0.30(0.26)	0.88	18705.7	600.00
1	40163.79	64.59	1.243	0.30(0.27)	0.89	21008.3	31100.00
1	42552.21	75.13	1.171	0.30(0.27)	0.90	26088.8	40100.00
1	44612.57	81.98	1.125	0.30(0.27)	0.91	29452.8	11801.00
1	47336.63	90.98	1.066	0.30(0.28)	0.92	34484.0	11530.00
1	49496.07	99.18	1.028	0.30(0.28)	0.93	40093.0	11910.00
1	51366.97	105.97	0.997	0.30(0.28)	0.94	44992.2	11330.00
1	52075.13	112.19	0.969	0.30(0.28)	0.94	49423.2	11130.00
1	51555.89	119.82	0.934	0.30(0.28)	0.94	53417.1	12330.00
1	50969.32	126.53	0.916	0.30(0.28)	0.95	56760.3	12400.00
1	50039.07	135.30	0.893	0.30(0.28)	0.95	60129.1	12201.00
1	48613.90	144.80	0.869	0.30(0.29)	0.95	62583.2	12101.10
1	47960.04	148.91	0.858	0.30(0.29)	0.95	63432.3	10400.00
1	46163.07	157.17	0.836	0.30(0.29)	0.95	64747.5	12010.00
1	44679.84	163.25	0.821	0.30(0.29)	0.95	65061.2	10210.00
1	40459.91	189.95	0.766	0.30(0.29)	0.95	65793.9	10100.00
2	289.56	28.17	1.938	0.30(0.27)	0.90	192.8	13870.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27755.63	23.52	2.171	0.30(0.25)	0.84	4945.8	13810.00
2	28183.03	24.52	2.108	0.30(0.25)	0.84	5175.2	13850.00
3	28443.26	25.14	2.072	0.30(0.25)	0.84	5314.7	10400.00
4	29865.50	28.17	1.938	0.30(0.25)	0.84	6264.4	13870.00
5	30314.14	29.15	1.894	0.30(0.25)	0.84	6564.6	10360.00
6	32543.39	35.22	1.723	0.30(0.25)	0.85	8623.8	13830.00
7	33291.20	37.38	1.668	0.30(0.25)	0.85	9320.1	10220.00
8	37869.77	52.81	1.357	0.30(0.26)	0.86	15860.9	150.00
9	39374.77	59.84	1.276	0.30(0.26)	0.88	18898.5	600.00
10	40332.75	64.59	1.243	0.30(0.27)	0.89	21201.1	31100.00
11	42708.73	75.13	1.171	0.30(0.27)	0.90	26281.6	40100.00
12	44761.02	81.98	1.125	0.30(0.27)	0.91	29645.6	11801.00
13	47474.84	90.98	1.066	0.30(0.28)	0.92	34676.8	11530.00
14	49627.77	99.18	1.028	0.30(0.28)	0.93	40285.8	11910.00
15	51493.29	105.97	0.997	0.30(0.28)	0.94	45185.0	11330.00
16	52196.52	112.19	0.969	0.30(0.28)	0.94	49616.0	11130.00
17	51671.23	119.82	0.934	0.30(0.28)	0.94	53610.0	12330.00
18	51081.58	126.53	0.916	0.30(0.28)	0.95	56953.2	12400.00
19	50147.36	135.30	0.893	0.30(0.28)	0.95	60321.9	12201.00
20	48717.91	144.80	0.869	0.30(0.28)	0.95	62776.1	12101.10
21	48062.20	148.91	0.858	0.30(0.29)	0.95	63625.1	10400.00
22	46261.50	157.17	0.836	0.30(0.29)	0.95	64940.3	12010.00
23	44775.53	163.25	0.821	0.30(0.29)	0.95	65254.0	10210.00
24	40546.07	189.95	0.766	0.30(0.29)	0.95	65986.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 52196.52 Tc(MIN.) = 112.19
EFFECTIVE AREA(ACRES) = 49616.01 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65986.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134066.75 FEET.

****
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 27.45
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.959
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 52235.79
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.08
AVERAGE FLOW DEPTH(FEET) = 27.44 TRAVEL TIME(MIN.) = 2.19
Tc(MIN.) = 114.38
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 78.54
EFFECTIVE AREA(ACRES) = 49733.70 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66104.4 PEAK FLOW RATE(CFS) = 52196.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

```
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  27.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 27.43   FLOW VELOCITY(FEET/SEC.) =   9.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  114.38
  RAINFALL INTENSITY(INCH/HR) =   0.96
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49733.70
  TOTAL STREAM AREA(ACRES) =   66104.42
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   52196.52

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.951
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    65    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =     12.71
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =     12.71

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.49
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.410
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.43
  AVERAGE FLOW DEPTH(FEET) =   0.47   TRAVEL TIME(MIN.) =   1.34
  Tc(MIN.) =    8.31
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   30.07
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1         PEAK FLOW RATE(CFS) =      41.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.59   FLOW VELOCITY(FEET/SEC.) =   6.26
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.68
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.868
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      61.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.24
  AVERAGE FLOW DEPTH(FEET) =   0.66   TRAVEL TIME(MIN.) =   1.34
  Tc(MIN.) =    9.65
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   40.14
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6         PEAK FLOW RATE(CFS) =      76.00
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   8.88
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) =   0.93
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.485
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -       15.87      0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      98.76
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.09
AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   1.80
Tc(MIN.) =   11.45
SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   45.49
EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =     113.35
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) =   0.99

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   9.50
LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) =   1.26
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.157
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -       28.41      0.30     0.985     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.96
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.68
AVERAGE FLOW DEPTH(FEET) =   1.24   TRAVEL TIME(MIN.) =   1.97
Tc(MIN.) =   13.42
SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   73.16
EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =     174.82
GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
"Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) =   1.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =  10.15
LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
DEPTH OF FLOW IN  48.0 INCH PIPE IS  34.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  18.39
ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     174.82
PIPE TRAVEL TIME(MIN.) =   1.72    Tc(MIN.) =   15.14
LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
MAINLINE Tc(MIN.) =   15.14
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.879
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED               -       11.69      0.30     0.634     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   28.29
EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =     186.13

****************************************************************************
FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   15.14
RAINFALL INTENSITY(INCH/HR) =   2.88
AREA-AVERAGED Fm(INCH/HR) =  0.28
AREA-AVERAGED Fp(INCH/HR) =  0.30
AREA-AVERAGED Ap =  0.94
EFFECTIVE STREAM AREA(ACRES) =      79.62
TOTAL STREAM AREA(ACRES) =      79.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =     186.13

** CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27755.63	26.11	2.029	0.30(0.25)	0.84	5063.5	13810.00
1	28183.03	27.10	1.985	0.30(0.25)	0.84	5292.9	13850.00
1	28443.26	27.72	1.958	0.30(0.25)	0.84	5432.4	10400.00
1	29865.50	30.71	1.839	0.30(0.25)	0.84	6382.1	13870.00
1	30314.14	31.68	1.814	0.30(0.25)	0.84	6682.3	10360.00
1	32543.39	37.70	1.660	0.30(0.25)	0.84	8741.5	13830.00
1	33291.20	39.85	1.605	0.30(0.25)	0.84	9437.8	10220.00
1	37869.77	55.19	1.329	0.30(0.26)	0.86	15978.6	150.00
1	39374.77	62.20	1.259	0.30(0.26)	0.88	19016.2	600.00
1	40332.75	66.93	1.227	0.30(0.27)	0.88	21318.8	31100.00
1	42708.73	77.44	1.155	0.30(0.27)	0.90	26399.3	40100.00
1	44761.02	84.25	1.109	0.30(0.27)	0.91	29763.3	11801.00
1	47474.84	93.22	1.055	0.30(0.28)	0.92	34794.5	11530.00
1	49627.77	101.39	1.018	0.30(0.28)	0.93	40403.5	11910.00
1	51493.29	108.17	0.987	0.30(0.28)	0.93	45302.7	11330.00
1	52196.52	114.38	0.959	0.30(0.28)	0.94	49733.7	11130.00
1	51671.23	122.02	0.928	0.30(0.28)	0.94	53727.7	12330.00
1	51081.58	128.72	0.910	0.30(0.28)	0.95	57070.9	12400.00
1	50147.36	137.51	0.887	0.30(0.28)	0.95	60439.6	12201.00
1	48717.91	147.03	0.863	0.30(0.28)	0.95	62893.8	12101.10
1	48062.20	151.14	0.852	0.30(0.29)	0.95	63742.8	10400.00
1	46261.50	159.43	0.830	0.30(0.29)	0.95	65058.0	12010.00
1	44775.53	165.53	0.815	0.30(0.29)	0.95	65371.7	10210.00
1	40546.07	192.29	0.763	0.30(0.29)	0.95	66104.4	10100.00
2	186.13	15.14	2.879	0.30(0.28)	0.94	79.6	13889.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23980.87	15.14	2.879	0.30(0.25)	0.84	3015.7	13889.00
2	27880.86	26.11	2.029	0.30(0.25)	0.84	5143.1	13810.00
3	28305.12	27.10	1.985	0.30(0.25)	0.84	5372.5	13850.00
4	28563.40	27.72	1.958	0.30(0.25)	0.84	5512.0	10400.00
5	29977.10	30.71	1.839	0.30(0.25)	0.84	6461.7	13870.00
6	30423.96	31.68	1.814	0.30(0.25)	0.84	6761.9	10360.00
7	32642.17	37.70	1.660	0.30(0.25)	0.85	8821.1	13830.00
8	33386.04	39.85	1.605	0.30(0.25)	0.85	9517.4	10220.00
9	37944.87	55.19	1.329	0.30(0.26)	0.86	16058.2	150.00
10	39444.83	62.20	1.259	0.30(0.26)	0.88	19095.8	600.00
11	40400.51	66.93	1.227	0.30(0.27)	0.88	21398.4	31100.00
12	42771.37	77.44	1.155	0.30(0.27)	0.90	26478.9	40100.00
13	44820.34	84.25	1.109	0.30(0.27)	0.91	29842.9	11801.00
14	47530.30	93.22	1.055	0.30(0.28)	0.92	34874.2	11530.00
15	49680.56	101.39	1.018	0.30(0.28)	0.93	40483.1	11910.00
16	51543.86	108.17	0.987	0.30(0.28)	0.93	45382.3	11330.00
17	52245.06	114.38	0.959	0.30(0.28)	0.94	49813.3	11130.00
18	51717.55	122.02	0.928	0.30(0.28)	0.94	53807.3	12330.00
19	51126.66	128.72	0.910	0.30(0.28)	0.95	57150.5	12400.00
20	50190.80	137.51	0.887	0.30(0.28)	0.95	60519.2	12201.00
21	48759.57	147.03	0.863	0.30(0.28)	0.95	62973.4	12101.10
22	48103.10	151.14	0.852	0.30(0.29)	0.95	63822.5	10400.00
23	46300.85	159.43	0.830	0.30(0.29)	0.95	65137.6	12010.00
24	44813.75	165.53	0.815	0.30(0.29)	0.95	65451.3	10210.00

25	40580.59	192.29	0.763	0.30(0.29)	0.95	66184.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 52245.06 Tc(MIN.) = 114.38
EFFECTIVE AREA(ACRES) = 49813.32 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66184.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66184.0 TC(MIN.) = 114.38
EFFECTIVE AREA(ACRES) = 49813.32 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.940
PEAK FLOW RATE(CFS) = 52245.06

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23980.87	15.14	2.879	0.30(0.25)	0.84	3015.7	13889.00
2	27880.86	26.11	2.029	0.30(0.25)	0.84	5143.1	13810.00
3	28305.12	27.10	1.985	0.30(0.25)	0.84	5372.5	13850.00
4	28563.40	27.72	1.958	0.30(0.25)	0.84	5512.0	10400.00
5	29977.10	30.71	1.839	0.30(0.25)	0.84	6461.7	13870.00
6	30423.96	31.68	1.814	0.30(0.25)	0.84	6761.9	10360.00
7	32642.17	37.70	1.660	0.30(0.25)	0.85	8821.1	13830.00
8	33386.04	39.85	1.605	0.30(0.25)	0.85	9517.4	10220.00
9	37944.87	55.19	1.329	0.30(0.26)	0.86	16058.2	150.00
10	39444.83	62.20	1.259	0.30(0.26)	0.88	19095.8	600.00
11	40400.51	66.93	1.227	0.30(0.27)	0.88	21398.4	31100.00
12	42771.37	77.44	1.155	0.30(0.27)	0.90	26478.9	40100.00
13	44820.34	84.25	1.109	0.30(0.27)	0.91	29842.9	11801.00
14	47530.30	93.22	1.055	0.30(0.28)	0.92	34874.2	11530.00
15	49680.56	101.39	1.018	0.30(0.28)	0.93	40483.1	11910.00
16	51543.86	108.17	0.987	0.30(0.28)	0.93	45382.3	11330.00
17	52245.06	114.38	0.959	0.30(0.28)	0.94	49813.3	11130.00
18	51717.55	122.02	0.928	0.30(0.28)	0.94	53807.3	12330.00
19	51126.66	128.72	0.910	0.30(0.28)	0.95	57150.5	12400.00
20	50190.80	137.51	0.887	0.30(0.28)	0.95	60519.2	12201.00
21	48759.57	147.03	0.863	0.30(0.28)	0.95	62973.4	12101.10
22	48103.10	151.14	0.852	0.30(0.29)	0.95	63822.5	10400.00
23	46300.85	159.43	0.830	0.30(0.29)	0.95	65137.6	12010.00
24	44813.75	165.53	0.815	0.30(0.29)	0.95	65451.3	10210.00
25	40580.59	192.29	0.763	0.30(0.29)	0.95	66184.0	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 100-YR EV JULY 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RU00EV39.DAT
  TIME/DATE OF STUDY: 13:03 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.744
   2)   10.00;  3.724
   3)   15.00;  2.891
   4)   20.00;  2.392
   5)   25.00;  2.077
   6)   30.00;  1.856
   7)   40.00;  1.601
   8)   50.00;  1.389
   9)   60.00;  1.273
  10)   90.00;  1.070
  11)  120.00;  0.932
  12)  180.00;  0.777
  13)  360.00;  0.571
  14) 1200.00;  0.248
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.581
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    65   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     11.81
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =     11.81

******************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.56
  AVERAGE FLOW DEPTH(FEET) =   0.33   TRAVEL TIME(MIN.) =   1.64
  Tc(MIN.) =   12.50
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   22.92
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      33.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.41   FLOW VELOCITY(FEET/SEC.) =   7.51
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      64.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.56
  AVERAGE FLOW DEPTH(FEET) =   0.60   TRAVEL TIME(MIN.) =   1.17
  Tc(MIN.) =   13.67
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   60.49
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      92.06
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =  10.79
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.29
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      92.06
  PIPE TRAVEL TIME(MIN.) =   0.80    Tc(MIN.) =   14.47
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   14.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.980
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   51.37
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =     139.07

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.12
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     139.07
  PIPE TRAVEL TIME(MIN.) =   2.03    Tc(MIN.) =   16.50
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.742
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   99.78
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     226.52

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU00EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23980.87	15.14	0.30(0.25)	0.84	3015.7	13889.00
2	30423.96	31.68	0.30(0.25)	0.84	6761.9	10360.00
3	33386.04	39.85	0.30(0.25)	0.85	9517.4	10220.00
4	37944.87	55.19	0.30(0.26)	0.86	16058.2	150.00
5	39444.83	62.20	0.30(0.26)	0.88	19095.8	600.00
6	40400.51	66.93	0.30(0.27)	0.88	21398.4	31100.00
7	42771.37	77.44	0.30(0.27)	0.90	26478.9	40100.00
8	44820.34	84.25	0.30(0.27)	0.91	29842.9	11801.00
9	47530.30	93.22	0.30(0.28)	0.92	34874.2	11530.00
10	49680.56	101.39	0.30(0.28)	0.93	40483.1	11910.00
11	51543.86	108.17	0.30(0.28)	0.93	45382.3	11330.00
12	52245.06	114.38	0.30(0.28)	0.94	49813.3	11130.00
13	51717.55	122.02	0.30(0.28)	0.94	53807.3	12330.00
14	51126.66	128.72	0.30(0.28)	0.95	57150.5	12400.00
15	50190.80	137.51	0.30(0.28)	0.95	60519.2	12201.00
16	48759.57	147.03	0.30(0.28)	0.95	62973.4	12101.10
17	48103.10	151.14	0.30(0.29)	0.95	63822.5	10400.00
18	46300.85	159.43	0.30(0.29)	0.95	65137.6	12010.00
19	44813.75	165.53	0.30(0.29)	0.95	65451.3	10210.00
20	40580.59	192.29	0.30(0.29)	0.95	66184.0	10100.00

TOTAL AREA(ACRES) = 66184.0

****
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23980.87	15.14	0.30(0.25)	0.84	3015.7	13889.00
2	30423.96	31.68	0.30(0.25)	0.84	6761.9	10360.00
3	33386.04	39.85	0.30(0.25)	0.85	9517.4	10220.00
4	37944.87	55.19	0.30(0.26)	0.86	16058.2	150.00
5	39444.83	62.20	0.30(0.26)	0.88	19095.8	600.00
6	40400.51	66.93	0.30(0.27)	0.88	21398.4	31100.00
7	42771.37	77.44	0.30(0.27)	0.90	26478.9	40100.00
8	44820.34	84.25	0.30(0.27)	0.91	29842.9	11801.00
9	47530.30	93.22	0.30(0.28)	0.92	34874.2	11530.00
10	49680.56	101.39	0.30(0.28)	0.93	40483.1	11910.00
11	51543.86	108.17	0.30(0.28)	0.93	45382.3	11330.00
12	52245.06	114.38	0.30(0.28)	0.94	49813.3	11130.00
13	51717.55	122.02	0.30(0.28)	0.94	53807.3	12330.00
14	51126.66	128.72	0.30(0.28)	0.95	57150.5	12400.00
15	50190.80	137.51	0.30(0.28)	0.95	60519.2	12201.00
16	48759.57	147.03	0.30(0.28)	0.95	62973.4	12101.10
17	48103.10	151.14	0.30(0.29)	0.95	63822.5	10400.00
18	46300.85	159.43	0.30(0.29)	0.95	65137.6	12010.00
19	44813.75	165.53	0.30(0.29)	0.95	65451.3	10210.00
20	40580.59	192.29	0.30(0.29)	0.95	66184.0	10100.00

TOTAL AREA(ACRES) = 66184.0

****
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 24.17
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.948
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.09	0.30	0.535	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 52279.12
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.00
AVERAGE FLOW DEPTH(FEET) = 24.17 TRAVEL TIME(MIN.) = 2.09
Tc(MIN.) = 116.46
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 68.13
EFFECTIVE AREA(ACRES) = 49909.41 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66280.1 PEAK FLOW RATE(CFS) = 52245.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 24.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 24.16 FLOW VELOCITY(FEET/SEC.) = 11.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

****
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23980.87	17.72	2.619	0.30(0.25)	0.83	3111.8	13889.00
2	30423.96	34.10	1.751	0.30(0.25)	0.84	6858.0	10360.00
3	33386.04	42.20	1.554	0.30(0.25)	0.84	9613.5	10220.00
4	37944.87	57.47	1.302	0.30(0.26)	0.86	16154.3	150.00
5	39444.83	64.45	1.243	0.30(0.26)	0.87	19191.9	600.00
6	40400.51	69.17	1.211	0.30(0.26)	0.88	21494.5	31100.00
7	42771.37	79.64	1.140	0.30(0.27)	0.90	26575.0	40100.00
8	44820.34	86.43	1.094	0.30(0.27)	0.91	29939.0	11801.00
9	47530.30	95.36	1.045	0.30(0.28)	0.92	34970.2	11530.00
10	49680.56	103.51	1.008	0.30(0.28)	0.93	40579.2	11910.00
11	51543.86	110.26	0.977	0.30(0.28)	0.93	45478.4	11330.00
12	52245.06	116.46	0.948	0.30(0.28)	0.94	49909.4	11130.00
13	51717.55	124.11	0.921	0.30(0.28)	0.94	53903.4	12330.00
14	51126.66	130.82	0.904	0.30(0.28)	0.95	57246.6	12400.00
15	50190.80	139.62	0.881	0.30(0.28)	0.95	60615.3	12201.00
16	48759.57	149.15	0.857	0.30(0.28)	0.95	63069.5	12101.10

```
    17    48103.10  153.27    0.846  0.30( 0.28) 0.95   63918.6   10400.00
    18    46300.85  161.58    0.825  0.30( 0.29) 0.95   65233.7   12010.00
    19    44813.75  167.70    0.809  0.30( 0.29) 0.95   65547.4   10210.00
    20    40580.59  194.52    0.760  0.30( 0.29) 0.95   66280.1   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      226.52   16.50    2.742  0.30( 0.25) 0.84     101.1   13900.00
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23701.37   16.50    2.742  0.30( 0.25) 0.83    2997.7   13900.00
      2    24196.25   17.72    2.619  0.30( 0.25) 0.83    3212.9   13889.00
      3    30560.35   34.10    1.751  0.30( 0.25) 0.84    6959.1   10360.00
      4    33504.49   42.20    1.554  0.30( 0.25) 0.84    9714.6   10220.00
      5    38040.38   57.47    1.302  0.30( 0.26) 0.86   16255.4     150.00
      6    39534.92   64.45    1.243  0.30( 0.26) 0.87   19293.0     600.00
      7    40487.70   69.17    1.211  0.30( 0.26) 0.88   21595.6   31100.00
      8    42852.11   79.64    1.140  0.30( 0.27) 0.90   26676.2   40100.00
      9    44896.90   86.43    1.094  0.30( 0.27) 0.91   30040.1   11801.00
     10    47602.41   95.36    1.045  0.30( 0.28) 0.92   35071.4   11530.00
     11    49749.27  103.51    1.008  0.30( 0.28) 0.93   40680.4   11910.00
     12    51609.73  110.26    0.977  0.30( 0.28) 0.93   45579.5   11330.00
     13    52308.34  116.46    0.948  0.30( 0.28) 0.94   50010.6   11130.00
     14    51778.39  124.11    0.921  0.30( 0.28) 0.94   54004.5   12330.00
     15    51185.91  130.82    0.904  0.30( 0.28) 0.95   57347.7   12400.00
     16    50247.98  139.62    0.881  0.30( 0.28) 0.95   60716.5   12201.00
     17    48814.52  149.15    0.857  0.30( 0.28) 0.95   63170.6   12101.10
     18    48157.07  153.27    0.846  0.30( 0.28) 0.95   64019.7   10400.00
     19    46352.87  161.58    0.825  0.30( 0.29) 0.95   65334.8   12010.00
     20    44864.33  167.70    0.809  0.30( 0.29) 0.95   65648.5   10210.00
     21    40626.77  194.52    0.760  0.30( 0.29) 0.95   66381.3   10100.00
    TOTAL AREA(ACRES) =     66381.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    52308.34  Tc(MIN.) =  116.463
  EFFECTIVE AREA(ACRES) =  50010.55  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    66381.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.947
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      134.30      0.30      0.658     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   52353.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  21.73
  AVERAGE FLOW DEPTH(FEET) =  15.04   TRAVEL TIME(MIN.) =   0.26
  Tc(MIN.) =  116.72
  SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   90.62
  EFFECTIVE AREA(ACRES) =  50144.86     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    66515.6         PEAK FLOW RATE(CFS) =   52308.34
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 15.03   FLOW VELOCITY(FEET/SEC.) =  21.73
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  0.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       96.27      0.30      0.723     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   52339.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  24.19
  AVERAGE FLOW DEPTH(FEET) =  13.91   TRAVEL TIME(MIN.) =   0.96
  Tc(MIN.) =  117.68
  SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   62.89
  EFFECTIVE AREA(ACRES) =  50241.12     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    66611.8         PEAK FLOW RATE(CFS) =   52308.34
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.90   FLOW VELOCITY(FEET/SEC.) =  24.18
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
  END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 66611.8 TC(MIN.) = 117.68
EFFECTIVE AREA(ACRES) = 50241.12 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.938
PEAK FLOW RATE(CFS) = 52308.34

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23701.37	18.04	2.588	0.30(0.25)	0.82	3228.2	13900.00
2	24196.25	19.25	2.467	0.30(0.25)	0.82	3443.5	13889.00
3	30560.35	35.53	1.715	0.30(0.25)	0.83	7189.7	10360.00
4	33504.49	43.59	1.525	0.30(0.25)	0.84	9945.2	10220.00
5	38040.38	58.80	1.287	0.30(0.26)	0.86	16486.0	150.00
6	39534.92	65.77	1.234	0.30(0.26)	0.87	19523.6	600.00
7	40487.70	70.48	1.202	0.30(0.26)	0.88	21826.2	31100.00
8	42852.11	80.93	1.131	0.30(0.27)	0.90	26906.7	40100.00
9	44896.90	87.70	1.086	0.30(0.27)	0.91	30270.7	11801.00
10	47602.41	96.61	1.040	0.30(0.28)	0.92	35302.0	11530.00
11	49749.27	104.74	1.002	0.30(0.28)	0.93	40910.9	11910.00
12	51609.73	111.48	0.971	0.30(0.28)	0.93	45810.1	11330.00
13	52308.34	117.68	0.943	0.30(0.28)	0.94	50241.1	11130.00
14	51778.39	125.33	0.918	0.30(0.28)	0.94	54235.1	12330.00
15	51185.91	132.05	0.901	0.30(0.28)	0.94	57578.3	12400.00
16	50247.98	140.85	0.878	0.30(0.28)	0.95	60947.1	12201.00
17	48814.52	150.39	0.853	0.30(0.28)	0.95	63401.2	12101.10
18	48157.07	154.52	0.843	0.30(0.28)	0.95	64250.3	10400.00
19	46352.87	162.84	0.821	0.30(0.28)	0.95	65565.4	12010.00
20	44864.33	168.98	0.805	0.30(0.28)	0.95	65879.1	10210.00
21	40626.77	195.83	0.759	0.30(0.29)	0.95	66611.8	10100.00

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                      Michael Baker International
                    5 Hutton Centre Drive, Suite 500
                         Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY ************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP - NODE 119 COMPLEX              *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 10-YR RM EV APRIL 2019 FKAZI                                          *
 **********************************************************************

  FILE NAME: RU10EV19.DAT
  TIME/DATE OF STUDY: 09:34 04/03/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.927
   2)   10.00;  2.601
   3)   15.00;  1.897
   4)   20.00;  1.624
   5)   25.00;  1.415
   6)   30.00;  1.266
   7)   40.00;  1.086
   8)   50.00;  0.968
   9)   60.00;  0.881
  10)   90.00;  0.734
  11)  120.00;  0.652
  12)  180.00;  0.549
  13)  360.00;  0.408
  14) 1200.00;  0.180
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.343
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         -        1.62      0.30      0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      4.44
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      4.44

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.467
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.95
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   3.75
  Tc(MIN.) =   10.95
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   16.50
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0         PEAK FLOW RATE(CFS) =      19.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   3.41
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.931
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      45.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.06
  AVERAGE FLOW DEPTH(FEET) =   0.95   TRAVEL TIME(MIN.) =   3.81
  Tc(MIN.) =   14.76
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   51.49
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =      66.34
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   4.59
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.38
  AVERAGE FLOW DEPTH(FEET) =   1.77   TRAVEL TIME(MIN.) =   4.42
```



```
  Tc(MIN.) =   19.18
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   29.40
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =      85.26
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.82   FLOW VELOCITY(FEET/SEC.) =   3.43
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.411
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     120.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.39
  AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   5.95
  Tc(MIN.) =   25.13
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =   69.26
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     138.74
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.81   FLOW VELOCITY(FEET/SEC.) =   5.65
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.44
```

```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.307
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       63.15      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.16
  AVERAGE FLOW DEPTH(FEET) =   1.42   TRAVEL TIME(MIN.) =   3.50
  Tc(MIN.) =   28.63
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   57.22
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     183.12
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.49   FLOW VELOCITY(FEET/SEC.) =   9.45
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.235
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       84.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     218.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.46
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   3.09
  Tc(MIN.) =   31.73
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =   71.42
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     241.62
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =  13.93
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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



```
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.142
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      199.43      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     317.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.84
  AVERAGE FLOW DEPTH(FEET) =   2.07   TRAVEL TIME(MIN.) =   5.18
  Tc(MIN.) =   36.91
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  151.06
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     368.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.25   FLOW VELOCITY(FEET/SEC.) =  11.33
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   36.91
  RAINFALL INTENSITY(INCH/HR) =   1.14
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     368.78

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.293
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.21
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      6.21

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.047
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.79
  AVERAGE FLOW DEPTH(FEET) =   0.27   TRAVEL TIME(MIN.) =   1.75
  Tc(MIN.) =   13.93
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =    9.11
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      14.55
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   4.23
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.91
  AVERAGE FLOW DEPTH(FEET) =   0.82   TRAVEL TIME(MIN.) =   6.42
  Tc(MIN.) =   20.35
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   63.98
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =      74.88
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   5.71
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.96
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.470
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     109.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.77
  AVERAGE FLOW DEPTH(FEET) =   0.94   TRAVEL TIME(MIN.) =   3.34
  Tc(MIN.) =   23.69
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =   68.57
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     135.47
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =  10.48
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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

```
 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.374
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     173.44
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.52
 AVERAGE FLOW DEPTH(FEET) =   1.31   TRAVEL TIME(MIN.) =   2.67
 Tc(MIN.) =   26.37
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =   75.92
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     200.34
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.42

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.42   FLOW VELOCITY(FEET/SEC.) =  11.02
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.91
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.267
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     231.03
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.84
 AVERAGE FLOW DEPTH(FEET) =   1.89   TRAVEL TIME(MIN.) =   3.60
 Tc(MIN.) =   29.97
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   61.34
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     241.68
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.94

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.94   FLOW VELOCITY(FEET/SEC.) =   8.97
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.93
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.221
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     337.93
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.78
 AVERAGE FLOW DEPTH(FEET) =   1.91   TRAVEL TIME(MIN.) =   2.54
 Tc(MIN.) =   32.50
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  192.47
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     422.64
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.16

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.16   FLOW VELOCITY(FEET/SEC.) =  13.65
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.77
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.150
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     465.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.83
  AVERAGE FLOW DEPTH(FEET) =   2.76   TRAVEL TIME(MIN.) =   3.95
  Tc(MIN.) =   36.45
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =   84.77
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     474.83
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.80   FLOW VELOCITY(FEET/SEC.) =  10.90
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   36.45
  RAINFALL INTENSITY(INCH/HR) =   1.15
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     474.83

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      368.78   36.91    1.142  0.30( 0.30) 0.98     484.1   11900.00
      2      474.83   36.45    1.150  0.30( 0.30) 1.00     620.7   11910.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      842.56   36.45    1.150  0.30( 0.30) 0.99    1098.7   11910.00
      2      838.95   36.91    1.142  0.30( 0.30) 0.99    1104.8   11900.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     842.56    Tc(MIN.) =    36.45
  EFFECTIVE AREA(ACRES) =    1098.72   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.104
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     881.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.29
  AVERAGE FLOW DEPTH(FEET) =   4.83   TRAVEL TIME(MIN.) =   2.54
  Tc(MIN.) =   38.99
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =   77.79
  EFFECTIVE AREA(ACRES) =   1206.19     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =     875.11
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.81

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.81   FLOW VELOCITY(FEET/SEC.) =   9.27
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.90
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.062
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     993.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.30
  AVERAGE FLOW DEPTH(FEET) =   4.88   TRAVEL TIME(MIN.) =   3.05
  Tc(MIN.) =   42.04
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  236.08
  EFFECTIVE AREA(ACRES) =   1550.46     AREA-AVERAGED Fm(INCH/HR) =   0.30
```

```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1065.30
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.05

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.05   FLOW VELOCITY(FEET/SEC.) =  10.48
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.009
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1117.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.59
  AVERAGE FLOW DEPTH(FEET) =   5.18   TRAVEL TIME(MIN.) =   4.50
  Tc(MIN.) =   46.55
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  105.37
  EFFECTIVE AREA(ACRES) =   1715.64     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    1096.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.13   FLOW VELOCITY(FEET/SEC.) =  10.55
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.65
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.973
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1227.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.25
  AVERAGE FLOW DEPTH(FEET) =   5.63   TRAVEL TIME(MIN.) =   3.00
  Tc(MIN.) =   49.54
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  262.88
  EFFECTIVE AREA(ACRES) =   2149.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    1304.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.80   FLOW VELOCITY(FEET/SEC.) =  10.41
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.08
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.933
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1380.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.29
  AVERAGE FLOW DEPTH(FEET) =   6.06   TRAVEL TIME(MIN.) =   4.46
  Tc(MIN.) =   54.01
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  151.26
  EFFECTIVE AREA(ACRES) =   2414.79     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    1378.20
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.06   FLOW VELOCITY(FEET/SEC.) =  10.28
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.91
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.900
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1404.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.54
  AVERAGE FLOW DEPTH(FEET) =   6.91   TRAVEL TIME(MIN.) =   3.75
  Tc(MIN.) =   57.76
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   52.68
  EFFECTIVE AREA(ACRES) =   2512.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    1378.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.85

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.85   FLOW VELOCITY(FEET/SEC.) =   8.50
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.874
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1392.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.84
  AVERAGE FLOW DEPTH(FEET) =   6.28   TRAVEL TIME(MIN.) =   3.68
  Tc(MIN.) =   61.44
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   27.81
  EFFECTIVE AREA(ACRES) =   2566.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    1378.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.25

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.25   FLOW VELOCITY(FEET/SEC.) =   9.81
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
================================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
================================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XX10.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      539.61   27.74  0.30( 0.30) 1.00     625.8   40130.00
      2      534.97   29.62  0.30( 0.30) 1.00     654.2   40100.00
    TOTAL AREA(ACRES) =      654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1378.20   61.44    0.874  0.30( 0.30) 1.00    2566.1   11910.00
      2     1372.61   61.93    0.872  0.30( 0.30) 1.00    2572.1   11900.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      539.61   27.74    1.333  0.30( 0.30) 1.00     625.8   40130.00
      2      534.97   29.62    1.277  0.30( 0.30) 1.00     654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1659.11   27.74    1.333  0.30( 0.30) 1.00    1784.4   40130.00
      2     1665.58   29.62    1.277  0.30( 0.30) 1.00    1891.2   40100.00
      3     1692.35   61.44    0.874  0.30( 0.30) 1.00    3220.3   11910.00
      4     1685.45   61.93    0.872  0.30( 0.30) 1.00    3226.4   11900.00
    TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1692.35  Tc(MIN.) =   61.439
```

```
  EFFECTIVE AREA(ACRES) =   3220.28  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.89
  CHANNEL FLOW THRU SUBAREA(CFS) =    1692.35
  FLOW VELOCITY(FEET/SEC.) =   8.32   FLOW DEPTH(FEET) =   7.89
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   63.42
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    4.27
  EFFECTIVE AREA(ACRES) =   3228.68   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    1692.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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



```
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.25
  EFFECTIVE AREA(ACRES) =   3229.18   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    1692.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   63.42
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.864
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.02
  EFFECTIVE AREA(ACRES) =   3231.18   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    1692.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
```

```
 CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.38
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.860
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.01      0.30     0.984     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1712.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.79
 AVERAGE FLOW DEPTH(FEET) =   6.38   TRAVEL TIME(MIN.) =   0.92
 Tc(MIN.) =   64.33
 SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   39.64
 EFFECTIVE AREA(ACRES) =   3309.19     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   6.34

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  6.34   FLOW VELOCITY(FEET/SEC.) =  11.76
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.33
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.860
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    0.86
 EFFECTIVE AREA(ACRES) =   3310.89   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
```



```
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.17
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       8.18      0.30     0.890     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1694.48
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.88
 AVERAGE FLOW DEPTH(FEET) =   8.17   TRAVEL TIME(MIN.) =   2.80
 Tc(MIN.) =   67.13
 SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    4.26
 EFFECTIVE AREA(ACRES) =   3319.07     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.16

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  8.16   FLOW VELOCITY(FEET/SEC.) =   7.88
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   67.13
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.846
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    1.23
 EFFECTIVE AREA(ACRES) =   3321.57   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    1692.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
```

>>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X10.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11616.90	44.00	0.30(0.30)	1.00	7599.6	11801.00
2	12892.03	58.27	0.30(0.30)	1.00	10804.1	11530.00
3	13438.67	64.50	0.30(0.30)	1.00	12758.4	11701.00
4	13628.71	66.49	0.30(0.30)	1.00	13434.8	11000.00
5	15265.02	77.21	0.30(0.30)	1.00	18437.6	11330.00
6	15528.32	79.96	0.30(0.30)	1.00	19719.4	10800.00
7	15902.78	82.44	0.30(0.30)	1.00	21039.3	11300.00
8	16140.10	85.75	0.30(0.30)	1.00	22434.4	10630.00
9	15918.65	96.09	0.30(0.30)	1.00	25763.3	11620.00
10	15868.02	97.88	0.30(0.30)	1.00	26303.3	11600.00
11	15636.46	103.56	0.30(0.30)	1.00	27777.9	11111.00
12	15531.21	106.40	0.30(0.30)	1.00	28370.9	10500.00
13	15352.00	110.70	0.30(0.30)	1.00	29161.8	10710.00
14	15201.33	113.32	0.30(0.30)	1.00	29547.2	10410.00
15	14857.39	118.86	0.30(0.30)	1.00	30260.6	10700.00
16	14446.26	125.40	0.30(0.30)	1.00	31040.6	10400.00
17	14178.55	129.18	0.30(0.30)	1.00	31414.4	10200.00
18	13775.63	136.31	0.30(0.30)	1.00	32035.9	10320.00
19	13411.70	140.89	0.30(0.30)	1.00	32196.8	10210.00
20	11422.66	173.20	0.30(0.30)	1.00	32916.6	10100.00

TOTAL AREA(ACRES) = 32916.6

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X10.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.30(0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.30(0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.30(0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.30(0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.30(0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.30(0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.30(0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.30(0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.30(0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.30(0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.30(0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.30(0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.30(0.29)	0.98	13237.1	12000.00

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.30(0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.30(0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.30(0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.30(0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.30(0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.30(0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.30(0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.30(0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.30(0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.30(0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.30(0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.30(0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.30(0.29)	0.98	13237.1	12000.00

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.812	0.30(0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.736	0.30(0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.730	0.30(0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.722	0.30(0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.709	0.30(0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.694	0.30(0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.680	0.30(0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.666	0.30(0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.657	0.30(0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.650	0.30(0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.648	0.30(0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.624	0.30(0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.608	0.30(0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11616.90	44.00	1.039	0.30(0.30)	1.00	7599.6	11801.00
2	12892.03	58.27	0.896	0.30(0.30)	1.00	10804.1	11530.00
3	13438.67	64.50	0.859	0.30(0.30)	1.00	12758.4	11701.00
4	13628.71	66.49	0.849	0.30(0.30)	1.00	13434.8	11000.00
5	15265.02	77.21	0.797	0.30(0.30)	1.00	18437.6	11330.00
6	15528.32	79.96	0.783	0.30(0.30)	1.00	19719.4	10800.00
7	15902.78	82.44	0.771	0.30(0.30)	1.00	21039.3	11300.00
8	16140.10	85.75	0.755	0.30(0.30)	1.00	22434.4	10630.00
9	15918.65	96.09	0.717	0.30(0.30)	1.00	25763.3	11620.00
10	15868.02	97.88	0.712	0.30(0.30)	1.00	26303.3	11600.00
11	15636.46	103.56	0.697	0.30(0.30)	1.00	27777.9	11111.00
12	15531.21	106.40	0.689	0.30(0.30)	1.00	28370.9	10500.00
13	15352.00	110.70	0.677	0.30(0.30)	1.00	29161.8	10710.00

14	15201.33	113.32	0.670	0.30(0.30)	1.00	29547.2	10410.00
15	14857.39	118.86	0.655	0.30(0.30)	1.00	30260.6	10700.00
16	14446.26	125.40	0.643	0.30(0.30)	1.00	31040.6	10400.00
17	14178.55	129.18	0.636	0.30(0.30)	1.00	31414.4	10200.00
18	13775.63	136.31	0.624	0.30(0.30)	1.00	32035.9	10320.00
19	13411.70	140.89	0.616	0.30(0.30)	1.00	32196.8	10210.00
20	11422.66	173.20	0.561	0.30(0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15427.07	44.00	1.039	0.30(0.30)	0.99	11287.3	11801.00
2	16968.09	58.27	0.896	0.30(0.30)	0.99	15687.3	11530.00
3	17671.53	64.50	0.859	0.30(0.30)	0.99	18163.7	11701.00
4	17916.64	66.49	0.849	0.30(0.30)	0.99	19007.1	11000.00
5	19259.36	74.17	0.812	0.30(0.30)	0.99	23236.5	12500.00
6	19795.97	77.21	0.797	0.30(0.30)	0.99	25040.6	11330.00
7	20125.68	79.96	0.783	0.30(0.30)	0.99	26674.0	10800.00
8	20559.80	82.44	0.771	0.30(0.30)	0.99	28309.7	11300.00
9	20877.05	85.75	0.755	0.30(0.30)	0.99	30127.8	10630.00
10	20887.39	89.61	0.736	0.30(0.30)	0.99	31863.6	12300.00
11	20907.71	91.31	0.730	0.30(0.30)	0.99	32717.7	12330.00
12	20928.11	94.56	0.722	0.30(0.30)	0.99	34317.4	12410.00
13	20924.67	96.09	0.717	0.30(0.30)	0.99	35043.8	11620.00
14	20908.49	97.88	0.712	0.30(0.30)	0.99	35860.1	11600.00
15	20878.88	99.26	0.709	0.30(0.30)	0.99	36427.0	12400.00
16	20749.46	103.56	0.697	0.30(0.30)	0.99	38094.4	11111.00
17	20720.29	104.67	0.694	0.30(0.30)	0.99	38466.4	12211.00
18	20666.45	106.40	0.689	0.30(0.30)	0.99	39044.4	10500.00
19	20552.81	109.58	0.680	0.30(0.30)	0.99	40028.3	12201.00
20	20487.24	110.70	0.677	0.30(0.30)	0.99	40339.9	10710.00
21	20291.57	113.32	0.670	0.30(0.30)	0.99	40976.1	10410.00
22	20182.47	114.70	0.666	0.30(0.30)	0.99	41285.1	12111.00
23	19946.92	118.21	0.657	0.30(0.30)	0.99	42116.5	12231.00
24	19897.64	118.86	0.655	0.30(0.30)	0.99	42260.3	10700.00
25	19726.52	121.09	0.650	0.30(0.30)	0.99	42733.2	12101.10
26	19615.75	122.44	0.648	0.30(0.30)	0.99	43005.4	12261.00
27	19345.12	125.40	0.643	0.30(0.30)	0.99	43528.1	10400.00
28	18969.58	129.18	0.636	0.30(0.30)	0.99	44118.3	10200.00
29	18362.79	136.31	0.624	0.30(0.30)	0.99	45148.8	10320.00
30	18349.32	136.43	0.624	0.30(0.30)	0.99	45160.4	12010.00
31	17833.67	140.89	0.616	0.30(0.30)	0.99	45374.3	10210.00
32	17382.11	145.50	0.608	0.30(0.30)	0.99	45536.7	12000.00
33	15034.06	173.20	0.561	0.30(0.30)	0.99	46153.7	10100.00

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 20928.11 Tc(MIN.) = 94.562
EFFECTIVE AREA(ACRES) = 34317.40 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

****
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.93
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.720
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.30	0.987	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20930.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.87
AVERAGE FLOW DEPTH(FEET) = 6.93 TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 95.25
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 5.48
EFFECTIVE AREA(ACRES) = 34331.77 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 20928.11
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.93 FLOW VELOCITY(FEET/SEC.) = 12.87
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

****
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15427.07	44.77	1.030	0.30(0.30)	0.99	11301.7	11801.00
2	16968.09	59.01	0.890	0.30(0.30)	0.99	15701.7	11530.00
3	17671.53	65.23	0.855	0.30(0.30)	0.99	18178.1	11701.00
4	17916.64	67.22	0.846	0.30(0.30)	0.99	19021.5	11000.00
5	19259.36	74.88	0.808	0.30(0.30)	0.99	23250.9	12500.00
6	19795.97	77.91	0.793	0.30(0.30)	0.99	25055.0	11330.00
7	20125.68	80.66	0.780	0.30(0.30)	0.99	26688.3	10800.00
8	20559.80	83.13	0.768	0.30(0.30)	0.99	28324.0	11300.00
9	20877.05	86.44	0.751	0.30(0.30)	0.99	30142.2	10630.00
10	20887.39	90.30	0.733	0.30(0.30)	0.99	31878.0	12300.00
11	20907.71	92.00	0.729	0.30(0.30)	0.99	32732.0	12330.00
12	20928.11	95.25	0.720	0.30(0.30)	0.99	34331.8	12410.00
13	20924.67	96.78	0.715	0.30(0.30)	0.99	35058.2	11620.00
14	20908.49	98.57	0.711	0.30(0.30)	0.99	35874.5	11600.00
15	20878.88	99.95	0.707	0.30(0.30)	0.99	36441.4	12400.00
16	20749.46	104.26	0.695	0.30(0.30)	0.99	38108.8	11111.00
17	20720.29	105.36	0.692	0.30(0.30)	0.99	38480.8	12211.00
18	20666.45	107.09	0.687	0.30(0.30)	0.99	39058.8	10500.00

19	20552.81	110.28	0.679	0.30(0.30)	0.99	40042.7	12201.00
20	20487.24	111.39	0.676	0.30(0.30)	0.99	40354.2	10710.00
21	20291.57	114.02	0.668	0.30(0.30)	0.99	40990.5	10410.00
22	20182.47	115.39	0.665	0.30(0.30)	0.99	41299.5	12111.00
23	19946.92	118.91	0.655	0.30(0.30)	0.99	42130.9	12231.00
24	19897.64	119.56	0.653	0.30(0.30)	0.99	42274.7	10700.00
25	19726.52	121.79	0.649	0.30(0.30)	0.99	42747.6	12101.10
26	19615.75	123.15	0.647	0.30(0.30)	0.99	43019.8	12261.00
27	19345.12	126.11	0.642	0.30(0.30)	0.99	43542.5	10400.00
28	18969.58	129.89	0.635	0.30(0.30)	0.99	44132.7	10200.00
29	18362.79	137.03	0.623	0.30(0.30)	0.99	45163.2	10320.00
30	18349.32	137.15	0.623	0.30(0.30)	0.99	45174.8	12010.00
31	17833.67	141.62	0.615	0.30(0.30)	0.99	45388.7	10210.00
32	17382.11	146.24	0.607	0.30(0.30)	0.99	45551.1	12000.00
33	15034.06	173.97	0.559	0.30(0.30)	0.99	46168.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1659.11	33.46	1.204	0.30(0.30)	1.00	1885.7	40130.00
2	1665.58	35.33	1.170	0.30(0.30)	1.00	1992.5	40100.00
3	1692.35	67.13	0.846	0.30(0.30)	1.00	3321.6	11910.00
4	1685.45	67.62	0.844	0.30(0.30)	1.00	3327.6	11900.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15929.33	33.46	1.204	0.30(0.30)	0.99	10331.7	40130.00
2	16173.79	35.33	1.170	0.30(0.30)	0.99	10911.0	40100.00
3	17100.60	44.77	1.030	0.30(0.30)	0.99	13688.7	11801.00
4	18653.61	59.01	0.890	0.30(0.30)	0.99	18684.0	11530.00
5	19362.29	65.23	0.855	0.30(0.30)	0.99	21420.3	11701.00
6	19597.81	67.13	0.846	0.30(0.30)	0.99	22304.6	11910.00
7	19607.73	67.22	0.846	0.30(0.30)	0.99	22344.2	11000.00
8	19672.87	67.62	0.844	0.30(0.30)	0.99	22572.1	11900.00
9	20834.75	74.88	0.808	0.30(0.30)	0.99	26578.5	12500.00
10	21325.43	77.91	0.793	0.30(0.30)	0.99	28382.6	11330.00
11	21613.42	80.66	0.780	0.30(0.30)	0.99	30016.0	10800.00
12	22010.08	83.13	0.768	0.30(0.30)	0.99	31651.7	11300.00
13	22277.11	86.44	0.751	0.30(0.30)	0.99	33469.8	10630.00
14	22230.94	90.30	0.733	0.30(0.30)	0.99	35205.6	12300.00
15	22236.95	92.00	0.729	0.30(0.30)	0.99	36059.7	12330.00
16	22229.80	95.25	0.720	0.30(0.30)	0.99	37659.4	12410.00
17	22213.45	96.78	0.715	0.30(0.30)	0.99	38385.8	11620.00
18	22182.07	98.57	0.711	0.30(0.30)	0.99	39202.1	11600.00
19	22140.86	99.95	0.707	0.30(0.30)	0.99	39769.0	12400.00
20	21974.99	104.26	0.695	0.30(0.30)	0.99	41436.4	11111.00
21	21936.47	105.36	0.692	0.30(0.30)	0.99	41808.4	12211.00
22	21868.00	107.09	0.687	0.30(0.30)	0.99	42386.4	10500.00
23	21727.41	110.28	0.679	0.30(0.30)	0.99	43370.3	12201.00
24	21652.42	111.39	0.676	0.30(0.30)	0.99	43681.9	10710.00
25	21434.54	114.02	0.668	0.30(0.30)	0.99	44318.1	10410.00
26	21313.77	115.39	0.665	0.30(0.30)	0.99	44627.1	12111.00
27	21048.44	118.91	0.655	0.30(0.30)	0.99	45458.5	12231.00
28	20993.68	119.56	0.653	0.30(0.30)	0.99	45602.3	10700.00
29	20809.33	121.79	0.649	0.30(0.30)	0.99	46075.2	12101.10

30	20691.36	123.15	0.647	0.30(0.30)	0.99	46347.4	12261.00
31	20404.98	126.11	0.642	0.30(0.30)	0.99	46870.1	10400.00
32	20009.38	129.89	0.635	0.30(0.30)	0.99	47460.3	10200.00
33	19364.66	137.03	0.623	0.30(0.30)	0.99	48490.9	10320.00
34	19350.52	137.15	0.623	0.30(0.30)	0.99	48502.4	12010.00
35	18811.18	141.62	0.615	0.30(0.30)	0.99	48716.3	10210.00
36	18335.06	146.24	0.607	0.30(0.30)	0.99	48878.7	12000.00
37	15839.68	173.97	0.559	0.30(0.30)	0.99	49495.7	10100.00

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22277.11 Tc(MIN.) = 86.444
EFFECTIVE AREA(ACRES) = 33469.80 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 86.44
EFFECTIVE AREA(ACRES) = 33469.80 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 22277.11

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15929.33	33.46	1.204	0.30(0.30)	0.99	10331.7	40130.00
2	16173.79	35.33	1.170	0.30(0.30)	0.99	10911.0	40100.00
3	17100.60	44.77	1.030	0.30(0.30)	0.99	13688.7	11801.00
4	18653.61	59.01	0.890	0.30(0.30)	0.99	18684.0	11530.00
5	19362.29	65.23	0.855	0.30(0.30)	0.99	21420.3	11701.00
6	19597.81	67.13	0.846	0.30(0.30)	0.99	22304.6	11910.00
7	19607.73	67.22	0.846	0.30(0.30)	0.99	22344.2	11000.00
8	19672.87	67.62	0.844	0.30(0.30)	0.99	22572.1	11900.00
9	20834.75	74.88	0.808	0.30(0.30)	0.99	26578.5	12500.00
10	21325.43	77.91	0.793	0.30(0.30)	0.99	28382.6	11330.00
11	21613.42	80.66	0.780	0.30(0.30)	0.99	30016.0	10800.00
12	22010.08	83.13	0.768	0.30(0.30)	0.99	31651.7	11300.00
13	22277.11	86.44	0.751	0.30(0.30)	0.99	33469.8	10630.00
14	22230.94	90.30	0.733	0.30(0.30)	0.99	35205.6	12300.00
15	22236.95	92.00	0.729	0.30(0.30)	0.99	36059.7	12330.00
16	22229.80	95.25	0.720	0.30(0.30)	0.99	37659.4	12410.00
17	22213.45	96.78	0.715	0.30(0.30)	0.99	38385.8	11620.00
18	22182.07	98.57	0.711	0.30(0.30)	0.99	39202.1	11600.00
19	22140.86	99.95	0.707	0.30(0.30)	0.99	39769.0	12400.00
20	21974.99	104.26	0.695	0.30(0.30)	0.99	41436.4	11111.00
21	21936.47	105.36	0.692	0.30(0.30)	0.99	41808.4	12211.00
22	21868.00	107.09	0.687	0.30(0.30)	0.99	42386.4	10500.00
23	21727.41	110.28	0.679	0.30(0.30)	0.99	43370.3	12201.00
24	21652.42	111.39	0.676	0.30(0.30)	0.99	43681.9	10710.00
25	21434.54	114.02	0.668	0.30(0.30)	0.99	44318.1	10410.00
26	21313.77	115.39	0.665	0.30(0.30)	0.99	44627.1	12111.00
27	21048.44	118.91	0.655	0.30(0.30)	0.99	45458.5	12231.00
28	20993.68	119.56	0.653	0.30(0.30)	0.99	45602.3	10700.00
29	20809.33	121.79	0.649	0.30(0.30)	0.99	46075.2	12101.10
30	20691.36	123.15	0.647	0.30(0.30)	0.99	46347.4	12261.00
31	20404.98	126.11	0.642	0.30(0.30)	0.99	46870.1	10400.00
32	20009.38	129.89	0.635	0.30(0.30)	0.99	47460.3	10200.00

33	19364.66	137.03	0.623	0.30(0.30)	0.99	48490.9	10320.00
34	19350.52	137.15	0.623	0.30(0.30)	0.99	48502.4	12010.00
35	18811.18	141.62	0.615	0.30(0.30)	0.99	48716.3	10210.00
36	18335.06	146.24	0.607	0.30(0.30)	0.99	48878.7	12000.00
37	15839.68	173.97	0.559	0.30(0.30)	0.99	49495.7	10100.00

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 10-YR EV JULY 2023 ROKAMOTO                                          *
 ************************************************************************

  FILE NAME: RU10EV26.DAT
  TIME/DATE OF STUDY: 13:40 07/05/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.912
   2)   10.00;  2.592
   3)   15.00;  1.893
   4)   20.00;  1.621
   5)   25.00;  1.412
   6)   30.00;  1.265
   7)   40.00;  1.084
   8)   50.00;  0.966
   9)   60.00;  0.879
  10)   90.00;  0.732
  11)  120.00;  0.650
  12)  180.00;  0.547
  13)  360.00;  0.406
  14) 1200.00;  0.179
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    16173.79   35.33  0.30( 0.30) 0.99   10911.0   40100.00
      2    17100.60   44.77  0.30( 0.30) 0.99   13688.7   11801.00
      3    18653.61   59.01  0.30( 0.30) 0.99   18684.0   11530.00
      4    19672.87   67.62  0.30( 0.30) 0.99   22572.1   11900.00
      5    21325.43   77.91  0.30( 0.30) 0.99   28382.6   11330.00
      6    22010.08   83.13  0.30( 0.30) 0.99   31651.7   11300.00
      7    22277.11   86.44  0.30( 0.30) 0.99   33469.8   10630.00
      8    22236.95   92.00  0.30( 0.30) 0.99   36059.7   12330.00
      9    22229.80   95.25  0.30( 0.30) 0.99   37659.4   12410.00
     10    22182.07   98.57  0.30( 0.30) 0.99   39202.1   11600.00
     11    21974.99  104.26  0.30( 0.30) 0.99   41436.4   11111.00
     12    21727.41  110.28  0.30( 0.30) 0.99   43370.3   12201.00
     13    21434.54  114.02  0.30( 0.30) 0.99   44318.1   10410.00
     14    21048.44  118.91  0.30( 0.30) 0.99   45458.5   12231.00
     15    20404.98  126.11  0.30( 0.30) 0.99   46870.1   10400.00
     16    20009.38  129.89  0.30( 0.30) 0.99   47460.3   10200.00
     17    19364.66  137.03  0.30( 0.30) 0.99   48490.9   10320.00
     18    18811.18  141.62  0.30( 0.30) 0.99   48716.3   10210.00
     19    18335.06  146.24  0.30( 0.30) 0.99   48878.7   12000.00
     20    15839.68  173.97  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    16173.79   35.33  0.30( 0.30) 0.99   10911.0   40100.00
      2    17100.60   44.77  0.30( 0.30) 0.99   13688.7   11801.00
      3    18653.61   59.01  0.30( 0.30) 0.99   18684.0   11530.00
      4    19672.87   67.62  0.30( 0.30) 0.99   22572.1   11900.00
      5    21325.43   77.91  0.30( 0.30) 0.99   28382.6   11330.00
      6    22010.08   83.13  0.30( 0.30) 0.99   31651.7   11300.00
      7    22277.11   86.44  0.30( 0.30) 0.99   33469.8   10630.00
      8    22236.95   92.00  0.30( 0.30) 0.99   36059.7   12330.00
      9    22229.80   95.25  0.30( 0.30) 0.99   37659.4   12410.00
     10    22182.07   98.57  0.30( 0.30) 0.99   39202.1   11600.00
     11    21974.99  104.26  0.30( 0.30) 0.99   41436.4   11111.00
     12    21727.41  110.28  0.30( 0.30) 0.99   43370.3   12201.00
     13    21434.54  114.02  0.30( 0.30) 0.99   44318.1   10410.00
```

```
    14    21048.44  118.91  0.30( 0.30) 0.99   45458.5   12231.00
    15    20404.98  126.11  0.30( 0.30) 0.99   46870.1   10400.00
    16    20009.38  129.89  0.30( 0.30) 0.99   47460.3   10200.00
    17    19364.66  137.03  0.30( 0.30) 0.99   48490.9   10320.00
    18    18811.18  141.62  0.30( 0.30) 0.99   48716.3   10210.00
    19    18335.06  146.24  0.30( 0.30) 0.99   48878.7   12000.00
    20    15839.68  173.97  0.30( 0.30) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.742
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22279.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.05
  AVERAGE FLOW DEPTH(FEET) =   6.03   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =   87.97
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    5.61
  EFFECTIVE AREA(ACRES) =  33483.91     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   22277.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.03   FLOW VELOCITY(FEET/SEC.) =  16.05
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
```



```
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O10EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       67.76   17.31  0.30( 0.29) 0.98       51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    16173.79   37.03    1.138  0.30( 0.30) 0.99    10925.1   40100.00
      2    17100.60   46.44    1.008  0.30( 0.30) 0.99    13702.8   11801.00
      3    18653.61   60.63    0.876  0.30( 0.30) 0.99    18698.1   11530.00
      4    19672.87   69.21    0.834  0.30( 0.30) 0.99    22586.2   11900.00
      5    21325.43   79.46    0.784  0.30( 0.30) 0.99    28396.7   11330.00
      6    22010.08   84.66    0.758  0.30( 0.30) 0.99    31665.8   11300.00
      7    22277.11   87.97    0.742  0.30( 0.30) 0.99    33483.9   10630.00
      8    22236.95   93.52    0.722  0.30( 0.30) 0.99    36073.8   12330.00
      9    22229.80   96.78    0.713  0.30( 0.30) 0.99    37673.5   12410.00
     10    22182.07  100.10    0.704  0.30( 0.30) 0.99    39216.2   11600.00
     11    21974.99  105.79    0.689  0.30( 0.30) 0.99    41450.6   11111.00
     12    21727.41  111.81    0.672  0.30( 0.30) 0.99    43384.4   12201.00
     13    21434.54  115.56    0.662  0.30( 0.30) 0.99    44332.2   10410.00
     14    21048.44  120.47    0.649  0.30( 0.30) 0.99    45472.6   12231.00
     15    20404.98  127.69    0.637  0.30( 0.30) 0.99    46884.2   10400.00
     16    20009.38  131.47    0.630  0.30( 0.30) 0.99    47474.4   10200.00
     17    19364.66  138.63    0.618  0.30( 0.30) 0.99    48505.0   10320.00
     18    18811.18  143.23    0.610  0.30( 0.30) 0.99    48730.4   10210.00
     19    18335.06  147.87    0.602  0.30( 0.30) 0.99    48892.8   12000.00
     20    15839.68  175.69    0.554  0.30( 0.30) 0.99    49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       67.76   17.31    1.767  0.30( 0.29) 0.98       51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    13297.29   17.31    1.767  0.30( 0.30) 0.99     5159.0     600.00
      2    16212.60   37.03    1.138  0.30( 0.30) 0.99    10976.2   40100.00
      3    17133.45   46.44    1.008  0.30( 0.30) 0.99    13753.9   11801.00
      4    18680.38   60.63    0.876  0.30( 0.30) 0.99    18749.2   11530.00
      5    19697.71   69.21    0.834  0.30( 0.30) 0.99    22637.3   11900.00
      6    21347.96   79.46    0.784  0.30( 0.30) 0.99    28447.8   11330.00
      7    22031.44   84.66    0.758  0.30( 0.30) 0.99    31716.9   11300.00
      8    22297.72   87.97    0.742  0.30( 0.30) 0.99    33535.0   10630.00
      9    22256.66   93.52    0.722  0.30( 0.30) 0.99    36124.9   12330.00
```

```
     10    22249.10   96.78    0.713  0.30( 0.30) 0.99   37724.6   12410.00
     11    22200.96  100.10    0.704  0.30( 0.30) 0.99   39267.3   11600.00
     12    21993.16  105.79    0.689  0.30( 0.30) 0.99   41501.7   11111.00
     13    21744.82  111.81    0.672  0.30( 0.30) 0.99   43435.5   12201.00
     14    21451.48  115.56    0.662  0.30( 0.30) 0.99   44383.3   10410.00
     15    21064.79  120.47    0.649  0.30( 0.30) 0.99   45523.8   12231.00
     16    20420.76  127.69    0.637  0.30( 0.30) 0.99   46935.3   10400.00
     17    20024.86  131.47    0.630  0.30( 0.30) 0.99   47525.5   10200.00
     18    19379.57  138.63    0.618  0.30( 0.30) 0.99   48556.1   10320.00
     19    18825.73  143.23    0.610  0.30( 0.30) 0.99   48781.5   10210.00
     20    18349.25  147.87    0.602  0.30( 0.30) 0.99   48943.9   12000.00
     21    15851.67  175.69    0.554  0.30( 0.30) 0.99   49560.9   10100.00
   TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    22297.72  Tc(MIN.) =   87.968
  EFFECTIVE AREA(ACRES) =  33535.01  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.47
  CHANNEL FLOW THRU SUBAREA(CFS) =   22297.72
  FLOW VELOCITY(FEET/SEC.) =  14.82   FLOW DEPTH(FEET) =   6.47
  TRAVEL TIME(MIN.) =   1.90   Tc(MIN.) =   89.87
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   89.87
  RAINFALL INTENSITY(INCH/HR) =   0.73
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33535.01
  TOTAL STREAM AREA(ACRES) =   49560.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   22297.72
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   14.64   RAINFALL INTENSITY(INCH/HR) =  1.94
  EFFECTIVE AREA(ACRES) =    71.80
  TOTAL AREA(ACRES) =   171.00        PEAK FLOW RATE(CFS) =    101.30
  AREA-AVERAGED Fm(INCH/HR) =   0.17  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.58
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.64
  RAINFALL INTENSITY(INCH/HR) =   1.94
  AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =     71.80
  TOTAL STREAM AREA(ACRES) =    171.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    101.30

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13297.29   19.59    1.643  0.30( 0.30) 0.99    5159.0     600.00
      1    16212.60   39.16    1.099  0.30( 0.30) 0.99   10976.2   40100.00
      1    17133.45   48.52    0.983  0.30( 0.30) 0.99   13753.9   11801.00
      1    18680.38   62.65    0.866  0.30( 0.30) 0.99   18749.2   11530.00
      1    19697.71   71.20    0.824  0.30( 0.30) 0.99   22637.3   11900.00
      1    21347.96   81.39    0.774  0.30( 0.30) 0.99   28447.8   11330.00
      1    22031.44   86.57    0.749  0.30( 0.30) 0.99   31716.9   11300.00
      1    22297.72   89.87    0.733  0.30( 0.30) 0.99   33535.0   10630.00
      1    22256.66   95.42    0.717  0.30( 0.30) 0.99   36124.9   12330.00
      1    22249.10   98.68    0.708  0.30( 0.30) 0.99   37724.6   12410.00
      1    22200.96  102.01    0.699  0.30( 0.30) 0.99   39267.3   11600.00
      1    21993.16  107.70    0.684  0.30( 0.30) 0.99   41501.7   11111.00
      1    21744.82  113.73    0.667  0.30( 0.30) 0.99   43435.5   12201.00
      1    21451.48  117.49    0.657  0.30( 0.30) 0.99   44383.3   10410.00
      1    21064.79  122.41    0.646  0.30( 0.30) 0.99   45523.8   12231.00
      1    20420.76  129.64    0.633  0.30( 0.30) 0.99   46935.3   10400.00
      1    20024.86  133.45    0.627  0.30( 0.30) 0.99   47525.5   10200.00
      1    19379.57  140.63    0.615  0.30( 0.30) 0.99   48556.1   10320.00
      1    18825.73  145.25    0.607  0.30( 0.30) 0.99   48781.5   10210.00
      1    18349.25  149.90    0.599  0.30( 0.30) 0.99   48943.9   12000.00
      1    15851.67  177.83    0.551  0.30( 0.30) 0.99   49560.9   10100.00
      2      101.30   14.64    1.943  0.30( 0.17) 0.58      71.8   12603.00
```

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12254.63	14.64	1.943	0.30(0.30)	0.99	3927.2	12603.00
2	13381.41	19.59	1.643	0.30(0.30)	0.99	5230.8	600.00
3	16265.58	39.16	1.099	0.30(0.30)	0.99	11048.0	40100.00
4	17179.79	48.52	0.983	0.30(0.30)	0.99	13825.7	11801.00
5	18720.00	62.65	0.866	0.30(0.30)	0.99	18821.0	11530.00
6	19734.93	71.20	0.824	0.30(0.30)	0.99	22709.1	11900.00
7	21382.33	81.39	0.774	0.30(0.30)	0.99	28519.6	11330.00
8	22064.35	86.57	0.749	0.30(0.30)	0.99	31788.7	11300.00
9	22329.70	89.87	0.733	0.30(0.30)	0.99	33606.8	10630.00
10	22287.76	95.42	0.717	0.30(0.30)	0.99	36196.7	12330.00
11	22279.69	98.68	0.708	0.30(0.30)	0.99	37796.4	12410.00
12	22231.03	102.01	0.699	0.30(0.30)	0.99	39339.1	11600.00
13	22022.34	107.70	0.684	0.30(0.30)	0.99	41573.5	11111.00
14	21773.06	113.73	0.667	0.30(0.30)	0.99	43507.3	12201.00
15	21479.13	117.49	0.657	0.30(0.30)	0.99	44455.1	10410.00
16	21091.80	122.41	0.646	0.30(0.30)	0.99	45595.6	12231.00
17	20447.06	129.64	0.633	0.30(0.30)	0.99	47007.1	10400.00
18	20050.79	133.45	0.627	0.30(0.30)	0.99	47597.3	10200.00
19	19404.79	140.63	0.615	0.30(0.30)	0.99	48627.9	10320.00
20	18850.50	145.25	0.607	0.30(0.30)	0.99	48853.3	10210.00
21	18373.56	149.90	0.599	0.30(0.30)	0.99	49015.7	12000.00
22	15873.23	177.83	0.551	0.30(0.30)	0.99	49632.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22329.70 Tc(MIN.) = 89.87
EFFECTIVE AREA(ACRES) = 33606.81 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49731.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.45 FEET.

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 89.87
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.733
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
PUBLIC PARK	B	1.30	0.30	0.850	56
COMMERCIAL	B	1.40	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	12.40	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.911

SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 7.56
EFFECTIVE AREA(ACRES) = 33625.11 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49750.2 PEAK FLOW RATE(CFS) = 22329.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 89.87
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.733
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	26.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 26.90 SUBAREA RUNOFF(CFS) = 10.47
EFFECTIVE AREA(ACRES) = 33652.01 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49777.1 PEAK FLOW RATE(CFS) = 22329.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 89.87
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.733
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.40	0.30	1.000	72
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69
PUBLIC PARK	B	0.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.70	0.30	1.000	72

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.968
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 1.31
EFFECTIVE AREA(ACRES) = 33655.31 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49780.4 PEAK FLOW RATE(CFS) = 22329.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    4.31
  EFFECTIVE AREA(ACRES) =  33666.11   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   22329.70
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   89.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.733
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    5.68
  EFFECTIVE AREA(ACRES) =  33680.71   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   22329.70
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.38
  CHANNEL FLOW THRU SUBAREA(CFS) =   22329.70
  FLOW VELOCITY(FEET/SEC.) =  12.77   FLOW DEPTH(FEET) =   7.38
  TRAVEL TIME(MIN.) =   1.15   Tc(MIN.) =   91.02
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   91.02
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    3.19
  EFFECTIVE AREA(ACRES) =  33688.51   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   22329.70
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   91.02
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    5.19
  EFFECTIVE AREA(ACRES) =  33701.31   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   22329.70
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.50
  CHANNEL FLOW THRU SUBAREA(CFS) =   22329.70
  FLOW VELOCITY(FEET/SEC.) =  14.78   FLOW DEPTH(FEET) =   6.50
  TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =   93.46
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   93.46
  RAINFALL INTENSITY(INCH/HR) =   0.72
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33701.31
  TOTAL STREAM AREA(ACRES) =   49826.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   22329.70

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   17.80   RAINFALL INTENSITY(INCH/HR) =  1.74
  EFFECTIVE AREA(ACRES) =   457.90
  TOTAL AREA(ACRES) =   553.80        PEAK FLOW RATE(CFS) =    538.10
  AREA-AVERAGED Fm(INCH/HR) =   0.26  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.85
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.80
  RAINFALL INTENSITY(INCH/HR) =   1.74
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
```



```
AREA-AVERAGED Ap =  0.85
EFFECTIVE STREAM AREA(ACRES) =     457.90
TOTAL STREAM AREA(ACRES) =     553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     538.10

** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    12254.63   19.06    1.672  0.30( 0.30) 0.99    4021.7   12603.00
    1    13381.41   23.88    1.459  0.30( 0.30) 0.99    5325.3     600.00
    1    16265.58   43.16    1.047  0.30( 0.30) 0.99   11142.5   40100.00
    1    17179.79   52.45    0.945  0.30( 0.30) 0.99   13920.2   11801.00
    1    18720.00   66.47    0.847  0.30( 0.30) 0.99   18915.5   11530.00
    1    19734.93   74.95    0.806  0.30( 0.30) 0.99   22803.6   11900.00
    1    21382.33   85.03    0.756  0.30( 0.30) 0.99   28614.1   11330.00
    1    22064.35   90.17    0.732  0.30( 0.30) 0.99   31883.2   11300.00
    1    22329.70   93.46    0.723  0.30( 0.30) 0.99   33701.3   10630.00
    1    22287.76   99.01    0.707  0.30( 0.30) 0.99   36291.2   12330.00
    1    22279.69  102.27    0.698  0.30( 0.30) 0.99   37890.9   12410.00
    1    22231.03  105.60    0.689  0.30( 0.30) 0.99   39433.6   11600.00
    1    22022.34  111.30    0.674  0.30( 0.30) 0.99   41668.0   11111.00
    1    21773.06  117.35    0.657  0.30( 0.30) 0.99   43601.8   12201.00
    1    21479.13  121.13    0.648  0.30( 0.30) 0.99   44549.6   10410.00
    1    21091.80  126.07    0.640  0.30( 0.30) 0.99   45690.1   12231.00
    1    20447.06  133.34    0.627  0.30( 0.30) 0.99   47101.6   10400.00
    1    20050.79  137.17    0.621  0.30( 0.30) 0.99   47691.8   10200.00
    1    19404.79  144.39    0.608  0.30( 0.30) 0.99   48722.4   10320.00
    1    18850.50  149.05    0.600  0.30( 0.30) 0.99   48947.8   10210.00
    1    18373.56  153.74    0.592  0.30( 0.30) 0.99   49110.2   12000.00
    1    15873.23  181.86    0.546  0.30( 0.30) 0.99   49727.2   10100.00
    2      538.10   17.80    1.741  0.30( 0.26) 0.85     457.9   12606.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    12551.90   17.80    1.741  0.30( 0.29) 0.97    4213.1   12606.00
    2    12767.84   19.06    1.672  0.30( 0.29) 0.97    4479.6   12603.00
    3    13817.48   23.88    1.459  0.30( 0.29) 0.98    5783.2     600.00
    4    16552.33   43.16    1.047  0.30( 0.30) 0.98   11600.4   40100.00
    5    17429.58   52.45    0.945  0.30( 0.30) 0.99   14378.1   11801.00
    6    18934.53   66.47    0.847  0.30( 0.30) 0.99   19373.4   11530.00
    7    19934.41   74.95    0.806  0.30( 0.30) 0.99   23261.5   11900.00
    8    21563.91   85.03    0.756  0.30( 0.30) 0.99   29072.0   11330.00
    9    22236.94   90.17    0.732  0.30( 0.30) 0.99   32341.1   11300.00
   10    22499.04   93.46    0.723  0.30( 0.30) 0.99   34159.2   10630.00
   11    22451.60   99.01    0.707  0.30( 0.30) 0.99   36749.1   12330.00
   12    22440.30  102.27    0.698  0.30( 0.30) 0.99   38348.8   12410.00
   13    22388.35  105.60    0.689  0.30( 0.30) 0.99   39891.5   11600.00
   14    22174.02  111.30    0.674  0.30( 0.30) 0.99   42125.9   11111.00
   15    21918.75  117.35    0.657  0.30( 0.30) 0.99   44059.7   12201.00
   16    21621.49  121.13    0.648  0.30( 0.30) 0.99   45007.5   10410.00
   17    21231.10  126.07    0.640  0.30( 0.30) 0.99   46148.0   12231.00
   18    20581.83  133.34    0.627  0.30( 0.30) 0.99   47559.5   10400.00
   19    20183.18  137.17    0.621  0.30( 0.30) 0.99   48149.7   10200.00
   20    19532.69  144.39    0.608  0.30( 0.30) 0.99   49180.3   10320.00
```

21	18975.50	149.05	0.600	0.30(0.30)	0.99	49405.7	10210.00
22	18495.65	153.74	0.592	0.30(0.30)	0.99	49568.1	12000.00
23	15978.47	181.86	0.546	0.30(0.30)	0.99	50185.1	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22499.04 Tc(MIN.) = 93.46
EFFECTIVE AREA(ACRES) = 34159.21 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 93.46
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.723
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.60	0.30	1.000	72
COMMERCIAL	B	1.10	0.30	0.100	56
PUBLIC PARK	B	0.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.666
SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 1.65
EFFECTIVE AREA(ACRES) = 34162.71 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50383.7 PEAK FLOW RATE(CFS) = 22499.04
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 93.46
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.723
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
AGRICULTURAL POOR COVER					
"ROW CROPS,STRAIGHT ROW"	B	1.50	0.30	1.000	81
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66

NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 8.50 SUBAREA RUNOFF(CFS) = 3.23
EFFECTIVE AREA(ACRES) = 34171.21 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50392.2 PEAK FLOW RATE(CFS) = 22499.04
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 93.46
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.723
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
PUBLIC PARK	B	3.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	3.90	0.30	1.000	72
PUBLIC PARK	B	5.90	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	9.10	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	20.60	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969
SUBAREA AREA(ACRES) = 46.50 SUBAREA RUNOFF(CFS) = 18.07
EFFECTIVE AREA(ACRES) = 34217.71 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50438.7 PEAK FLOW RATE(CFS) = 22499.04
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 50438.7 TC(MIN.) = 93.46
EFFECTIVE AREA(ACRES) = 34217.71 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
PEAK FLOW RATE(CFS) = 22499.04

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12551.90	17.80	1.741	0.30(0.29)	0.97	4271.6	12606.00
2	12767.84	19.06	1.672	0.30(0.29)	0.97	4538.1	12603.00
3	13817.48	23.88	1.459	0.30(0.29)	0.98	5841.7	600.00
4	16552.33	43.16	1.047	0.30(0.30)	0.98	11658.9	40100.00
5	17429.58	52.45	0.945	0.30(0.30)	0.99	14436.6	11801.00
6	18934.53	66.47	0.847	0.30(0.30)	0.99	19431.9	11530.00
7	19934.41	74.95	0.806	0.30(0.30)	0.99	23320.0	11900.00
8	21563.91	85.03	0.756	0.30(0.30)	0.99	29130.5	11330.00
9	22236.94	90.17	0.732	0.30(0.30)	0.99	32399.6	11300.00
10	22499.04	93.46	0.723	0.30(0.30)	0.99	34217.7	10630.00
11	22451.60	99.01	0.707	0.30(0.30)	0.99	36807.6	12330.00

12	22440.30	102.27	0.698	0.30(0.30)	0.99	38407.3	12410.00
13	22388.35	105.60	0.689	0.30(0.30)	0.99	39950.0	11600.00
14	22174.02	111.30	0.674	0.30(0.30)	0.99	42184.4	11111.00
15	21918.75	117.35	0.657	0.30(0.30)	0.99	44118.2	12201.00
16	21621.49	121.13	0.648	0.30(0.30)	0.99	45066.0	10410.00
17	21231.10	126.07	0.640	0.30(0.30)	0.99	46206.5	12231.00
18	20581.83	133.34	0.627	0.30(0.30)	0.99	47618.0	10400.00
19	20183.18	137.17	0.621	0.30(0.30)	0.99	48208.2	10200.00
20	19532.69	144.39	0.608	0.30(0.30)	0.99	49238.8	10320.00
21	18975.50	149.05	0.600	0.30(0.30)	0.99	49464.2	10210.00
22	18495.65	153.74	0.592	0.30(0.30)	0.99	49626.6	12000.00
23	15978.47	181.86	0.546	0.30(0.30)	0.99	50243.6	10100.00

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 10-YR EV JULY 2023 ROKAMOTO                                          *
 ****************************************************************************

  FILE NAME: RU10EV27.DAT
  TIME/DATE OF STUDY: 13:40 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.879
   2)   10.00;  2.574
   3)   15.00;  1.886
   4)   20.00;  1.614
   5)   25.00;  1.407
   6)   30.00;  1.261
   7)   40.00;  1.080
   8)   50.00;  0.962
   9)   60.00;  0.875
  10)   90.00;  0.728
  11)  120.00;  0.645
  12)  180.00;  0.542
  13)  360.00;  0.402
  14) 1200.00;  0.177
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    12767.84   19.06  0.30( 0.29) 0.97    4538.1   12603.00
      2    13817.48   23.88  0.30( 0.29) 0.98    5841.7     600.00
      3    16552.33   43.16  0.30( 0.30) 0.98   11658.9   40100.00
      4    17429.58   52.45  0.30( 0.30) 0.99   14436.6   11801.00
      5    18934.53   66.47  0.30( 0.30) 0.99   19431.9   11530.00
      6    19934.41   74.95  0.30( 0.30) 0.99   23320.0   11900.00
      7    21563.91   85.03  0.30( 0.30) 0.99   29130.5   11330.00
      8    22499.04   93.46  0.30( 0.30) 0.99   34217.7   10630.00
      9    22451.60   99.01  0.30( 0.30) 0.99   36807.6   12330.00
     10    22388.35  105.60  0.30( 0.30) 0.99   39950.0   11600.00
     11    22174.02  111.30  0.30( 0.30) 0.99   42184.4   11111.00
     12    21918.75  117.35  0.30( 0.30) 0.99   44118.2   12201.00
     13    21621.49  121.13  0.30( 0.30) 0.99   45066.0   10410.00
     14    21231.10  126.07  0.30( 0.30) 0.99   46206.5   12231.00
     15    20581.83  133.34  0.30( 0.30) 0.99   47618.0   10400.00
     16    20183.18  137.17  0.30( 0.30) 0.99   48208.2   10200.00
     17    19532.69  144.39  0.30( 0.30) 0.99   49238.8   10320.00
     18    18975.50  149.05  0.30( 0.30) 0.99   49464.2   10210.00
     19    18495.65  153.74  0.30( 0.30) 0.99   49626.6   12000.00
     20    15978.47  181.86  0.30( 0.30) 0.99   50243.6   10100.00
    TOTAL AREA(ACRES) =    50243.6

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    12767.84   19.06  0.30( 0.29) 0.97    4538.1   12603.00
      2    13817.48   23.88  0.30( 0.29) 0.98    5841.7     600.00
      3    16552.33   43.16  0.30( 0.30) 0.98   11658.9   40100.00
      4    17429.58   52.45  0.30( 0.30) 0.99   14436.6   11801.00
      5    18934.53   66.47  0.30( 0.30) 0.99   19431.9   11530.00
      6    19934.41   74.95  0.30( 0.30) 0.99   23320.0   11900.00
      7    21563.91   85.03  0.30( 0.30) 0.99   29130.5   11330.00
      8    22499.04   93.46  0.30( 0.30) 0.99   34217.7   10630.00
      9    22451.60   99.01  0.30( 0.30) 0.99   36807.6   12330.00
     10    22388.35  105.60  0.30( 0.30) 0.99   39950.0   11600.00
     11    22174.02  111.30  0.30( 0.30) 0.99   42184.4   11111.00
     12    21918.75  117.35  0.30( 0.30) 0.99   44118.2   12201.00
     13    21621.49  121.13  0.30( 0.30) 0.99   45066.0   10410.00
```

```
    14    21231.10  126.07  0.30( 0.30) 0.99   46206.5   12231.00
    15    20581.83  133.34  0.30( 0.30) 0.99   47618.0   10400.00
    16    20183.18  137.17  0.30( 0.30) 0.99   48208.2   10200.00
    17    19532.69  144.39  0.30( 0.30) 0.99   49238.8   10320.00
    18    18975.50  149.05  0.30( 0.30) 0.99   49464.2   10210.00
    19    18495.65  153.74  0.30( 0.30) 0.99   49626.6   12000.00
    20    15978.47  181.86  0.30( 0.30) 0.99   50243.6   10100.00
   TOTAL AREA(ACRES) =     50243.6

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.714
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22506.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.33
  AVERAGE FLOW DEPTH(FEET) =   6.72   TRAVEL TIME(MIN.) =   1.47
  Tc(MIN.) =   94.92
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   14.83
  EFFECTIVE AREA(ACRES) =  34253.81     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50279.7         PEAK FLOW RATE(CFS) =   22499.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.72

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.72   FLOW VELOCITY(FEET/SEC.) =  14.32
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.04
  CHANNEL FLOW THRU SUBAREA(CFS) =   22499.04
  FLOW VELOCITY(FEET/SEC.) =  13.59   FLOW DEPTH(FEET) =   7.04
  TRAVEL TIME(MIN.) =   0.18   Tc(MIN.) =   95.11
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   95.11
  RAINFALL INTENSITY(INCH/HR) =   0.71
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   34253.81
  TOTAL STREAM AREA(ACRES) =   50279.69
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   22499.04

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.036
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.25
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     10.25

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.58
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.797
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       26.94      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.70
 AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   2.72
 Tc(MIN.) =   16.63
 SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   36.31
 EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      45.15
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.71

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   5.53
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.75
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.651
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       14.73      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.11
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.34
 AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   2.70
 Tc(MIN.) =   19.32
 SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   17.91
 EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      58.63
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.78

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.78   FLOW VELOCITY(FEET/SEC.) =   6.49
```



```
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.29
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.536
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      105.64      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.47
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.47
 AVERAGE FLOW DEPTH(FEET) =   1.26   TRAVEL TIME(MIN.) =   2.56
 Tc(MIN.) =   21.89
 SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  117.51
 EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     171.16
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.55

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.55   FLOW VELOCITY(FEET/SEC.) =   8.41
 LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.06
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.426
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      127.13      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     235.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.24
```

AVERAGE FLOW DEPTH(FEET) = 2.03 TRAVEL TIME(MIN.) = 2.66
Tc(MIN.) = 24.54
SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 128.82
EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 284.73
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.25 FLOW VELOCITY(FEET/SEC.) = 8.74
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 24.54
RAINFALL INTENSITY(INCH/HR) = 1.43
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 281.00
TOTAL STREAM AREA(ACRES) = 281.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 284.73

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12767.84	21.07	1.570	0.30(0.29)	0.97	4574.2	12603.00
1	13817.48	25.83	1.383	0.30(0.29)	0.98	5877.8	600.00
1	16552.33	44.99	1.021	0.30(0.30)	0.98	11695.0	40100.00
1	17429.58	54.25	0.925	0.30(0.30)	0.99	14472.7	11801.00
1	18934.53	68.22	0.835	0.30(0.30)	0.99	19468.0	11530.00
1	19934.41	76.66	0.793	0.30(0.30)	0.99	23356.1	11900.00
1	21563.91	86.70	0.744	0.30(0.30)	0.99	29166.6	11330.00
1	22499.04	95.11	0.714	0.30(0.30)	0.99	34253.8	10630.00
1	22451.60	100.66	0.698	0.30(0.30)	0.99	36843.7	12330.00
1	22388.35	107.25	0.680	0.30(0.30)	0.99	39986.1	11600.00
1	22174.02	112.96	0.664	0.30(0.30)	0.99	42220.5	11111.00
1	21918.75	119.01	0.648	0.30(0.30)	0.99	44154.3	12201.00
1	21621.49	122.80	0.640	0.30(0.30)	0.99	45102.1	10410.00
1	21231.10	127.75	0.632	0.30(0.30)	0.99	46242.6	12231.00
1	20581.83	135.04	0.619	0.30(0.30)	0.99	47654.1	10400.00
1	20183.18	138.88	0.613	0.30(0.30)	0.99	48244.3	10200.00
1	19532.69	146.12	0.600	0.30(0.30)	0.99	49274.9	10320.00
1	18975.50	150.80	0.592	0.30(0.30)	0.99	49500.3	10210.00
1	18495.65	155.50	0.584	0.30(0.30)	0.99	49662.7	12000.00
1	15978.47	183.72	0.539	0.30(0.30)	0.99	50279.7	10100.00
2	284.73	24.54	1.426	0.30(0.30)	1.00	281.0	12710.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13043.49	21.07	1.570	0.30(0.29)	0.97	4815.4	12603.00
2	13819.50	24.54	1.426	0.30(0.29)	0.98	5807.7	12710.00
3	14091.35	25.83	1.383	0.30(0.29)	0.98	6158.8	600.00
4	16734.70	44.99	1.021	0.30(0.30)	0.98	11976.0	40100.00
5	17587.66	54.25	0.925	0.30(0.30)	0.99	14753.7	11801.00
6	19069.76	68.22	0.835	0.30(0.30)	0.99	19749.0	11530.00
7	20059.18	76.66	0.793	0.30(0.30)	0.99	23637.1	11900.00
8	21676.24	86.70	0.744	0.30(0.30)	0.99	29447.6	11330.00
9	22603.71	95.11	0.714	0.30(0.30)	0.99	34534.8	10630.00
10	22552.38	100.66	0.698	0.30(0.30)	0.99	37124.7	12330.00
11	22484.52	107.25	0.680	0.30(0.30)	0.99	40267.1	11600.00
12	22266.19	112.96	0.664	0.30(0.30)	0.99	42501.5	11111.00
13	22006.69	119.01	0.648	0.30(0.30)	0.99	44435.3	12201.00
14	21707.53	122.80	0.640	0.30(0.30)	0.99	45383.1	10410.00
15	21314.98	127.75	0.632	0.30(0.30)	0.99	46523.6	12231.00
16	20662.55	135.04	0.619	0.30(0.30)	0.99	47935.1	10400.00
17	20262.23	138.88	0.613	0.30(0.30)	0.99	48525.3	10200.00
18	19608.60	146.12	0.600	0.30(0.30)	0.99	49555.9	10320.00
19	19049.38	150.80	0.592	0.30(0.30)	0.99	49781.3	10210.00
20	18567.49	155.50	0.584	0.30(0.30)	0.99	49943.7	12000.00
21	16038.94	183.72	0.539	0.30(0.30)	0.99	50560.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22603.71 Tc(MIN.) = 95.11
EFFECTIVE AREA(ACRES) = 34534.81 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50560.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.75 FEET.

****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.18
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.705
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.30	0.30	1.000	65
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					

```
  "MEADOWS"                 B        0.50      0.30     1.000    70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22604.06
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.34
  AVERAGE FLOW DEPTH(FEET) =   7.18   TRAVEL TIME(MIN.) =   3.33
  Tc(MIN.) =   98.44
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    0.69
  EFFECTIVE AREA(ACRES) =  34536.51     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50562.4         PEAK FLOW RATE(CFS) =   22603.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.18   FLOW VELOCITY(FEET/SEC.) =  13.34
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.705
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  COMMERCIAL                 B        1.40      0.30     0.100    56
  COMMERCIAL                 B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =    6.64
  EFFECTIVE AREA(ACRES) =  34552.21   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50578.1       PEAK FLOW RATE(CFS) =   22603.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.705
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"           B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   22.62
  EFFECTIVE AREA(ACRES) =  34614.31   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50640.2       PEAK FLOW RATE(CFS) =   22603.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   98.44
  RAINFALL INTENSITY(INCH/HR) =   0.70
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   34614.31
  TOTAL STREAM AREA(ACRES) =   50640.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   22603.71

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   23.50   RAINFALL INTENSITY(INCH/HR) =  1.47
  EFFECTIVE AREA(ACRES) =   762.10
  TOTAL AREA(ACRES) =  1292.30        PEAK FLOW RATE(CFS) =    827.00
  AREA-AVERAGED Fm(INCH/HR) =   0.13  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.43
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.50
  RAINFALL INTENSITY(INCH/HR) =   1.47
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.43
```

EFFECTIVE STREAM AREA(ACRES) = 762.10
TOTAL STREAM AREA(ACRES) = 1292.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 827.00

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13043.49	25.10	1.404	0.30(0.29)	0.97	4894.9	12603.00
1	13819.50	28.49	1.305	0.30(0.29)	0.97	5887.2	12710.00
1	14091.35	29.75	1.268	0.30(0.29)	0.98	6238.3	600.00
1	16734.70	48.69	0.978	0.30(0.30)	0.98	12055.5	40100.00
1	17587.66	57.88	0.893	0.30(0.30)	0.99	14833.2	11801.00
1	19069.76	71.75	0.817	0.30(0.30)	0.99	19828.5	11530.00
1	20059.18	80.14	0.776	0.30(0.30)	0.99	23716.6	11900.00
1	21676.24	90.08	0.728	0.30(0.30)	0.99	29527.1	11330.00
1	22603.71	98.44	0.705	0.30(0.30)	0.99	34614.3	10630.00
1	22552.38	104.00	0.689	0.30(0.30)	0.99	37204.2	12330.00
1	22484.52	110.59	0.671	0.30(0.30)	0.99	40346.6	11600.00
1	22266.19	116.31	0.655	0.30(0.30)	0.99	42581.0	11111.00
1	22006.69	122.38	0.641	0.30(0.30)	0.99	44514.8	12201.00
1	21707.53	126.18	0.634	0.30(0.30)	0.99	45462.6	10410.00
1	21314.98	131.15	0.626	0.30(0.30)	0.99	46603.1	12231.00
1	20662.55	138.48	0.613	0.30(0.30)	0.99	48014.6	10400.00
1	20262.23	142.34	0.607	0.30(0.30)	0.99	48604.8	10200.00
1	19608.60	149.62	0.594	0.30(0.30)	0.99	49635.4	10320.00
1	19049.38	154.33	0.586	0.30(0.30)	0.99	49860.8	10210.00
1	18567.49	159.07	0.578	0.30(0.30)	0.99	50023.2	12000.00
1	16038.94	187.47	0.536	0.30(0.30)	0.99	50640.2	10100.00
2	827.00	23.50	1.469	0.30(0.13)	0.43	762.1	12720.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13753.21	23.50	1.469	0.30(0.27)	0.89	5345.6	12720.50
2	13830.42	25.10	1.404	0.30(0.27)	0.90	5657.0	12603.00
3	14545.23	28.49	1.305	0.30(0.27)	0.91	6649.3	12710.00
4	14794.48	29.75	1.268	0.30(0.27)	0.92	7000.4	600.00
5	17258.32	48.69	0.978	0.30(0.29)	0.95	12817.6	40100.00
6	18059.40	57.88	0.893	0.30(0.29)	0.96	15595.3	11801.00
7	19494.61	71.75	0.817	0.30(0.29)	0.97	20590.6	11530.00
8	20458.66	80.14	0.776	0.30(0.29)	0.97	24478.7	11900.00
9	22045.76	90.08	0.728	0.30(0.29)	0.98	30289.2	11330.00
10	22958.96	98.44	0.705	0.30(0.29)	0.98	35376.4	10630.00
11	22898.13	104.00	0.689	0.30(0.29)	0.98	37966.3	12330.00
12	22819.02	110.59	0.671	0.30(0.29)	0.98	41108.7	11600.00
13	22590.92	116.31	0.655	0.30(0.29)	0.98	43343.1	11111.00
14	22322.60	122.38	0.641	0.30(0.29)	0.98	45276.9	12201.00
15	22019.42	126.18	0.634	0.30(0.29)	0.98	46224.7	10410.00
16	21621.60	131.15	0.626	0.30(0.29)	0.98	47365.2	12231.00
17	20961.41	138.48	0.613	0.30(0.29)	0.98	48776.7	10400.00
18	20557.00	142.34	0.607	0.30(0.29)	0.98	49366.9	10200.00
19	19895.66	149.62	0.594	0.30(0.29)	0.98	50397.5	10320.00
20	19331.44	154.33	0.586	0.30(0.29)	0.98	50622.9	10210.00
21	18844.53	159.07	0.578	0.30(0.29)	0.98	50785.3	12000.00
22	16290.22	187.47	0.536	0.30(0.29)	0.98	51402.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 22958.96 Tc(MIN.) = 98.44
EFFECTIVE AREA(ACRES) = 35376.41 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51932.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12722.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.61
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.699
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
COMMERCIAL	B	0.40	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22959.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.63
AVERAGE FLOW DEPTH(FEET) = 9.61 TRAVEL TIME(MIN.) = 2.20
Tc(MIN.) = 100.64
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 0.60
EFFECTIVE AREA(ACRES) = 35377.81 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51933.9 PEAK FLOW RATE(CFS) = 22958.96
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.61 FLOW VELOCITY(FEET/SEC.) = 9.63
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.96 FEET.

****
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 100.64

```
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.699
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        0.50      0.30     0.100    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.60      0.30     1.000    86
 COMMERCIAL                 B        0.60      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.90      0.30     1.000    66
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
 SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    1.77
 EFFECTIVE AREA(ACRES) =  35382.01   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =    51938.1       PEAK FLOW RATE(CFS) =   22958.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =  100.64
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.699
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
 NATURAL FAIR COVER
 "MEADOWS"                  B        3.20      0.30     1.000    70
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       12.00      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =    7.25
 EFFECTIVE AREA(ACRES) =  35402.21   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =    51958.3       PEAK FLOW RATE(CFS) =   22958.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
```



```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.93
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.696
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
 PUBLIC PARK                B        0.50      0.30     0.850    56
 NATURAL FAIR COVER
 "GRASS"                    B        0.50      0.30     1.000    69
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
 COMMERCIAL                 B        1.50      0.30     0.100    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   22959.97
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.08
 AVERAGE FLOW DEPTH(FEET) =   7.93   TRAVEL TIME(MIN.) =   0.86
 Tc(MIN.) =  101.50
 SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    2.02
 EFFECTIVE AREA(ACRES) =  35406.81     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
 TOTAL AREA(ACRES) =    51962.9         PEAK FLOW RATE(CFS) =   22958.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.93

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.93   FLOW VELOCITY(FEET/SEC.) =  12.08
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =  101.50
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.696
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        2.50      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        2.60      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        2.80      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        5.40      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
 SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =    9.88
```

```
  EFFECTIVE AREA(ACRES) =  35432.81   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51988.9       PEAK FLOW RATE(CFS) =   22958.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  101.50
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.696
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   13.91
  EFFECTIVE AREA(ACRES) =  35471.81   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52027.9       PEAK FLOW RATE(CFS) =   22958.96
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  101.50
  RAINFALL INTENSITY(INCH/HR) =   0.70
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =   35471.81
  TOTAL STREAM AREA(ACRES) =   52027.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   22958.96

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.048
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.96
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =      9.96

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.73
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.742
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      32.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.24
  AVERAGE FLOW DEPTH(FEET) =   0.68   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   17.64
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   44.94
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      53.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   4.99
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.52      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.73
  AVERAGE FLOW DEPTH(FEET) =   1.22   TRAVEL TIME(MIN.) =   3.36
  Tc(MIN.) =   21.00
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =   68.17
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     115.07
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.43   FLOW VELOCITY(FEET/SEC.) =   6.26
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.84
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.389
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       64.05      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     146.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.97
  AVERAGE FLOW DEPTH(FEET) =   1.80   TRAVEL TIME(MIN.) =   4.62
  Tc(MIN.) =   25.62
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   62.77
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     161.23
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.90   FLOW VELOCITY(FEET/SEC.) =   6.14
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.265
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.02      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     172.53
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.37
  AVERAGE FLOW DEPTH(FEET) =   1.74   TRAVEL TIME(MIN.) =   4.25
  Tc(MIN.) =   29.87
  SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   22.59
  EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     165.44
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.70   FLOW VELOCITY(FEET/SEC.) =   7.27
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   29.87
  RAINFALL INTENSITY(INCH/HR) =   1.26
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     190.54
  TOTAL STREAM AREA(ACRES) =     190.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     165.44

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13753.21   27.13    1.345  0.30( 0.27) 0.90    5441.0   12720.50
      1    13830.42   28.72    1.298  0.30( 0.27) 0.90    5752.4   12603.00
      1    14545.23   32.05    1.224  0.30( 0.27) 0.91    6744.7   12710.00
      1    14794.48   33.29    1.202  0.30( 0.28) 0.92    7095.8     600.00
      1    17258.32   52.05    0.944  0.30( 0.29) 0.95   12913.0   40100.00
```

```
     1    18059.40   61.19    0.869  0.30( 0.29) 0.96   15690.7   11801.00
     1    19494.61   74.97    0.802  0.30( 0.29) 0.97   20686.0   11530.00
     1    20458.66   83.31    0.761  0.30( 0.29) 0.97   24574.1   11900.00
     1    22045.76   93.18    0.719  0.30( 0.29) 0.98   30384.6   11330.00
     1    22958.96  101.50    0.696  0.30( 0.29) 0.98   35471.8   10630.00
     1    22898.13  107.06    0.681  0.30( 0.29) 0.98   38061.7   12330.00
     1    22819.02  113.65    0.663  0.30( 0.29) 0.98   41204.1   11600.00
     1    22590.92  119.38    0.647  0.30( 0.29) 0.98   43438.5   11111.00
     1    22322.60  125.46    0.636  0.30( 0.29) 0.98   45372.3   12201.00
     1    22019.42  129.27    0.629  0.30( 0.29) 0.98   46320.1   10410.00
     1    21621.60  134.27    0.621  0.30( 0.29) 0.98   47460.6   12231.00
     1    20961.41  141.63    0.608  0.30( 0.29) 0.98   48872.1   10400.00
     1    20557.00  145.51    0.601  0.30( 0.29) 0.98   49462.3   10200.00
     1    19895.66  152.83    0.589  0.30( 0.29) 0.98   50492.9   10320.00
     1    19331.44  157.57    0.581  0.30( 0.29) 0.98   50718.3   10210.00
     1    18844.53  162.33    0.572  0.30( 0.29) 0.98   50880.7   12000.00
     1    16290.22  190.89    0.534  0.30( 0.29) 0.98   51497.7   10100.00
     2      165.44   29.87    1.265  0.30( 0.30) 1.00     190.5   12730.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13915.93   27.13    1.345  0.30( 0.27) 0.90    5614.0   12720.50
      2    13995.02   28.72    1.298  0.30( 0.27) 0.90    5935.6   12603.00
      3    14243.30   29.87    1.265  0.30( 0.27) 0.91    6286.4   12730.00
      4    14703.65   32.05    1.224  0.30( 0.27) 0.92    6935.2   12710.00
      5    14949.08   33.29    1.202  0.30( 0.28) 0.92    7286.4     600.00
      6    17368.79   52.05    0.944  0.30( 0.29) 0.95   13103.5   40100.00
      7    18157.00   61.19    0.869  0.30( 0.29) 0.96   15881.2   11801.00
      8    19580.63   74.97    0.802  0.30( 0.29) 0.97   20876.5   11530.00
      9    20537.68   83.31    0.761  0.30( 0.29) 0.97   24764.6   11900.00
     10    22117.64   93.18    0.719  0.30( 0.29) 0.98   30575.2   11330.00
     11    23026.90  101.50    0.696  0.30( 0.29) 0.98   35662.4   10630.00
     12    22963.43  107.06    0.681  0.30( 0.29) 0.98   38252.2   12330.00
     13    22881.19  113.65    0.663  0.30( 0.29) 0.98   41394.7   11600.00
     14    22650.38  119.38    0.647  0.30( 0.29) 0.98   43629.0   11111.00
     15    22380.16  125.46    0.636  0.30( 0.29) 0.98   45562.8   12201.00
     16    22075.85  129.27    0.629  0.30( 0.29) 0.98   46510.7   10410.00
     17    21676.56  134.27    0.621  0.30( 0.29) 0.98   47651.1   12231.00
     18    21014.20  141.63    0.608  0.30( 0.29) 0.98   49062.6   10400.00
     19    20608.65  145.51    0.601  0.30( 0.29) 0.98   49652.9   10200.00
     20    19945.16  152.83    0.589  0.30( 0.29) 0.98   50683.4   10320.00
     21    19379.54  157.57    0.581  0.30( 0.29) 0.98   50908.9   10210.00
     22    18891.23  162.33    0.572  0.30( 0.29) 0.98   51071.2   12000.00
     23    16330.27  190.89    0.534  0.30( 0.29) 0.98   51688.2   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   23026.90    Tc(MIN.) =   101.50
  EFFECTIVE AREA(ACRES) =   35662.35   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52218.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    252.10  DOWNSTREAM(FEET) =    240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0099
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.39
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.693
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.30      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  COMMERCIAL                 B        0.40      0.30     0.100    56
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  PUBLIC PARK                B        3.20      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.784
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   23028.21
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.54
  AVERAGE FLOW DEPTH(FEET) =   6.39   TRAVEL TIME(MIN.) =   1.31
  Tc(MIN.) =  102.81
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =    2.63
  EFFECTIVE AREA(ACRES) =  35668.75     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =    52224.8         PEAK FLOW RATE(CFS) =   23026.90
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.39   FLOW VELOCITY(FEET/SEC.) =  15.54
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.693
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        3.90      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        8.70      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       10.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 8.09
EFFECTIVE AREA(ACRES) = 35691.65 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52247.7 PEAK FLOW RATE(CFS) = 23026.90
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 52247.7 TC(MIN.) = 102.81
EFFECTIVE AREA(ACRES) = 35691.65 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.979
PEAK FLOW RATE(CFS) = 23026.90

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13915.93	28.69	1.299	0.30(0.27)	0.90	5643.3	12720.50
2	13995.02	30.27	1.256	0.30(0.27)	0.90	5964.9	12603.00
3	14243.30	31.42	1.235	0.30(0.27)	0.91	6315.7	12730.00
4	14703.65	33.58	1.196	0.30(0.27)	0.92	6964.5	12710.00
5	14949.08	34.81	1.174	0.30(0.28)	0.92	7315.7	600.00
6	17368.79	53.49	0.932	0.30(0.29)	0.95	13132.8	40100.00
7	18157.00	62.61	0.862	0.30(0.29)	0.96	15910.5	11801.00
8	19580.63	76.36	0.795	0.30(0.29)	0.97	20905.8	11530.00
9	20537.68	84.67	0.754	0.30(0.29)	0.97	24793.9	11900.00
10	22117.64	94.51	0.716	0.30(0.29)	0.98	30604.5	11330.00
11	23026.90	102.81	0.693	0.30(0.29)	0.98	35691.6	10630.00
12	22963.43	108.37	0.677	0.30(0.29)	0.98	38281.5	12330.00
13	22881.19	114.96	0.659	0.30(0.29)	0.98	41424.0	11600.00
14	22650.38	120.70	0.644	0.30(0.29)	0.98	43658.3	11111.00
15	22380.16	126.78	0.633	0.30(0.29)	0.98	45592.1	12201.00
16	22075.85	130.60	0.627	0.30(0.29)	0.98	46540.0	10410.00
17	21676.56	135.61	0.618	0.30(0.29)	0.98	47680.4	12231.00
18	21014.20	142.98	0.606	0.30(0.29)	0.98	49091.9	10400.00
19	20608.65	146.87	0.599	0.30(0.29)	0.98	49682.2	10200.00
20	19945.16	154.20	0.586	0.30(0.29)	0.98	50712.7	10320.00
21	19379.54	158.96	0.578	0.30(0.29)	0.98	50938.2	10210.00
22	18891.23	163.73	0.570	0.30(0.29)	0.98	51100.5	12000.00
23	16330.27	192.37	0.532	0.30(0.29)	0.98	51717.5	10100.00

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 10-YR EV JULY 2023 ROKAMOTO                                          *
 **********************************************************************

  FILE NAME: RU10EV28.DAT
  TIME/DATE OF STUDY: 13:40 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.879
   2)   10.00;  2.574
   3)   15.00;  1.886
   4)   20.00;  1.614
   5)   25.00;  1.407
   6)   30.00;  1.261
   7)   40.00;  1.080
   8)   50.00;  0.962
   9)   60.00;  0.875
  10)   90.00;  0.728
  11)  120.00;  0.645
  12)  180.00;  0.542
  13)  360.00;  0.402
  14) 1200.00;  0.177
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV27.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    14243.30   31.42  0.30( 0.27) 0.91    6315.7   12730.00
      2    14949.08   34.81  0.30( 0.28) 0.92    7315.7     600.00
      3    17368.79   53.49  0.30( 0.29) 0.95   13132.8   40100.00
      4    18157.00   62.61  0.30( 0.29) 0.96   15910.5   11801.00
      5    19580.63   76.36  0.30( 0.29) 0.97   20905.8   11530.00
      6    20537.68   84.67  0.30( 0.29) 0.97   24793.9   11900.00
      7    22117.64   94.51  0.30( 0.29) 0.98   30604.5   11330.00
      8    23026.90  102.81  0.30( 0.29) 0.98   35691.6   10630.00
      9    22963.43  108.37  0.30( 0.29) 0.98   38281.5   12330.00
     10    22881.19  114.96  0.30( 0.29) 0.98   41424.0   11600.00
     11    22650.38  120.70  0.30( 0.29) 0.98   43658.3   11111.00
     12    22380.16  126.78  0.30( 0.29) 0.98   45592.1   12201.00
     13    22075.85  130.60  0.30( 0.29) 0.98   46540.0   10410.00
     14    21676.56  135.61  0.30( 0.29) 0.98   47680.4   12231.00
     15    21014.20  142.98  0.30( 0.29) 0.98   49091.9   10400.00
     16    20608.65  146.87  0.30( 0.29) 0.98   49682.2   10200.00
     17    19945.16  154.20  0.30( 0.29) 0.98   50712.7   10320.00
     18    19379.54  158.96  0.30( 0.29) 0.98   50938.2   10210.00
     19    18891.23  163.73  0.30( 0.29) 0.98   51100.5   12000.00
     20    16330.27  192.37  0.30( 0.29) 0.98   51717.5   10100.00
    TOTAL AREA(ACRES) =    51717.5

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P501XX10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      250.32   13.83  0.30( 0.25) 0.84     172.7   50110.00
      2      263.89   18.66  0.30( 0.26) 0.85     223.2   50100.00
    TOTAL AREA(ACRES) =      223.2

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
```

```
     1      250.32   13.83  0.30( 0.25) 0.84     172.7   50110.00
     2      263.89   18.66  0.30( 0.26) 0.85     223.2   50100.00
   TOTAL AREA(ACRES) =       223.2

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      250.32   13.83    2.046  0.30( 0.25) 0.84     172.7   50110.00
      2      263.89   18.66    1.687  0.30( 0.26) 0.85     223.2   50100.00
  LONGEST FLOWPATH FROM NODE  50100.00 TO NODE  12800.00 =    4170.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14243.30   31.42    1.235  0.30( 0.27) 0.91    6315.7   12730.00
      2    14949.08   34.81    1.174  0.30( 0.28) 0.92    7315.7     600.00
      3    17368.79   53.49    0.932  0.30( 0.29) 0.95   13132.8   40100.00
      4    18157.00   62.61    0.862  0.30( 0.29) 0.96   15910.5   11801.00
      5    19580.63   76.36    0.795  0.30( 0.29) 0.97   20905.8   11530.00
      6    20537.68   84.67    0.754  0.30( 0.29) 0.97   24793.9   11900.00
      7    22117.64   94.51    0.716  0.30( 0.29) 0.98   30604.5   11330.00
      8    23026.90  102.81    0.693  0.30( 0.29) 0.98   35691.6   10630.00
      9    22963.43  108.37    0.677  0.30( 0.29) 0.98   38281.5   12330.00
     10    22881.19  114.96    0.659  0.30( 0.29) 0.98   41424.0   11600.00
     11    22650.38  120.70    0.644  0.30( 0.29) 0.98   43658.3   11111.00
     12    22380.16  126.78    0.633  0.30( 0.29) 0.98   45592.1   12201.00
     13    22075.85  130.60    0.627  0.30( 0.29) 0.98   46540.0   10410.00
     14    21676.56  135.61    0.618  0.30( 0.29) 0.98   47680.4   12231.00
     15    21014.20  142.98    0.606  0.30( 0.29) 0.98   49091.9   10400.00
     16    20608.65  146.87    0.599  0.30( 0.29) 0.98   49682.2   10200.00
     17    19945.16  154.20    0.586  0.30( 0.29) 0.98   50712.7   10320.00
     18    19379.54  158.96    0.578  0.30( 0.29) 0.98   50938.2   10210.00
     19    18891.23  163.73    0.570  0.30( 0.29) 0.98   51100.5   12000.00
     20    16330.27  192.37    0.532  0.30( 0.29) 0.98   51717.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11802.83   13.83    2.046  0.30( 0.27) 0.90    2953.8   50110.00
      2    12689.29   18.66    1.687  0.30( 0.27) 0.90    3974.5   50100.00
      3    14423.97   31.42    1.235  0.30( 0.27) 0.91    6538.9   12730.00
      4    15118.45   34.81    1.174  0.30( 0.28) 0.92    7538.9     600.00
      5    17493.49   53.49    0.932  0.30( 0.29) 0.95   13356.0   40100.00
      6    18268.91   62.61    0.862  0.30( 0.29) 0.96   16133.8   11801.00
      7    19680.12   76.36    0.795  0.30( 0.29) 0.97   21129.0   11530.00
      8    20629.66   84.67    0.754  0.30( 0.29) 0.97   25017.1   11900.00
      9    22202.51   94.51    0.716  0.30( 0.29) 0.98   30827.7   11330.00
     10    23107.53  102.81    0.693  0.30( 0.29) 0.98   35914.8   10630.00
     11    23041.23  108.37    0.677  0.30( 0.29) 0.98   38504.7   12330.00
     12    22955.62  114.96    0.659  0.30( 0.29) 0.98   41647.2   11600.00
     13    22722.02  120.70    0.644  0.30( 0.29) 0.98   43881.5   11111.00
```



```
     14    22449.88  126.78    0.633  0.30( 0.29) 0.98   45815.3   12201.00
     15    22144.37  130.60    0.627  0.30( 0.29) 0.98   46763.2   10410.00
     16    21743.49  135.61    0.618  0.30( 0.29) 0.98   47903.6   12231.00
     17    21078.80  142.98    0.606  0.30( 0.29) 0.98   49315.1   10400.00
     18    20672.02  146.87    0.599  0.30( 0.29) 0.98   49905.4   10200.00
     19    20006.20  154.20    0.586  0.30( 0.29) 0.98   50935.9   10320.00
     20    19439.08  158.96    0.578  0.30( 0.29) 0.98   51161.4   10210.00
     21    18949.26  163.73    0.570  0.30( 0.29) 0.98   51323.7   12000.00
     22    16381.38  192.37    0.532  0.30( 0.29) 0.98   51940.7   10100.00
   TOTAL AREA(ACRES) =     51940.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    23107.53  Tc(MIN.) =  102.805
  EFFECTIVE AREA(ACRES) =  35914.85  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51940.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    51940.7  TC(MIN.) =    102.81
  EFFECTIVE AREA(ACRES) =  35914.85  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.978
  PEAK FLOW RATE(CFS)   =   23107.53

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11802.83   13.83    2.046  0.30( 0.27) 0.90    2953.8   50110.00
      2    12689.29   18.66    1.687  0.30( 0.27) 0.90    3974.5   50100.00
      3    14423.97   31.42    1.235  0.30( 0.27) 0.91    6538.9   12730.00
      4    15118.45   34.81    1.174  0.30( 0.28) 0.92    7538.9     600.00
      5    17493.49   53.49    0.932  0.30( 0.29) 0.95   13356.0   40100.00
      6    18268.91   62.61    0.862  0.30( 0.29) 0.96   16133.8   11801.00
      7    19680.12   76.36    0.795  0.30( 0.29) 0.97   21129.0   11530.00
      8    20629.66   84.67    0.754  0.30( 0.29) 0.97   25017.1   11900.00
      9    22202.51   94.51    0.716  0.30( 0.29) 0.98   30827.7   11330.00
     10    23107.53  102.81    0.693  0.30( 0.29) 0.98   35914.8   10630.00
     11    23041.23  108.37    0.677  0.30( 0.29) 0.98   38504.7   12330.00
     12    22955.62  114.96    0.659  0.30( 0.29) 0.98   41647.2   11600.00
     13    22722.02  120.70    0.644  0.30( 0.29) 0.98   43881.5   11111.00
     14    22449.88  126.78    0.633  0.30( 0.29) 0.98   45815.3   12201.00
     15    22144.37  130.60    0.627  0.30( 0.29) 0.98   46763.2   10410.00
     16    21743.49  135.61    0.618  0.30( 0.29) 0.98   47903.6   12231.00
     17    21078.80  142.98    0.606  0.30( 0.29) 0.98   49315.1   10400.00
     18    20672.02  146.87    0.599  0.30( 0.29) 0.98   49905.4   10200.00
     19    20006.20  154.20    0.586  0.30( 0.29) 0.98   50935.9   10320.00
     20    19439.08  158.96    0.578  0.30( 0.29) 0.98   51161.4   10210.00
     21    18949.26  163.73    0.570  0.30( 0.29) 0.98   51323.7   12000.00
     22    16381.38  192.37    0.532  0.30( 0.29) 0.98   51940.7   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 10-YR EV JULY 2023 ROKAMOTO                                          *
 **********************************************************************

  FILE NAME: RU10EV29.DAT
  TIME/DATE OF STUDY: 13:40 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.854
   2)   10.00;  2.561
   3)   15.00;  1.881
   4)   20.00;  1.609
   5)   25.00;  1.403
   6)   30.00;  1.259
   7)   40.00;  1.077
   8)   50.00;  0.959
   9)   60.00;  0.872
  10)   90.00;  0.725
  11)  120.00;  0.641
  12)  180.00;  0.539
  13)  360.00;  0.399
  14) 1200.00;  0.175
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    11802.83   13.83  0.30( 0.27) 0.90    2953.8   50110.00
      2    12689.29   18.66  0.30( 0.27) 0.90    3974.5   50100.00
      3    15118.45   34.81  0.30( 0.28) 0.92    7538.9     600.00
      4    17493.49   53.49  0.30( 0.29) 0.95   13356.0   40100.00
      5    18268.91   62.61  0.30( 0.29) 0.96   16133.8   11801.00
      6    19680.12   76.36  0.30( 0.29) 0.97   21129.0   11530.00
      7    20629.66   84.67  0.30( 0.29) 0.97   25017.1   11900.00
      8    22202.51   94.51  0.30( 0.29) 0.98   30827.7   11330.00
      9    23107.53  102.81  0.30( 0.29) 0.98   35914.8   10630.00
     10    23041.23  108.37  0.30( 0.29) 0.98   38504.7   12330.00
     11    22955.62  114.96  0.30( 0.29) 0.98   41647.2   11600.00
     12    22722.02  120.70  0.30( 0.29) 0.98   43881.5   11111.00
     13    22449.88  126.78  0.30( 0.29) 0.98   45815.3   12201.00
     14    21743.49  135.61  0.30( 0.29) 0.98   47903.6   12231.00
     15    21078.80  142.98  0.30( 0.29) 0.98   49315.1   10400.00
     16    20672.02  146.87  0.30( 0.29) 0.98   49905.4   10200.00
     17    20006.20  154.20  0.30( 0.29) 0.98   50935.9   10320.00
     18    19439.08  158.96  0.30( 0.29) 0.98   51161.4   10210.00
     19    18949.26  163.73  0.30( 0.29) 0.98   51323.7   12000.00
     20    16381.38  192.37  0.30( 0.29) 0.98   51940.7   10100.00
    TOTAL AREA(ACRES) =    51940.7

******************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    11802.83   13.83  0.30( 0.27) 0.90    2953.8   50110.00
      2    12689.29   18.66  0.30( 0.27) 0.90    3974.5   50100.00
      3    15118.45   34.81  0.30( 0.28) 0.92    7538.9     600.00
      4    17493.49   53.49  0.30( 0.29) 0.95   13356.0   40100.00
      5    18268.91   62.61  0.30( 0.29) 0.96   16133.8   11801.00
      6    19680.12   76.36  0.30( 0.29) 0.97   21129.0   11530.00
      7    20629.66   84.67  0.30( 0.29) 0.97   25017.1   11900.00
      8    22202.51   94.51  0.30( 0.29) 0.98   30827.7   11330.00
      9    23107.53  102.81  0.30( 0.29) 0.98   35914.8   10630.00
     10    23041.23  108.37  0.30( 0.29) 0.98   38504.7   12330.00
     11    22955.62  114.96  0.30( 0.29) 0.98   41647.2   11600.00
     12    22722.02  120.70  0.30( 0.29) 0.98   43881.5   11111.00
     13    22449.88  126.78  0.30( 0.29) 0.98   45815.3   12201.00
```

```
     14    21743.49  135.61  0.30( 0.29) 0.98   47903.6   12231.00
     15    21078.80  142.98  0.30( 0.29) 0.98   49315.1   10400.00
     16    20672.02  146.87  0.30( 0.29) 0.98   49905.4   10200.00
     17    20006.20  154.20  0.30( 0.29) 0.98   50935.9   10320.00
     18    19439.08  158.96  0.30( 0.29) 0.98   51161.4   10210.00
     19    18949.26  163.73  0.30( 0.29) 0.98   51323.7   12000.00
     20    16381.38  192.37  0.30( 0.29) 0.98   51940.7   10100.00
    TOTAL AREA(ACRES) =     51940.7

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.89
  CHANNEL FLOW THRU SUBAREA(CFS) =   23107.53
  FLOW VELOCITY(FEET/SEC.) =  14.31   FLOW DEPTH(FEET) =   6.89
  TRAVEL TIME(MIN.) =   3.63   Tc(MIN.) =  106.44
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   11.94
  EFFECTIVE AREA(ACRES) =  35938.55   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51964.4       PEAK FLOW RATE(CFS) =   23107.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    1.36
  EFFECTIVE AREA(ACRES) =  35941.65   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51967.5       PEAK FLOW RATE(CFS) =   23107.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    3.58
  EFFECTIVE AREA(ACRES) =  35950.85   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51976.7       PEAK FLOW RATE(CFS) =   23107.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   13.31
  EFFECTIVE AREA(ACRES) =  35986.35   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52012.2       PEAK FLOW RATE(CFS) =   23107.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  106.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   19.13
  EFFECTIVE AREA(ACRES) =  36037.85   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52063.7       PEAK FLOW RATE(CFS) =   23107.53
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.76
  CHANNEL FLOW THRU SUBAREA(CFS) =   23107.53
  FLOW VELOCITY(FEET/SEC.) =  14.61   FLOW DEPTH(FEET) =   6.76
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  106.58
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P503XX10.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     1147.25   19.67  0.30( 0.22) 0.74    1015.8   50320.00
      2     1155.57   20.90  0.30( 0.22) 0.74    1063.4   50240.00
      3     1161.70   21.75  0.30( 0.22) 0.74    1095.6   50330.00
      4     1155.23   24.73  0.30( 0.22) 0.74    1192.0   50280.00
      5     1146.67   25.95  0.30( 0.22) 0.74    1221.5   50300.00
      6     1124.24   27.59  0.30( 0.22) 0.74    1248.7   50220.00
      7     1033.51   32.98  0.30( 0.22) 0.74    1294.8   50260.00
      8      999.73   34.83  0.30( 0.22) 0.74    1298.6   50200.00
    TOTAL AREA(ACRES) =     1298.6

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    11802.83   18.60    1.685  0.30( 0.27) 0.90    3076.8   50110.00
      2    12689.29   23.31    1.473  0.30( 0.27) 0.90    4097.5   50100.00
      3    15118.45   39.18    1.092  0.30( 0.27) 0.92    7661.9     600.00
      4    17493.49   57.64    0.893  0.30( 0.28) 0.95   13479.0   40100.00
      5    18268.91   66.70    0.839  0.30( 0.29) 0.96   16256.8   11801.00
      6    19680.12   80.35    0.772  0.30( 0.29) 0.97   21252.0   11530.00
      7    20629.66   88.59    0.732  0.30( 0.29) 0.97   25140.1   11900.00
      8    22202.51   98.33    0.702  0.30( 0.29) 0.97   30950.7   11330.00
      9    23107.53  106.58    0.679  0.30( 0.29) 0.98   36037.8   10630.00
     10    23041.23  112.15    0.663  0.30( 0.29) 0.98   38627.7   12330.00
     11    22955.62  118.75    0.645  0.30( 0.29) 0.98   41770.2   11600.00
     12    22722.02  124.50    0.633  0.30( 0.29) 0.98   44004.5   11111.00
     13    22449.88  130.60    0.623  0.30( 0.29) 0.98   45938.3   12201.00
     14    21743.49  139.46    0.608  0.30( 0.29) 0.98   48026.6   12231.00
     15    21078.80  146.87    0.595  0.30( 0.29) 0.98   49438.1   10400.00
     16    20672.02  150.79    0.589  0.30( 0.29) 0.98   50028.4   10200.00
     17    20006.20  158.16    0.576  0.30( 0.29) 0.98   51058.9   10320.00
     18    19439.08  162.96    0.568  0.30( 0.29) 0.98   51284.4   10210.00
     19    18949.26  167.77    0.560  0.30( 0.29) 0.98   51446.7   12000.00
     20    16381.38  196.62    0.526  0.30( 0.29) 0.98   52063.7   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1147.25   19.67    1.627  0.30( 0.22) 0.74    1015.8   50320.00
      2     1155.57   20.90    1.572  0.30( 0.22) 0.74    1063.4   50240.00
      3     1161.70   21.75    1.537  0.30( 0.22) 0.74    1095.6   50330.00
      4     1155.23   24.73    1.414  0.30( 0.22) 0.74    1192.0   50280.00
      5     1146.67   25.95    1.376  0.30( 0.22) 0.74    1221.5   50300.00
```

```
     6     1124.24   27.59    1.328  0.30( 0.22) 0.74    1248.7   50220.00
     7     1033.51   32.98    1.205  0.30( 0.22) 0.74    1294.8   50260.00
     8      999.73   34.83    1.171  0.30( 0.22) 0.74    1298.6   50200.00
  LONGEST FLOWPATH FROM NODE  50220.00 TO NODE  12902.00 =   17597.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12932.62   18.60    1.685  0.30( 0.26) 0.86    4037.3   50110.00
      2    13151.67   19.67    1.627  0.30( 0.26) 0.86    4324.7   50320.00
      3    13390.14   20.90    1.572  0.30( 0.26) 0.86    4637.3   50240.00
      4    13557.65   21.75    1.537  0.30( 0.26) 0.86    4855.3   50330.00
      5    13847.61   23.31    1.473  0.30( 0.26) 0.87    5243.5   50100.00
      6    14062.23   24.73    1.414  0.30( 0.26) 0.87    5608.9   50280.00
      7    14240.69   25.95    1.376  0.30( 0.26) 0.87    5912.8   50300.00
      8    14468.99   27.59    1.328  0.30( 0.26) 0.87    6308.0   50220.00
      9    15203.53   32.98    1.205  0.30( 0.26) 0.88    7564.9   50260.00
     10    15452.89   34.83    1.171  0.30( 0.27) 0.88    7984.3   50200.00
     11    16034.84   39.18    1.092  0.30( 0.27) 0.89    8960.5     600.00
     12    18199.66   57.64    0.893  0.30( 0.28) 0.93   14777.6   40100.00
     13    18918.83   66.70    0.839  0.30( 0.28) 0.94   17555.3   11801.00
     14    20259.57   80.35    0.772  0.30( 0.29) 0.95   22550.6   11530.00
     15    21166.53   88.59    0.732  0.30( 0.29) 0.96   26438.7   11900.00
     16    22707.53   98.33    0.702  0.30( 0.29) 0.97   32249.3   11330.00
     17    23588.22  106.58    0.679  0.30( 0.29) 0.97   37336.4   10630.00
     18    23505.47  112.15    0.663  0.30( 0.29) 0.97   39926.3   12330.00
     19    23400.40  118.75    0.645  0.30( 0.29) 0.97   43068.8   11600.00
     20    23155.04  124.50    0.633  0.30( 0.29) 0.97   45303.1   11111.00
     21    22871.97  130.60    0.623  0.30( 0.29) 0.97   47236.9   12201.00
     22    22149.70  139.46    0.608  0.30( 0.29) 0.97   49325.2   12231.00
     23    21471.73  146.87    0.595  0.30( 0.29) 0.97   50736.7   10400.00
     24    21057.93  150.79    0.589  0.30( 0.29) 0.97   51327.0   10200.00
     25    20378.90  158.16    0.576  0.30( 0.29) 0.97   52357.5   10320.00
     26    19803.19  162.96    0.568  0.30( 0.29) 0.97   52583.0   10210.00
     27    19304.75  167.77    0.560  0.30( 0.29) 0.97   52745.3   12000.00
     28    16701.33  196.62    0.526  0.30( 0.29) 0.98   53362.3   10100.00
    TOTAL AREA(ACRES) =     53362.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    23588.22  Tc(MIN.) =  106.578
  EFFECTIVE AREA(ACRES) =  37336.45  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =    53362.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.04
  CHANNEL FLOW THRU SUBAREA(CFS) =   23588.22
  FLOW VELOCITY(FEET/SEC.) =   7.53   FLOW DEPTH(FEET) =  12.04
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =  108.56
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P504XX10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1       96.33   13.93  0.30( 0.28) 0.94      70.7   50400.00
    TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12932.62   21.01    1.567  0.30( 0.26) 0.86    4037.3   50110.00
      2    13151.67   22.07    1.524  0.30( 0.26) 0.86    4324.7   50320.00
      3    13390.14   23.28    1.474  0.30( 0.26) 0.86    4637.3   50240.00
      4    13557.65   24.12    1.439  0.30( 0.26) 0.86    4855.3   50330.00
      5    13847.61   25.66    1.384  0.30( 0.26) 0.87    5243.5   50100.00
      6    14062.23   27.07    1.343  0.30( 0.26) 0.87    5608.9   50280.00
      7    14240.69   28.29    1.308  0.30( 0.26) 0.87    5912.8   50300.00
      8    14468.99   29.91    1.262  0.30( 0.26) 0.87    6308.0   50220.00
      9    15203.53   35.26    1.163  0.30( 0.26) 0.88    7564.9   50260.00
     10    15452.89   37.10    1.130  0.30( 0.27) 0.88    7984.3   50200.00
     11    16034.84   41.42    1.060  0.30( 0.27) 0.89    8960.5     600.00
     12    18199.66   59.79    0.874  0.30( 0.28) 0.93   14777.6   40100.00
     13    18918.83   68.83    0.829  0.30( 0.28) 0.94   17555.3   11801.00
     14    20259.57   82.43    0.762  0.30( 0.29) 0.95   22550.6   11530.00
     15    21166.53   90.64    0.723  0.30( 0.29) 0.96   26438.7   11900.00
     16    22707.53  100.34    0.696  0.30( 0.29) 0.97   32249.3   11330.00
     17    23588.22  108.56    0.673  0.30( 0.29) 0.97   37336.4   10630.00
     18    23505.47  114.13    0.657  0.30( 0.29) 0.97   39926.3   12330.00
     19    23400.40  120.73    0.640  0.30( 0.29) 0.97   43068.8   11600.00
     20    23155.04  126.49    0.630  0.30( 0.29) 0.97   45303.1   11111.00
     21    22871.97  132.60    0.620  0.30( 0.29) 0.97   47236.9   12201.00
     22    22149.70  141.48    0.604  0.30( 0.29) 0.97   49325.2   12231.00
     23    21471.73  148.91    0.592  0.30( 0.29) 0.97   50736.7   10400.00
     24    21057.93  152.84    0.585  0.30( 0.29) 0.97   51327.0   10200.00
     25    20378.90  160.24    0.573  0.30( 0.29) 0.97   52357.5   10320.00
     26    19803.19  165.06    0.564  0.30( 0.29) 0.97   52583.0   10210.00
     27    19304.75  169.88    0.556  0.30( 0.29) 0.97   52745.3   12000.00
     28    16701.33  198.83    0.524  0.30( 0.29) 0.98   53362.3   10100.00
```

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	96.33	13.93	2.027	0.30(0.28)	0.94	70.7	50400.00

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11677.97	13.93	2.027	0.30(0.26)	0.86	2746.9	50400.00
2	13003.59	21.01	1.567	0.30(0.26)	0.86	4108.0	50110.00
3	13220.24	22.07	1.524	0.30(0.26)	0.86	4395.4	50320.00
4	13455.96	23.28	1.474	0.30(0.26)	0.86	4708.0	50240.00
5	13621.54	24.12	1.439	0.30(0.26)	0.86	4926.0	50330.00
6	13908.45	25.66	1.384	0.30(0.26)	0.87	5314.2	50100.00
7	14120.83	27.07	1.343	0.30(0.26)	0.87	5679.6	50280.00
8	14297.37	28.29	1.308	0.30(0.26)	0.87	5983.5	50300.00
9	14523.08	29.91	1.262	0.30(0.26)	0.87	6378.7	50220.00
10	15252.19	35.26	1.163	0.30(0.26)	0.88	7635.6	50260.00
11	15499.71	37.10	1.130	0.30(0.27)	0.88	8055.0	50200.00
12	16077.82	41.42	1.060	0.30(0.27)	0.89	9031.2	600.00
13	18232.35	59.79	0.874	0.30(0.28)	0.93	14848.3	40100.00
14	18949.04	68.83	0.829	0.30(0.28)	0.94	17626.0	11801.00
15	20286.10	82.43	0.762	0.30(0.29)	0.95	22621.3	11530.00
16	21190.92	90.64	0.723	0.30(0.29)	0.96	26509.4	11900.00
17	22730.42	100.34	0.696	0.30(0.29)	0.97	32320.0	11330.00
18	23609.83	108.56	0.673	0.30(0.29)	0.97	37407.1	10630.00
19	23526.23	114.13	0.657	0.30(0.29)	0.97	39997.0	12330.00
20	23420.18	120.73	0.640	0.30(0.29)	0.97	43139.5	11600.00
21	23174.28	126.49	0.630	0.30(0.29)	0.97	45373.8	11111.00
22	22890.64	132.60	0.620	0.30(0.29)	0.97	47307.6	12201.00
23	22167.54	141.48	0.604	0.30(0.29)	0.97	49395.9	12231.00
24	21488.87	148.91	0.592	0.30(0.29)	0.97	50807.4	10400.00
25	21074.70	152.84	0.585	0.30(0.29)	0.97	51397.7	10200.00
26	20394.98	160.24	0.573	0.30(0.29)	0.97	52428.2	10320.00
27	19818.81	165.06	0.564	0.30(0.29)	0.97	52653.7	10210.00
28	19319.92	169.88	0.556	0.30(0.29)	0.97	52816.0	12000.00
29	16714.75	198.83	0.524	0.30(0.29)	0.98	53433.0	10100.00

TOTAL AREA(ACRES) = 53433.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 23609.83 Tc(MIN.) = 108.559
EFFECTIVE AREA(ACRES) = 37407.15 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53433.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.54
CHANNEL FLOW THRU SUBAREA(CFS) = 23609.83
FLOW VELOCITY(FEET/SEC.) = 7.94 FLOW DEPTH(FEET) = 11.54
TRAVEL TIME(MIN.) = 1.61 Tc(MIN.) = 110.17
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 110.17
RAINFALL INTENSITY(INCH/HR) = 0.67
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 37407.15
TOTAL STREAM AREA(ACRES) = 53433.03
PEAK FLOW RATE(CFS) AT CONFLUENCE = 23609.83

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 20.59 RAINFALL INTENSITY(INCH/HR) = 1.58
EFFECTIVE AREA(ACRES) = 30.00
TOTAL AREA(ACRES) = 213.70 PEAK FLOW RATE(CFS) = 35.40
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 20.59
RAINFALL INTENSITY(INCH/HR) = 1.58
AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
EFFECTIVE STREAM AREA(ACRES) = 30.00
TOTAL STREAM AREA(ACRES) = 213.70

PEAK FLOW RATE(CFS) AT CONFLUENCE = 35.40

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11677.97	15.95	1.829	0.30(0.26)	0.86	2746.9	50400.00
1	13003.59	22.97	1.487	0.30(0.26)	0.86	4108.0	50110.00
1	13220.24	24.01	1.444	0.30(0.26)	0.86	4395.4	50320.00
1	13455.96	25.21	1.397	0.30(0.26)	0.86	4708.0	50240.00
1	13621.54	26.05	1.373	0.30(0.26)	0.86	4926.0	50330.00
1	13908.45	27.58	1.329	0.30(0.26)	0.87	5314.2	50100.00
1	14120.83	28.98	1.288	0.30(0.26)	0.87	5679.6	50280.00
1	14297.37	30.18	1.256	0.30(0.26)	0.87	5983.5	50300.00
1	14523.08	31.80	1.226	0.30(0.26)	0.87	6378.7	50220.00
1	15252.19	37.12	1.129	0.30(0.26)	0.88	7635.6	50260.00
1	15499.71	38.95	1.096	0.30(0.27)	0.88	8055.0	50200.00
1	16077.82	43.24	1.039	0.30(0.27)	0.89	9031.2	600.00
1	18232.35	61.54	0.864	0.30(0.28)	0.93	14848.3	40100.00
1	18949.04	70.55	0.820	0.30(0.28)	0.94	17626.0	11801.00
1	20286.10	84.12	0.754	0.30(0.29)	0.95	22621.3	11530.00
1	21190.92	92.31	0.719	0.30(0.29)	0.96	26509.4	11900.00
1	22730.42	101.97	0.691	0.30(0.29)	0.97	32320.0	11330.00
1	23609.83	110.17	0.669	0.30(0.29)	0.97	37407.1	10630.00
1	23526.23	115.74	0.653	0.30(0.29)	0.97	39997.0	12330.00
1	23420.18	122.35	0.637	0.30(0.29)	0.97	43139.5	11600.00
1	23174.28	128.11	0.627	0.30(0.29)	0.97	45373.8	11111.00
1	22890.64	134.22	0.617	0.30(0.29)	0.97	47307.6	12201.00
1	22167.54	143.12	0.602	0.30(0.29)	0.97	49395.9	12231.00
1	21488.87	150.57	0.589	0.30(0.29)	0.97	50807.4	10400.00
1	21074.70	154.51	0.582	0.30(0.29)	0.97	51397.7	10200.00
1	20394.98	161.93	0.570	0.30(0.29)	0.97	52428.2	10320.00
1	19818.81	166.76	0.562	0.30(0.29)	0.97	52653.7	10210.00
1	19319.92	171.60	0.553	0.30(0.29)	0.97	52816.0	12000.00
1	16714.75	200.63	0.523	0.30(0.29)	0.98	53433.0	10100.00
2	35.40	20.59	1.585	0.30(0.13)	0.43	30.0	12904.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11710.01	15.95	1.829	0.30(0.26)	0.86	2770.2	50400.00
2	12589.85	20.59	1.585	0.30(0.26)	0.86	3676.8	12904.00
3	13036.61	22.97	1.487	0.30(0.26)	0.86	4138.0	50110.00
4	13252.21	24.01	1.444	0.30(0.26)	0.86	4425.4	50320.00
5	13486.79	25.21	1.397	0.30(0.26)	0.86	4738.0	50240.00
6	13651.79	26.05	1.373	0.30(0.26)	0.86	4956.0	50330.00
7	13937.63	27.58	1.329	0.30(0.26)	0.86	5344.2	50100.00
8	14149.03	28.98	1.288	0.30(0.26)	0.87	5709.6	50280.00
9	14324.77	30.18	1.256	0.30(0.26)	0.87	6013.5	50300.00
10	14549.77	31.80	1.226	0.30(0.26)	0.87	6408.7	50220.00
11	15276.52	37.12	1.129	0.30(0.26)	0.88	7665.6	50260.00
12	15523.23	38.95	1.096	0.30(0.26)	0.88	8085.0	50200.00
13	16099.95	43.24	1.039	0.30(0.27)	0.89	9061.2	600.00
14	18250.24	61.54	0.864	0.30(0.28)	0.93	14878.3	40100.00
15	18965.85	70.55	0.820	0.30(0.28)	0.94	17656.0	11801.00
16	20301.30	84.12	0.754	0.30(0.29)	0.95	22651.3	11530.00

17	21205.26	92.31	0.719	0.30(0.29)	0.96	26539.4	11900.00
18	22744.10	101.97	0.691	0.30(0.29)	0.96	32350.0	11330.00
19	23622.96	110.17	0.669	0.30(0.29)	0.97	37437.1	10630.00
20	23538.97	115.74	0.653	0.30(0.29)	0.97	40027.0	12330.00
21	23432.53	122.35	0.637	0.30(0.29)	0.97	43169.5	11600.00
22	23186.40	128.11	0.627	0.30(0.29)	0.97	45403.8	11111.00
23	22902.50	134.22	0.617	0.30(0.29)	0.97	47337.6	12201.00
24	22179.03	143.12	0.602	0.30(0.29)	0.97	49425.9	12231.00
25	21500.05	150.57	0.589	0.30(0.29)	0.97	50837.4	10400.00
26	21085.72	154.51	0.582	0.30(0.29)	0.97	51427.7	10200.00
27	20405.70	161.93	0.570	0.30(0.29)	0.97	52458.2	10320.00
28	19829.33	166.76	0.562	0.30(0.29)	0.97	52683.7	10210.00
29	19330.24	171.60	0.553	0.30(0.29)	0.97	52846.0	12000.00
30	16724.33	200.63	0.523	0.30(0.29)	0.97	53463.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 23622.96 Tc(MIN.) = 110.17
EFFECTIVE AREA(ACRES) = 37437.15 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53646.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 110.17
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.80	0.30	1.000	65
COMMERCIAL	B	1.20	0.30	0.100	56
COMMERCIAL	B	1.50	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	3.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.641
SUBAREA AREA(ACRES) = 6.80 SUBAREA RUNOFF(CFS) = 2.91
EFFECTIVE AREA(ACRES) = 37443.95 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53653.5 PEAK FLOW RATE(CFS) = 23622.96
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 110.17
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	3.60	0.30	1.000	69
PUBLIC PARK	B	15.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	20.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.941
SUBAREA AREA(ACRES) = 38.70 SUBAREA RUNOFF(CFS) = 13.45
EFFECTIVE AREA(ACRES) = 37482.65 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53692.2 PEAK FLOW RATE(CFS) = 23622.96
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 53692.2 TC(MIN.) = 110.17
EFFECTIVE AREA(ACRES) = 37482.65 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.969
PEAK FLOW RATE(CFS) = 23622.96

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11710.01	15.95	1.829	0.30(0.26)	0.86	2815.7	50400.00
2	12589.85	20.59	1.585	0.30(0.26)	0.86	3722.3	12904.00
3	13036.61	22.97	1.487	0.30(0.26)	0.86	4183.5	50110.00
4	13252.21	24.01	1.444	0.30(0.26)	0.86	4470.9	50320.00
5	13486.79	25.21	1.397	0.30(0.26)	0.86	4783.5	50240.00
6	13651.79	26.05	1.373	0.30(0.26)	0.86	5001.5	50330.00
7	13937.63	27.58	1.329	0.30(0.26)	0.86	5389.7	50100.00
8	14149.03	28.98	1.288	0.30(0.26)	0.87	5755.1	50280.00
9	14324.77	30.18	1.256	0.30(0.26)	0.87	6059.0	50300.00
10	14549.77	31.80	1.226	0.30(0.26)	0.87	6454.2	50220.00
11	15276.52	37.12	1.129	0.30(0.26)	0.88	7711.1	50260.00
12	15523.23	38.95	1.096	0.30(0.26)	0.88	8130.5	50200.00
13	16099.95	43.24	1.039	0.30(0.27)	0.89	9106.7	600.00
14	18250.24	61.54	0.864	0.30(0.28)	0.93	14923.8	40100.00
15	18965.85	70.55	0.820	0.30(0.28)	0.94	17701.5	11801.00
16	20301.30	84.12	0.754	0.30(0.29)	0.95	22696.8	11530.00
17	21205.26	92.31	0.719	0.30(0.29)	0.96	26584.9	11900.00
18	22744.10	101.97	0.691	0.30(0.29)	0.96	32395.5	11330.00
19	23622.96	110.17	0.669	0.30(0.29)	0.97	37482.6	10630.00
20	23538.97	115.74	0.653	0.30(0.29)	0.97	40072.5	12330.00
21	23432.53	122.35	0.637	0.30(0.29)	0.97	43215.0	11600.00
22	23186.40	128.11	0.627	0.30(0.29)	0.97	45449.3	11111.00
23	22902.50	134.22	0.617	0.30(0.29)	0.97	47383.1	12201.00
24	22179.03	143.12	0.602	0.30(0.29)	0.97	49471.4	12231.00
25	21500.05	150.57	0.589	0.30(0.29)	0.97	50882.9	10400.00
26	21085.72	154.51	0.582	0.30(0.29)	0.97	51473.2	10200.00
27	20405.70	161.93	0.570	0.30(0.29)	0.97	52503.7	10320.00
28	19829.33	166.76	0.562	0.30(0.29)	0.97	52729.2	10210.00
29	19330.24	171.60	0.553	0.30(0.29)	0.97	52891.5	12000.00
30	16724.33	200.63	0.523	0.30(0.29)	0.97	53508.5	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 10-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU10EV33.DAT
  TIME/DATE OF STUDY: 13:41 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.774
   2)   10.00;  2.517
   3)   15.00;  1.863
   4)   20.00;  1.593
   5)   25.00;  1.391
   6)   30.00;  1.250
   7)   40.00;  1.068
   8)   50.00;  0.950
   9)   60.00;  0.862
  10)   90.00;  0.714
  11)  120.00;  0.630
  12)  180.00;  0.528
  13)  360.00;  0.388
  14) 1200.00;  0.170
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   70.37   RAINFALL INTENSITY(INCH/HR) =  0.81
  EFFECTIVE AREA(ACRES) =  3660.20
  TOTAL AREA(ACRES) =  4924.40        PEAK FLOW RATE(CFS) =   1572.50
  AREA-AVERAGED Fm(INCH/HR) =   0.25  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.82
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.93
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.788
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.60      0.30     1.000    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  COMMERCIAL                 B       22.60      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1585.35
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.22
  AVERAGE FLOW DEPTH(FEET) =   2.93   TRAVEL TIME(MIN.) =   4.58
  Tc(MIN.) =   74.95
  SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   25.70
  EFFECTIVE AREA(ACRES) =   3705.40     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    1811.93
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.16
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.16   FLOW VELOCITY(FEET/SEC.) =   9.63
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.95
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.788
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  COMMERCIAL                 B        7.40      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
  SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =    9.05
  EFFECTIVE AREA(ACRES) =   3721.90   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    1820.98

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.95
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.788
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    3.52
  EFFECTIVE AREA(ACRES) =   3729.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    1824.50
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.95
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.788
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =    9.67
  EFFECTIVE AREA(ACRES) =   3751.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    1834.17

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.95
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.788
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =    6.59
  EFFECTIVE AREA(ACRES) =   3766.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    1840.76

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
```

```
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.859
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      2.53
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      2.53

********************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.768
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.25
  AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   0.36
  Tc(MIN.) =    9.00
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    2.89
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       5.33

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.51   FLOW VELOCITY(FEET/SEC.) =   6.88
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.
```



```
********************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.654
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.43
  AVERAGE FLOW DEPTH(FEET) =   0.59   TRAVEL TIME(MIN.) =   0.46
  Tc(MIN.) =    9.46
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    4.87
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =       9.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   7.96
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.467
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.79
```

```
  AVERAGE FLOW DEPTH(FEET) =   0.88   TRAVEL TIME(MIN.) =   0.92
  Tc(MIN.) =   10.38
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =    7.02
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      16.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.94   FLOW VELOCITY(FEET/SEC.) =   6.07
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.367
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.26
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =   0.77
  Tc(MIN.) =   11.15
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   11.91
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      27.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.17   FLOW VELOCITY(FEET/SEC.) =   6.64
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.264
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      36.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.26
  AVERAGE FLOW DEPTH(FEET) =   1.30   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =   11.94
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   19.09
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      45.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.40   FLOW VELOCITY(FEET/SEC.) =   7.65
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.070
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.10
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.97
  AVERAGE FLOW DEPTH(FEET) =   1.65   TRAVEL TIME(MIN.) =   1.48
  Tc(MIN.) =   13.42
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   24.05
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      64.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.73   FLOW VELOCITY(FEET/SEC.) =   7.16
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.952
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.98
  AVERAGE FLOW DEPTH(FEET) =   1.93   TRAVEL TIME(MIN.) =   0.90
  Tc(MIN.) =   14.32
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   27.21
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =      87.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.02   FLOW VELOCITY(FEET/SEC.) =   7.18
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.841
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.93
  AVERAGE FLOW DEPTH(FEET) =   2.03   TRAVEL TIME(MIN.) =   1.09
  Tc(MIN.) =   15.41
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   20.25
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     101.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.06   FLOW VELOCITY(FEET/SEC.) =   8.03
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.41
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.841
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   45.49
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     147.42

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.688
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     152.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.34
  AVERAGE FLOW DEPTH(FEET) =   2.47   TRAVEL TIME(MIN.) =   2.84
  Tc(MIN.) =   18.25
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   10.37
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     147.42
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.44   FLOW VELOCITY(FEET/SEC.) =   8.28
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.688
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   27.24
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     170.37

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.497
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     180.13
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.44
  AVERAGE FLOW DEPTH(FEET) =   2.84   TRAVEL TIME(MIN.) =   4.14
  Tc(MIN.) =   22.38
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   19.51
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     170.37
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.78   FLOW VELOCITY(FEET/SEC.) =   7.35
```

```
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      170.37   22.38    1.497  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1840.76   74.95    0.788  0.30( 0.25) 0.82    3766.8   13222.00
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1437.37   22.38    1.497  0.30( 0.25) 0.84    1279.4   31100.00
      2     1910.29   74.95    0.788  0.30( 0.25) 0.82    3921.3   13222.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1910.29  Tc(MIN.) =   74.952
  EFFECTIVE AREA(ACRES) =   3921.30  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.43
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
```



```
  "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
  NATURAL POOR COVER
  "BARREN"                   B        0.90      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1912.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.82
  AVERAGE FLOW DEPTH(FEET) =   4.43   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   77.74
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    4.01
  EFFECTIVE AREA(ACRES) =   3930.70     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    1910.29
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.42   FLOW VELOCITY(FEET/SEC.) =   6.83
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13302.00 =    7532.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   77.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       13.80      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        2.60      0.30     1.000    86
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   12.36
  EFFECTIVE AREA(ACRES) =   3958.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    1910.29
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   77.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
  COMMERCIAL                 B        0.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    1.41
  EFFECTIVE AREA(ACRES) =   3961.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    1910.29
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   77.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.10      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.80      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =    8.63
  EFFECTIVE AREA(ACRES) =   3982.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    1910.29
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   77.74
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       34.60      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       11.60      0.30     1.000    79
  APARTMENTS                 B        0.40      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.80      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   32.71
  EFFECTIVE AREA(ACRES) =   4058.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    1919.28

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   77.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.774
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       46.40      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.10      0.30     0.200    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       60.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =   48.96
  EFFECTIVE AREA(ACRES) =   4173.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    1968.24

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.02
CHANNEL FLOW THRU SUBAREA(CFS) = 1968.24
FLOW VELOCITY(FEET/SEC.) = 7.88 FLOW DEPTH(FEET) = 4.02
TRAVEL TIME(MIN.) = 4.64 Tc(MIN.) = 82.38
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 3.43
EFFECTIVE AREA(ACRES) = 4180.70 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.20	0.30	1.000	63
COMMERCIAL	B	3.60	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 6.89
EFFECTIVE AREA(ACRES) = 4195.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	14.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	6.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 10.00
EFFECTIVE AREA(ACRES) = 4220.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.80	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.60	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	31.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 14.44
EFFECTIVE AREA(ACRES) = 4255.40 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6 PEAK FLOW RATE(CFS) = 1968.24

```
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   82.38
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.752
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.70      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
 SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    4.75
 EFFECTIVE AREA(ACRES) =   4265.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    1968.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   82.38
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.752
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
 NATURAL POOR COVER
 "BARREN"                   B        0.30      0.30     1.000    86
 COMMERCIAL                 B        0.20      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
 SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    4.97
 EFFECTIVE AREA(ACRES) =   4277.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    1968.24
```



```
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.66
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.740
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.30      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        1.10      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.50      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1969.57
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.60
 AVERAGE FLOW DEPTH(FEET) =   4.66   TRAVEL TIME(MIN.) =   2.34
 Tc(MIN.) =   84.72
 SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    2.65
 EFFECTIVE AREA(ACRES) =   4284.20     AREA-AVERAGED Fm(INCH/HR) =   0.25
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
 TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    1968.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.66

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.66   FLOW VELOCITY(FEET/SEC.) =   6.59
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13304.00 =   10651.45 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   84.72
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.740
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    2.81
  EFFECTIVE AREA(ACRES) =   4291.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        7.80      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        9.40      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =    9.03
  EFFECTIVE AREA(ACRES) =   4314.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   84.72
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.740
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    1.35
  EFFECTIVE AREA(ACRES) =   4317.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.70      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1969.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.60
  AVERAGE FLOW DEPTH(FEET) =   3.74   TRAVEL TIME(MIN.) =   5.75
  Tc(MIN.) =   90.46
  SUBAREA AREA(ACRES) =     9.20       SUBAREA RUNOFF(CFS) =    3.42
  EFFECTIVE AREA(ACRES) =   4326.70     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.74   FLOW VELOCITY(FEET/SEC.) =   8.59
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =    6.76
  EFFECTIVE AREA(ACRES) =   4344.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       18.40      0.30     1.000    86
  NATURAL FAIR COVER
  "MEADOWS"                  B        1.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       26.60      0.30     1.000    86
  COMMERCIAL                 B        3.90      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   20.71
  EFFECTIVE AREA(ACRES) =   4398.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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



```
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       14.00      0.30     1.000    86
  COMMERCIAL                 B        4.30      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        5.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        2.70      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   11.30
  EFFECTIVE AREA(ACRES) =   4425.70   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =    9.75
  EFFECTIVE AREA(ACRES) =   4451.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    4.53
  EFFECTIVE AREA(ACRES) =   4462.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   90.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    3.45
  EFFECTIVE AREA(ACRES) =   4470.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    1968.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A10EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
```



```
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      742.58   14.11  0.30( 0.13) 0.43     433.8     120.00
      2      739.67   14.27  0.30( 0.13) 0.43     436.5     110.00
      3      635.72   21.58  0.30( 0.13) 0.43     503.8     100.00
      4      587.61   24.64  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1542.58   39.22    1.082  0.30( 0.26) 0.88    1828.9   31100.00
      2     1968.24   90.46    0.713  0.30( 0.25) 0.84    4470.8   13222.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      742.58   14.11    1.980  0.30( 0.13) 0.43     433.8     120.00
      2      739.67   14.27    1.959  0.30( 0.13) 0.43     436.5     110.00
      3      635.72   21.58    1.529  0.30( 0.13) 0.43     503.8     100.00
      4      587.61   24.64    1.406  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1905.30   14.11    1.980  0.30( 0.21) 0.70    1091.6     120.00
      2     1901.25   14.27    1.959  0.30( 0.21) 0.70    1101.8     110.00
      3     1947.53   21.58    1.529  0.30( 0.22) 0.73    1510.0     100.00
      4     1939.20   24.64    1.406  0.30( 0.22) 0.74    1659.0     150.00
      5     1981.16   39.22    1.082  0.30( 0.23) 0.78    2339.1   31100.00
      6     2236.64   90.46    0.713  0.30( 0.24) 0.80    4981.0   13222.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2236.64  Tc(MIN.) =   90.464
  EFFECTIVE AREA(ACRES) =   4981.00  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.71
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.10      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2239.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.89
  AVERAGE FLOW DEPTH(FEET) =   3.71   TRAVEL TIME(MIN.) =   7.43
  Tc(MIN.) =   97.89
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =    6.49
  EFFECTIVE AREA(ACRES) =   4999.40     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.70   FLOW VELOCITY(FEET/SEC.) =   9.88
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13306.00 =   18026.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
```



```
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   17.49
  EFFECTIVE AREA(ACRES) =   5049.00   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.28
  EFFECTIVE AREA(ACRES) =   5049.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.48
  EFFECTIVE AREA(ACRES) =   5051.10   AREA-AVERAGED Fm(INCH/HR) =  0.24
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    3.05
  EFFECTIVE AREA(ACRES) =   5058.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
  COMMERCIAL                 B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   21.17
  EFFECTIVE AREA(ACRES) =   5106.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
```



```
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.692
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   20.52
  EFFECTIVE AREA(ACRES) =   5164.48   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.66
  CHANNEL FLOW THRU SUBAREA(CFS) =    2236.64
  FLOW VELOCITY(FEET/SEC.) =  10.03   FLOW DEPTH(FEET) =   3.66
  TRAVEL TIME(MIN.) =   2.56   Tc(MIN.) =  100.46
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13307.00 =   19569.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  100.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.685
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        3.70      0.30     1.000    86
```

```
  COMMERCIAL                  B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    2.79
  EFFECTIVE AREA(ACRES) =   5172.18   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  100.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.685
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        3.60      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    2.11
  EFFECTIVE AREA(ACRES) =   5178.28   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.39
  CHANNEL FLOW THRU SUBAREA(CFS) =    2236.64
  FLOW VELOCITY(FEET/SEC.) =   8.06   FLOW DEPTH(FEET) =   4.39
  TRAVEL TIME(MIN.) =   1.91   Tc(MIN.) =  102.37
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13308.00 =   20494.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        5.00      0.30     1.000    65
  COMMERCIAL                  B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    4.02
  EFFECTIVE AREA(ACRES) =   5187.78   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                  B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                    B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        1.00      0.30     1.000    63
  COMMERCIAL                  B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   36.06
  EFFECTIVE AREA(ACRES) =   5263.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    2236.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK               B        0.10      0.30     0.850    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"     B        0.90      0.30     1.000    79
 SCHOOL                    B        0.30      0.30     0.600    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B       13.20      0.30     1.000    65
 APARTMENTS                B        0.50      0.30     0.200    56
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"     B        0.60      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
 SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =    5.47
 EFFECTIVE AREA(ACRES) =   5278.98   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    2236.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =  102.37
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                B       33.90      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                   B       17.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B       16.80      0.30     1.000    66
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"      B        0.60      0.30     0.200    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"     B        1.50      0.30     0.400    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"     B       10.00      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
 SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   36.06
 EFFECTIVE AREA(ACRES) =   5359.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    2236.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =  102.37
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
 SCHOOL                    B        0.30      0.30     0.600    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.70      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
 SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.37
 EFFECTIVE AREA(ACRES) =   5360.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    2236.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =  102.37
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                   B        0.30      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        0.50      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        0.30      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    0.72
 EFFECTIVE AREA(ACRES) =   5362.48   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    2236.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =  102.37
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.679
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                   B        1.20      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        0.50      0.30     1.000    66
 PUBLIC PARK               B        1.70      0.30     0.850    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        7.20      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        1.00      0.30     1.000    69
```

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978
SUBAREA AREA(ACRES) = 11.60 SUBAREA RUNOFF(CFS) = 4.03
EFFECTIVE AREA(ACRES) = 5374.08 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 6638.3 PEAK FLOW RATE(CFS) = 2236.64
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==========

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: RU10EV29.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12589.85	20.59	0.30(0.26)	0.86	3722.3	12904.00
2	13651.79	26.05	0.30(0.26)	0.86	5001.5	50330.00
3	14549.77	31.80	0.30(0.26)	0.87	6454.2	50220.00
4	16099.95	43.24	0.30(0.27)	0.89	9106.7	600.00
5	18250.24	61.54	0.30(0.28)	0.93	14923.8	40100.00
6	18965.85	70.55	0.30(0.28)	0.94	17701.5	11801.00
7	20301.30	84.12	0.30(0.29)	0.95	22696.8	11530.00
8	21205.26	92.31	0.30(0.29)	0.96	26584.9	11900.00
9	22744.10	101.97	0.30(0.29)	0.96	32395.5	11330.00
10	23622.96	110.17	0.30(0.29)	0.97	37482.6	10630.00
11	23538.97	115.74	0.30(0.29)	0.97	40072.5	12330.00
12	23432.53	122.35	0.30(0.29)	0.97	43215.0	11600.00
13	23186.40	128.11	0.30(0.29)	0.97	45449.3	11111.00
14	22902.50	134.22	0.30(0.29)	0.97	47383.1	12201.00
15	22179.03	143.12	0.30(0.29)	0.97	49471.4	12231.00
16	21500.05	150.57	0.30(0.29)	0.97	50882.9	10400.00
17	20405.70	161.93	0.30(0.29)	0.97	52503.7	10320.00
18	19829.33	166.76	0.30(0.29)	0.97	52729.2	10210.00
19	19330.24	171.60	0.30(0.29)	0.97	52891.5	12000.00
20	16724.33	200.63	0.30(0.29)	0.97	53508.5	10100.00

TOTAL AREA(ACRES) = 53508.5

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12589.85	20.59	0.30(0.26)	0.86	3722.3	12904.00
2	13651.79	26.05	0.30(0.26)	0.86	5001.5	50330.00
3	14549.77	31.80	0.30(0.26)	0.87	6454.2	50220.00
4	16099.95	43.24	0.30(0.27)	0.89	9106.7	600.00

5	18250.24	61.54	0.30(0.28)	0.93	14923.8	40100.00
6	18965.85	70.55	0.30(0.28)	0.94	17701.5	11801.00
7	20301.30	84.12	0.30(0.29)	0.95	22696.8	11530.00
8	21205.26	92.31	0.30(0.29)	0.96	26584.9	11900.00
9	22744.10	101.97	0.30(0.29)	0.96	32395.5	11330.00
10	23622.96	110.17	0.30(0.29)	0.97	37482.6	10630.00
11	23538.97	115.74	0.30(0.29)	0.97	40072.5	12330.00
12	23432.53	122.35	0.30(0.29)	0.97	43215.0	11600.00
13	23186.40	128.11	0.30(0.29)	0.97	45449.3	11111.00
14	22902.50	134.22	0.30(0.29)	0.97	47383.1	12201.00
15	22179.03	143.12	0.30(0.29)	0.97	49471.4	12231.00
16	21500.05	150.57	0.30(0.29)	0.97	50882.9	10400.00
17	20405.70	161.93	0.30(0.29)	0.97	52503.7	10320.00
18	19829.33	166.76	0.30(0.29)	0.97	52729.2	10210.00
19	19330.24	171.60	0.30(0.29)	0.97	52891.5	12000.00
20	16724.33	200.63	0.30(0.29)	0.97	53508.5	10100.00

TOTAL AREA(ACRES) = 53508.5

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.61
CHANNEL FLOW THRU SUBAREA(CFS) = 23622.96
FLOW VELOCITY(FEET/SEC.) = 6.48 FLOW DEPTH(FEET) = 13.61
TRAVEL TIME(MIN.) = 3.58 Tc(MIN.) = 113.75
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

****
FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12589.85	24.96	1.393	0.30(0.26)	0.86	3722.3	12904.00
2	13651.79	30.30	1.245	0.30(0.26)	0.86	5001.5	50330.00
3	14549.77	35.96	1.141	0.30(0.26)	0.87	6454.2	50220.00
4	16099.95	47.27	0.982	0.30(0.27)	0.89	9106.7	600.00
5	18250.24	65.42	0.835	0.30(0.28)	0.93	14923.8	40100.00
6	18965.85	74.38	0.791	0.30(0.28)	0.94	17701.5	11801.00
7	20301.30	87.86	0.725	0.30(0.29)	0.95	22696.8	11530.00
8	21205.26	96.01	0.697	0.30(0.29)	0.96	26584.9	11900.00
9	22744.10	105.58	0.670	0.30(0.29)	0.96	32395.5	11330.00
10	23622.96	113.75	0.648	0.30(0.29)	0.97	37482.6	10630.00
11	23538.97	119.32	0.632	0.30(0.29)	0.97	40072.5	12330.00
12	23432.53	125.93	0.620	0.30(0.29)	0.97	43215.0	11600.00
13	23186.40	131.71	0.610	0.30(0.29)	0.97	45449.3	11111.00
14	22902.50	137.83	0.600	0.30(0.29)	0.97	47383.1	12201.00
15	22179.03	146.77	0.584	0.30(0.29)	0.97	49471.4	12231.00

16	21500.05	154.25	0.572	0.30(0.29)	0.97	50882.9	10400.00
17	20405.70	165.67	0.552	0.30(0.29)	0.97	52503.7	10320.00
18	19829.33	170.54	0.544	0.30(0.29)	0.97	52729.2	10210.00
19	19330.24	175.41	0.536	0.30(0.29)	0.97	52891.5	12000.00
20	16724.33	204.62	0.509	0.30(0.29)	0.97	53508.5	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1905.30	26.65	1.344	0.30(0.22)	0.72	1484.7	120.00
2	1901.25	26.82	1.340	0.30(0.22)	0.72	1494.8	110.00
3	1947.53	34.03	1.177	0.30(0.22)	0.73	1903.1	100.00
4	1939.20	37.11	1.121	0.30(0.22)	0.75	2052.1	150.00
5	1981.16	51.61	0.936	0.30(0.23)	0.78	2732.2	31100.00
6	2236.64	102.37	0.679	0.30(0.24)	0.80	5374.1	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14450.37	24.96	1.393	0.30(0.25)	0.82	5112.7	12904.00
2	14831.66	26.65	1.344	0.30(0.25)	0.82	5612.4	120.00
3	14860.32	26.82	1.340	0.30(0.25)	0.82	5661.9	110.00
4	15575.39	30.30	1.245	0.30(0.25)	0.83	6693.5	50330.00
5	16191.13	34.03	1.177	0.30(0.25)	0.84	7862.0	100.00
6	16492.07	35.96	1.141	0.30(0.25)	0.84	8450.7	50220.00
7	16646.23	37.11	1.121	0.30(0.25)	0.84	8775.4	150.00
8	18068.56	47.27	0.982	0.30(0.26)	0.86	11635.5	600.00
9	18594.97	51.61	0.936	0.30(0.26)	0.87	13229.0	31100.00
10	20300.89	65.42	0.835	0.30(0.27)	0.90	18374.7	40100.00
11	21061.63	74.38	0.791	0.30(0.27)	0.91	21619.1	11801.00
12	22464.93	87.86	0.725	0.30(0.28)	0.92	27315.9	11530.00
13	23409.88	96.01	0.697	0.30(0.28)	0.93	31627.9	11900.00
14	24464.08	102.37	0.679	0.30(0.28)	0.94	35818.7	13222.00
15	24934.99	105.58	0.670	0.30(0.28)	0.94	37769.6	11330.00
16	25697.74	113.75	0.648	0.30(0.28)	0.95	42856.7	10630.00
17	25534.40	119.32	0.632	0.30(0.28)	0.95	45446.6	12330.00
18	25367.07	125.93	0.620	0.30(0.29)	0.95	48589.0	11600.00
19	25071.06	131.71	0.610	0.30(0.29)	0.95	50823.4	11111.00
20	24734.25	137.83	0.600	0.30(0.29)	0.95	52757.2	12201.00
21	23933.58	146.77	0.584	0.30(0.29)	0.96	54845.5	12231.00
22	23189.94	154.25	0.572	0.30(0.29)	0.96	56257.0	10400.00
23	21996.97	165.67	0.552	0.30(0.29)	0.96	57877.8	10320.00
24	21378.55	170.54	0.544	0.30(0.29)	0.96	58103.3	10210.00
25	20837.41	175.41	0.536	0.30(0.29)	0.96	58265.6	12000.00
26	18094.51	204.62	0.509	0.30(0.29)	0.96	58882.6	10100.00

TOTAL AREA(ACRES) = 60146.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 25697.74 Tc(MIN.) = 113.745
EFFECTIVE AREA(ACRES) = 42856.73 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 60146.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60146.8 TC(MIN.) = 113.75

EFFECTIVE AREA(ACRES) = 42856.73 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.947
PEAK FLOW RATE(CFS) = 25697.74

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14450.37	24.96	1.393	0.30(0.25)	0.82	5112.7	12904.00
2	14831.66	26.65	1.344	0.30(0.25)	0.82	5612.4	120.00
3	14860.32	26.82	1.340	0.30(0.25)	0.82	5661.9	110.00
4	15575.39	30.30	1.245	0.30(0.25)	0.83	6693.5	50330.00
5	16191.13	34.03	1.177	0.30(0.25)	0.84	7862.0	100.00
6	16492.07	35.96	1.141	0.30(0.25)	0.84	8450.7	50220.00
7	16646.23	37.11	1.121	0.30(0.25)	0.84	8775.4	150.00
8	18068.56	47.27	0.982	0.30(0.26)	0.86	11635.5	600.00
9	18594.97	51.61	0.936	0.30(0.26)	0.87	13229.0	31100.00
10	20300.89	65.42	0.835	0.30(0.27)	0.90	18374.7	40100.00
11	21061.63	74.38	0.791	0.30(0.27)	0.91	21619.1	11801.00
12	22464.93	87.86	0.725	0.30(0.28)	0.92	27315.9	11530.00
13	23409.88	96.01	0.697	0.30(0.28)	0.93	31627.9	11900.00
14	24464.08	102.37	0.679	0.30(0.28)	0.94	35818.7	13222.00
15	24934.99	105.58	0.670	0.30(0.28)	0.94	37769.6	11330.00
16	25697.74	113.75	0.648	0.30(0.28)	0.95	42856.7	10630.00
17	25534.40	119.32	0.632	0.30(0.28)	0.95	45446.6	12330.00
18	25367.07	125.93	0.620	0.30(0.29)	0.95	48589.0	11600.00
19	25071.06	131.71	0.610	0.30(0.29)	0.95	50823.4	11111.00
20	24734.25	137.83	0.600	0.30(0.29)	0.95	52757.2	12201.00
21	23933.58	146.77	0.584	0.30(0.29)	0.96	54845.5	12231.00
22	23189.94	154.25	0.572	0.30(0.29)	0.96	56257.0	10400.00
23	21996.97	165.67	0.552	0.30(0.29)	0.96	57877.8	10320.00
24	21378.55	170.54	0.544	0.30(0.29)	0.96	58103.3	10210.00
25	20837.41	175.41	0.536	0.30(0.29)	0.96	58265.6	12000.00
26	18094.51	204.62	0.509	0.30(0.29)	0.96	58882.6	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 10-YR EV AUG 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU10EV34.DAT
  TIME/DATE OF STUDY: 00:16 08/11/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.757
   2)   10.00;  2.507
   3)   15.00;  1.859
   4)   20.00;  1.590
   5)   25.00;  1.388
   6)   30.00;  1.248
   7)   40.00;  1.066
   8)   50.00;  0.948
   9)   60.00;  0.860
  10)   90.00;  0.712
  11)  120.00;  0.627
  12)  180.00;  0.525
  13)  360.00;  0.386
  14) 1200.00;  0.169
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    15575.39   30.30  0.30( 0.25) 0.83    6693.5   50330.00
      2    16646.23   37.11  0.30( 0.25) 0.84    8775.4     150.00
      3    18068.56   47.27  0.30( 0.26) 0.86   11635.5     600.00
      4    18594.97   51.61  0.30( 0.26) 0.87   13229.0   31100.00
      5    20300.89   65.42  0.30( 0.27) 0.90   18374.7   40100.00
      6    21061.63   74.38  0.30( 0.27) 0.91   21619.1   11801.00
      7    22464.93   87.86  0.30( 0.28) 0.92   27315.9   11530.00
      8    23409.88   96.01  0.30( 0.28) 0.93   31627.9   11900.00
      9    24934.99  105.58  0.30( 0.28) 0.94   37769.6   11330.00
     10    25697.74  113.75  0.30( 0.28) 0.95   42856.7   10630.00
     11    25534.40  119.32  0.30( 0.28) 0.95   45446.6   12330.00
     12    25367.07  125.93  0.30( 0.29) 0.95   48589.0   11600.00
     13    25071.06  131.71  0.30( 0.29) 0.95   50823.4   11111.00
     14    24734.25  137.83  0.30( 0.29) 0.95   52757.2   12201.00
     15    23933.58  146.77  0.30( 0.29) 0.96   54845.5   12231.00
     16    23189.94  154.25  0.30( 0.29) 0.96   56257.0   10400.00
     17    21996.97  165.67  0.30( 0.29) 0.96   57877.8   10320.00
     18    21378.55  170.54  0.30( 0.29) 0.96   58103.3   10210.00
     19    20837.41  175.41  0.30( 0.29) 0.96   58265.6   12000.00
     20    18094.51  204.62  0.30( 0.29) 0.96   58882.6   10100.00
   TOTAL AREA(ACRES) =    58882.6

************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    15575.39   30.30  0.30( 0.25) 0.83    6693.5   50330.00
      2    16646.23   37.11  0.30( 0.25) 0.84    8775.4     150.00
      3    18068.56   47.27  0.30( 0.26) 0.86   11635.5     600.00
      4    18594.97   51.61  0.30( 0.26) 0.87   13229.0   31100.00
      5    20300.89   65.42  0.30( 0.27) 0.90   18374.7   40100.00
      6    21061.63   74.38  0.30( 0.27) 0.91   21619.1   11801.00
      7    22464.93   87.86  0.30( 0.28) 0.92   27315.9   11530.00
      8    23409.88   96.01  0.30( 0.28) 0.93   31627.9   11900.00
      9    24934.99  105.58  0.30( 0.28) 0.94   37769.6   11330.00
     10    25697.74  113.75  0.30( 0.28) 0.95   42856.7   10630.00
     11    25534.40  119.32  0.30( 0.28) 0.95   45446.6   12330.00
     12    25367.07  125.93  0.30( 0.29) 0.95   48589.0   11600.00
     13    25071.06  131.71  0.30( 0.29) 0.95   50823.4   11111.00
```

```
     14    24734.25  137.83  0.30( 0.29) 0.95   52757.2   12201.00
     15    23933.58  146.77  0.30( 0.29) 0.96   54845.5   12231.00
     16    23189.94  154.25  0.30( 0.29) 0.96   56257.0   10400.00
     17    21996.97  165.67  0.30( 0.29) 0.96   57877.8   10320.00
     18    21378.55  170.54  0.30( 0.29) 0.96   58103.3   10210.00
     19    20837.41  175.41  0.30( 0.29) 0.96   58265.6   12000.00
     20    18094.51  204.62  0.30( 0.29) 0.96   58882.6   10100.00
    TOTAL AREA(ACRES) =     58882.6

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.37
  CHANNEL FLOW THRU SUBAREA(CFS) =   25697.74
  FLOW VELOCITY(FEET/SEC.) =  12.69   FLOW DEPTH(FEET) =   8.37
  TRAVEL TIME(MIN.) =   0.82   Tc(MIN.) =  114.56
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P505XX10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     165.51   18.39  0.30( 0.29) 0.96     146.4   50500.00
    TOTAL AREA(ACRES) =      146.4

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    15575.39   31.27    1.225  0.30( 0.25) 0.83    6693.5   50330.00
      2    16646.23   38.06    1.101  0.30( 0.25) 0.84    8775.4     150.00
      3    18068.56   48.20    0.969  0.30( 0.26) 0.86   11635.5     600.00
      4    18594.97   52.52    0.926  0.30( 0.26) 0.87   13229.0   31100.00
      5    20300.89   66.30    0.829  0.30( 0.27) 0.90   18374.7   40100.00
      6    21061.63   75.26    0.785  0.30( 0.27) 0.91   21619.1   11801.00
      7    22464.93   88.72    0.718  0.30( 0.28) 0.92   27315.9   11530.00
      8    23409.88   96.85    0.693  0.30( 0.28) 0.93   31627.9   11900.00
      9    24934.99  106.41    0.666  0.30( 0.28) 0.94   37769.6   11330.00
     10    25697.74  114.56    0.642  0.30( 0.28) 0.95   42856.7   10630.00
     11    25534.40  120.14    0.627  0.30( 0.28) 0.95   45446.6   12330.00
     12    25367.07  126.75    0.616  0.30( 0.29) 0.95   48589.0   11600.00
```



```
     13    25071.06  132.53    0.606  0.30( 0.29) 0.95   50823.4   11111.00
     14    24734.25  138.66    0.595  0.30( 0.29) 0.95   52757.2   12201.00
     15    23933.58  147.61    0.580  0.30( 0.29) 0.96   54845.5   12231.00
     16    23189.94  155.10    0.567  0.30( 0.29) 0.96   56257.0   10400.00
     17    21996.97  166.53    0.548  0.30( 0.29) 0.96   57877.8   10320.00
     18    21378.55  171.41    0.540  0.30( 0.29) 0.96   58103.3   10210.00
     19    20837.41  176.28    0.531  0.30( 0.29) 0.96   58265.6   12000.00
     20    18094.51  205.54    0.505  0.30( 0.29) 0.96   58882.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     165.51   18.39    1.677  0.30( 0.29) 0.96     146.4   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    5416.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13562.95   18.39    1.677  0.30( 0.25) 0.83    4083.2   50500.00
      2    15687.08   31.27    1.225  0.30( 0.25) 0.83    6839.9   50330.00
      3    16743.20   38.06    1.101  0.30( 0.25) 0.84    8921.8     150.00
      4    18149.79   48.20    0.969  0.30( 0.26) 0.86   11781.9     600.00
      5    18671.02   52.52    0.926  0.30( 0.26) 0.87   13375.4   31100.00
      6    20365.40   66.30    0.829  0.30( 0.27) 0.90   18521.1   40100.00
      7    21120.88   75.26    0.785  0.30( 0.27) 0.91   21765.5   11801.00
      8    22516.26   88.72    0.718  0.30( 0.28) 0.92   27462.3   11530.00
      9    23458.14   96.85    0.693  0.30( 0.28) 0.93   31774.3   11900.00
     10    24980.03  106.41    0.666  0.30( 0.28) 0.94   37916.0   11330.00
     11    25740.02  114.56    0.642  0.30( 0.28) 0.95   43003.1   10630.00
     12    25574.82  120.14    0.627  0.30( 0.28) 0.95   45593.0   12330.00
     13    25406.16  126.75    0.616  0.30( 0.29) 0.95   48735.4   11600.00
     14    25108.98  132.53    0.606  0.30( 0.29) 0.95   50969.8   11111.00
     15    24770.92  138.66    0.595  0.30( 0.29) 0.95   52903.6   12201.00
     16    23968.44  147.61    0.580  0.30( 0.29) 0.96   54991.9   12231.00
     17    23223.28  155.10    0.567  0.30( 0.29) 0.96   56403.4   10400.00
     18    22027.99  166.53    0.548  0.30( 0.29) 0.96   58024.2   10320.00
     19    21408.59  171.41    0.540  0.30( 0.29) 0.96   58249.7   10210.00
     20    20866.46  176.28    0.531  0.30( 0.29) 0.96   58412.0   12000.00
     21    18120.46  205.54    0.505  0.30( 0.29) 0.96   59029.0   10100.00
    TOTAL AREA(ACRES) =     59029.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    25740.02  Tc(MIN.) =  114.564
  EFFECTIVE AREA(ACRES) =  43003.13  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    59029.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.26
  CHANNEL FLOW THRU SUBAREA(CFS) =   25740.02
  FLOW VELOCITY(FEET/SEC.) =  12.91   FLOW DEPTH(FEET) =   8.26
  TRAVEL TIME(MIN.) =   0.51   Tc(MIN.) =  115.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P506XX10.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       54.80   18.85  0.30( 0.29) 0.97      49.5   50600.00
    TOTAL AREA(ACRES) =       49.5

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13562.95   19.03    1.642  0.30( 0.25) 0.83    4083.2   50500.00
      2    15687.08   31.87    1.214  0.30( 0.25) 0.83    6839.9   50330.00
      3    16743.20   38.65    1.091  0.30( 0.25) 0.84    8921.8     150.00
      4    18149.79   48.77    0.963  0.30( 0.26) 0.86   11781.9     600.00
      5    18671.02   53.09    0.921  0.30( 0.26) 0.87   13375.4   31100.00
      6    20365.40   66.86    0.826  0.30( 0.27) 0.90   18521.1   40100.00
      7    21120.88   75.80    0.782  0.30( 0.27) 0.91   21765.5   11801.00
      8    22516.26   89.25    0.716  0.30( 0.28) 0.92   27462.3   11530.00
      9    23458.14   97.38    0.691  0.30( 0.28) 0.93   31774.3   11900.00
     10    24980.03  106.93    0.664  0.30( 0.28) 0.94   37916.0   11330.00
     11    25740.02  115.07    0.641  0.30( 0.28) 0.95   43003.1   10630.00
     12    25574.82  120.65    0.626  0.30( 0.28) 0.95   45593.0   12330.00
     13    25406.16  127.27    0.615  0.30( 0.29) 0.95   48735.4   11600.00
     14    25108.98  133.05    0.605  0.30( 0.29) 0.95   50969.8   11111.00
     15    24770.92  139.18    0.594  0.30( 0.29) 0.95   52903.6   12201.00
     16    23968.44  148.13    0.579  0.30( 0.29) 0.96   54991.9   12231.00
     17    23223.28  155.63    0.566  0.30( 0.29) 0.96   56403.4   10400.00
     18    22027.99  167.07    0.547  0.30( 0.29) 0.96   58024.2   10320.00
     19    21408.59  171.95    0.539  0.30( 0.29) 0.96   58249.7   10210.00
     20    20866.46  176.83    0.530  0.30( 0.29) 0.96   58412.0   12000.00
     21    18120.46  206.11    0.505  0.30( 0.29) 0.96   59029.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       54.80   18.85    1.652  0.30( 0.29) 0.97      49.5   50600.00
  LONGEST FLOWPATH FROM NODE  50600.00 TO NODE  13404.00 =    4378.00 FEET.

  ** PEAK FLOW RATE TABLE **
```



```
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13583.86   18.85    1.652  0.30( 0.25) 0.83    4095.1   50600.00
      2    13617.37   19.03    1.642  0.30( 0.25) 0.83    4132.7   50500.00
      3    15724.27   31.87    1.214  0.30( 0.25) 0.83    6889.4   50330.00
      4    16775.43   38.65    1.091  0.30( 0.25) 0.85    8971.3     150.00
      5    18176.87   48.77    0.963  0.30( 0.26) 0.86   11831.4     600.00
      6    18696.42   53.09    0.921  0.30( 0.26) 0.87   13424.9   31100.00
      7    20386.99   66.86    0.826  0.30( 0.27) 0.90   18570.6   40100.00
      8    21140.69   75.80    0.782  0.30( 0.27) 0.91   21815.0   11801.00
      9    22533.40   89.25    0.716  0.30( 0.28) 0.92   27511.8   11530.00
     10    23474.30   97.38    0.691  0.30( 0.28) 0.93   31823.8   11900.00
     11    24995.09  106.93    0.664  0.30( 0.28) 0.94   37965.5   11330.00
     12    25754.16  115.07    0.641  0.30( 0.28) 0.95   43052.6   10630.00
     13    25588.35  120.65    0.626  0.30( 0.28) 0.95   45642.5   12330.00
     14    25419.23  127.27    0.615  0.30( 0.29) 0.95   48784.9   11600.00
     15    25121.66  133.05    0.605  0.30( 0.29) 0.95   51019.3   11111.00
     16    24783.19  139.18    0.594  0.30( 0.29) 0.95   52953.1   12201.00
     17    23980.09  148.13    0.579  0.30( 0.29) 0.96   55041.4   12231.00
     18    23234.41  155.63    0.566  0.30( 0.29) 0.96   56452.9   10400.00
     19    22038.35  167.07    0.547  0.30( 0.29) 0.96   58073.7   10320.00
     20    21418.61  171.95    0.539  0.30( 0.29) 0.96   58299.2   10210.00
     21    20876.14  176.83    0.530  0.30( 0.29) 0.96   58461.5   12000.00
     22    18129.12  206.11    0.505  0.30( 0.29) 0.96   59078.5   10100.00
   TOTAL AREA(ACRES) =     59078.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    25754.16  Tc(MIN.) =  115.074
  EFFECTIVE AREA(ACRES) =  43052.63  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    59078.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13406.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    207.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1601.97   CHANNEL SLOPE =  0.0075
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.39
  CHANNEL FLOW THRU SUBAREA(CFS) =   25754.16
  FLOW VELOCITY(FEET/SEC.) =  14.71   FLOW DEPTH(FEET) =   7.39
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =  116.89
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  116.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.636
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.60      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.10      SUBAREA RUNOFF(CFS) =    6.07
  EFFECTIVE AREA(ACRES) =  43072.73   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    59098.6       PEAK FLOW RATE(CFS) =   25754.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  116.89
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.636
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        2.00      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       12.50      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.40      SUBAREA RUNOFF(CFS) =    6.17
  EFFECTIVE AREA(ACRES) =  43093.13   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    59119.0       PEAK FLOW RATE(CFS) =   25754.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.16
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.627
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        7.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.30      0.30     1.000    65
  COMMERCIAL                B        0.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.40      0.30     1.000    66
  COMMERCIAL                B        0.30      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   25756.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.11
  AVERAGE FLOW DEPTH(FEET) =   8.16   TRAVEL TIME(MIN.) =   3.13
  Tc(MIN.) =  120.01
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    3.82
  EFFECTIVE AREA(ACRES) =  43105.53     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =    59131.4         PEAK FLOW RATE(CFS) =   25754.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.16   FLOW VELOCITY(FEET/SEC.) =  13.11
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P10EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      518.09   10.14  0.30( 0.11) 0.38     237.9     429.00
      2      548.24   11.82  0.30( 0.11) 0.38     277.3     425.00
      3      551.99   12.10  0.30( 0.11) 0.38     284.1     400.00
      4      566.31   13.74  0.30( 0.11) 0.38     322.9     300.00
      5      605.65   19.30  0.30( 0.11) 0.38     439.2     210.00
      6      601.31   21.30  0.30( 0.11) 0.38     463.8     410.00
      7      598.36   22.55  0.30( 0.11) 0.38     478.8     200.00
      8      595.72   23.25  0.30( 0.11) 0.38     486.6     230.00
      9      580.44   24.41  0.30( 0.11) 0.37     491.2     220.50
    TOTAL AREA(ACRES) =      491.2

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

```
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    13583.86   25.00    1.388  0.30( 0.25) 0.84    4148.0   50600.00
     2    13617.37   25.17    1.383  0.30( 0.25) 0.84    4185.6   50500.00
     3    15724.27   37.72    1.108  0.30( 0.25) 0.83    6942.3   50330.00
     4    16775.43   44.36    1.014  0.30( 0.25) 0.85    9024.2     150.00
     5    18176.87   54.33    0.910  0.30( 0.26) 0.86   11884.3     600.00
     6    18696.42   58.60    0.872  0.30( 0.26) 0.88   13477.8   31100.00
     7    20386.99   72.20    0.800  0.30( 0.27) 0.90   18623.5   40100.00
     8    21140.69   81.09    0.756  0.30( 0.27) 0.91   21867.9   11801.00
     9    22533.40   94.42    0.699  0.30( 0.28) 0.92   27564.7   11530.00
    10    23474.30  102.48    0.677  0.30( 0.28) 0.93   31876.7   11900.00
    11    24995.09  111.92    0.650  0.30( 0.28) 0.94   38018.4   11330.00
    12    25754.16  120.01    0.627  0.30( 0.28) 0.95   43105.5   10630.00
    13    25588.35  125.61    0.617  0.30( 0.28) 0.95   45695.4   12330.00
    14    25419.23  132.23    0.606  0.30( 0.29) 0.95   48837.8   11600.00
    15    25121.66  138.03    0.596  0.30( 0.29) 0.95   51072.2   11111.00
    16    24783.19  144.18    0.586  0.30( 0.29) 0.96   53006.0   12201.00
    17    23980.09  153.19    0.571  0.30( 0.29) 0.96   55094.3   12231.00
    18    23234.41  160.74    0.558  0.30( 0.29) 0.96   56505.8   10400.00
    19    22038.35  172.28    0.538  0.30( 0.29) 0.96   58126.6   10320.00
    20    21418.61  177.21    0.530  0.30( 0.29) 0.96   58352.1   10210.00
    21    20876.14  182.13    0.523  0.30( 0.29) 0.96   58514.4   12000.00
    22    18129.12  211.68    0.501  0.30( 0.29) 0.96   59131.4   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      518.09   10.14    2.489  0.30( 0.11) 0.38     237.9     429.00
     2      548.24   11.82    2.271  0.30( 0.11) 0.38     277.3     425.00
     3      551.99   12.10    2.234  0.30( 0.11) 0.38     284.1     400.00
     4      566.31   13.74    2.022  0.30( 0.11) 0.38     322.9     300.00
     5      605.65   19.30    1.628  0.30( 0.11) 0.38     439.2     210.00
     6      601.31   21.30    1.537  0.30( 0.11) 0.38     463.8     410.00
     7      598.36   22.55    1.487  0.30( 0.11) 0.38     478.8     200.00
     8      595.72   23.25    1.459  0.30( 0.11) 0.38     486.6     230.00
     9      580.44   24.41    1.412  0.30( 0.11) 0.37     491.2     220.50
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13408.00 =   11903.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    11359.50   10.14    2.489  0.30( 0.23) 0.78    1919.8     429.00
     2    11958.66   11.82    2.271  0.30( 0.23) 0.78    2238.8     425.00
     3    12023.24   12.10    2.234  0.30( 0.23) 0.78    2292.4     400.00
     4    12196.17   13.74    2.022  0.30( 0.23) 0.78    2603.4     300.00
     5    13302.22   19.30    1.628  0.30( 0.23) 0.78    3641.3     210.00
     6    13696.01   21.30    1.537  0.30( 0.23) 0.78    3997.9     410.00
     7    13916.77   22.55    1.487  0.30( 0.24) 0.78    4219.6     200.00
     8    14013.66   23.25    1.459  0.30( 0.24) 0.78    4343.7     230.00
     9    14122.15   24.41    1.412  0.30( 0.24) 0.79    4542.2     220.50
```



```
    10    14153.74   25.00    1.388  0.30( 0.24) 0.79    4639.2   50600.00
    11    14185.14   25.17    1.383  0.30( 0.24) 0.79    4676.8   50500.00
    12    16168.85   37.72    1.108  0.30( 0.24) 0.80    7433.5   50330.00
    13    17178.44   44.36    1.014  0.30( 0.25) 0.82    9515.4     150.00
    14    18533.14   54.33    0.910  0.30( 0.25) 0.85   12375.5     600.00
    15    19035.91   58.60    0.872  0.30( 0.26) 0.86   13969.0   31100.00
    16    20694.08   72.20    0.800  0.30( 0.27) 0.89   19114.7   40100.00
    17    21428.20   81.09    0.756  0.30( 0.27) 0.90   22359.1   11801.00
    18    22795.67   94.42    0.699  0.30( 0.27) 0.92   28055.9   11530.00
    19    23726.37  102.48    0.677  0.30( 0.28) 0.92   32367.9   11900.00
    20    25235.21  111.92    0.650  0.30( 0.28) 0.93   38509.6   11330.00
    21    25984.04  120.01    0.627  0.30( 0.28) 0.94   43596.7   10630.00
    22    25813.98  125.61    0.617  0.30( 0.28) 0.94   46186.6   12330.00
    23    25639.84  132.23    0.606  0.30( 0.28) 0.95   49329.0   11600.00
    24    25337.86  138.03    0.596  0.30( 0.28) 0.95   51563.4   11111.00
    25    24994.71  144.18    0.586  0.30( 0.28) 0.95   53497.2   12201.00
    26    24184.77  153.19    0.571  0.30( 0.29) 0.95   55585.5   12231.00
    27    23433.36  160.74    0.558  0.30( 0.29) 0.95   56997.0   10400.00
    28    22228.54  172.28    0.538  0.30( 0.29) 0.95   58617.8   10320.00
    29    21605.05  177.21    0.530  0.30( 0.29) 0.95   58843.3   10210.00
    30    21059.73  182.13    0.523  0.30( 0.29) 0.95   59005.6   12000.00
    31    18302.51  211.68    0.501  0.30( 0.29) 0.95   59622.6   10100.00
   TOTAL AREA(ACRES) =     59622.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    25984.04  Tc(MIN.) =  120.015
  EFFECTIVE AREA(ACRES) =  43596.73  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =    59622.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P507XX10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      215.04   23.85  0.30( 0.30) 0.99     231.4   50700.00
    TOTAL AREA(ACRES) =      231.4

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	11359.50	10.14	2.489	0.30(0.23)	0.78	1919.8	429.00
2	11958.66	11.82	2.271	0.30(0.23)	0.78	2238.8	425.00
3	12023.24	12.10	2.234	0.30(0.23)	0.78	2292.4	400.00
4	12196.17	13.74	2.022	0.30(0.23)	0.78	2603.4	300.00
5	13302.22	19.30	1.628	0.30(0.23)	0.78	3641.3	210.00
6	13696.01	21.30	1.537	0.30(0.23)	0.78	3997.9	410.00
7	13916.77	22.55	1.487	0.30(0.24)	0.78	4219.6	200.00
8	14013.66	23.25	1.459	0.30(0.24)	0.78	4343.7	230.00
9	14122.15	24.41	1.412	0.30(0.24)	0.79	4542.2	220.50
10	14153.74	25.00	1.388	0.30(0.24)	0.79	4639.2	50600.00
11	14185.14	25.17	1.383	0.30(0.24)	0.79	4676.8	50500.00
12	16168.85	37.72	1.108	0.30(0.24)	0.80	7433.5	50330.00
13	17178.44	44.36	1.014	0.30(0.25)	0.82	9515.4	150.00
14	18533.14	54.33	0.910	0.30(0.25)	0.85	12375.5	600.00
15	19035.91	58.60	0.872	0.30(0.26)	0.86	13969.0	31100.00
16	20694.08	72.20	0.800	0.30(0.27)	0.89	19114.7	40100.00
17	21428.20	81.09	0.756	0.30(0.27)	0.90	22359.1	11801.00
18	22795.67	94.42	0.699	0.30(0.27)	0.92	28055.9	11530.00
19	23726.37	102.48	0.677	0.30(0.28)	0.92	32367.9	11900.00
20	25235.21	111.92	0.650	0.30(0.28)	0.93	38509.6	11330.00
21	25984.04	120.01	0.627	0.30(0.28)	0.94	43596.7	10630.00
22	25813.98	125.61	0.617	0.30(0.28)	0.94	46186.6	12330.00
23	25639.84	132.23	0.606	0.30(0.28)	0.95	49329.0	11600.00
24	25337.86	138.03	0.596	0.30(0.28)	0.95	51563.4	11111.00
25	24994.71	144.18	0.586	0.30(0.28)	0.95	53497.2	12201.00
26	24184.77	153.19	0.571	0.30(0.29)	0.95	55585.5	12231.00
27	23433.36	160.74	0.558	0.30(0.29)	0.95	56997.0	10400.00
28	22228.54	172.28	0.538	0.30(0.29)	0.95	58617.8	10320.00
29	21605.05	177.21	0.530	0.30(0.29)	0.95	58843.3	10210.00
30	21059.73	182.13	0.523	0.30(0.29)	0.95	59005.6	12000.00
31	18302.51	211.68	0.501	0.30(0.29)	0.95	59622.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	215.04	23.85	1.434	0.30(0.30)	0.99	231.4	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7683.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11535.61	10.14	2.489	0.30(0.24)	0.79	2018.1	429.00
2	12143.58	11.82	2.271	0.30(0.24)	0.79	2353.5	425.00
3	12209.08	12.10	2.234	0.30(0.24)	0.79	2409.8	400.00
4	12384.04	13.74	2.022	0.30(0.24)	0.79	2736.8	300.00
5	13505.77	19.30	1.628	0.30(0.24)	0.79	3828.5	210.00
6	13905.44	21.30	1.537	0.30(0.24)	0.79	4204.5	410.00
7	14129.45	22.55	1.487	0.30(0.24)	0.79	4438.4	200.00
8	14227.74	23.25	1.459	0.30(0.24)	0.79	4569.2	230.00
9	14285.07	23.85	1.434	0.30(0.24)	0.80	4678.2	50700.00
10	14332.90	24.41	1.412	0.30(0.24)	0.80	4773.6	220.50
11	14360.03	25.00	1.388	0.30(0.24)	0.80	4870.6	50600.00
12	14390.53	25.17	1.383	0.30(0.24)	0.80	4908.2	50500.00
13	16322.14	37.72	1.108	0.30(0.24)	0.81	7664.9	50330.00
14	17314.14	44.36	1.014	0.30(0.25)	0.83	9746.8	150.00
15	18649.07	54.33	0.910	0.30(0.25)	0.85	12606.9	600.00
16	19144.75	58.60	0.872	0.30(0.26)	0.86	14200.4	31100.00

17	20789.21	72.20	0.800	0.30(0.27)	0.89	19346.1	40100.00
18	21515.05	81.09	0.756	0.30(0.27)	0.90	22590.5	11801.00
19	22871.83	94.42	0.699	0.30(0.27)	0.92	28287.3	11530.00
20	23798.22	102.48	0.677	0.30(0.28)	0.92	32599.3	11900.00
21	25302.01	111.92	0.650	0.30(0.28)	0.93	38741.0	11330.00
22	26046.51	120.01	0.627	0.30(0.28)	0.94	43828.1	10630.00
23	25874.65	125.61	0.617	0.30(0.28)	0.94	46418.0	12330.00
24	25698.38	132.23	0.606	0.30(0.28)	0.95	49560.4	11600.00
25	25394.54	138.03	0.596	0.30(0.28)	0.95	51794.8	11111.00
26	25049.41	144.18	0.586	0.30(0.28)	0.95	53728.6	12201.00
27	24236.58	153.19	0.571	0.30(0.29)	0.95	55816.9	12231.00
28	23482.74	160.74	0.558	0.30(0.29)	0.95	57228.4	10400.00
29	22274.21	172.28	0.538	0.30(0.29)	0.95	58849.2	10320.00
30	21649.14	177.21	0.530	0.30(0.29)	0.95	59074.7	10210.00
31	21102.61	182.13	0.523	0.30(0.29)	0.95	59237.0	12000.00
32	18341.08	211.68	0.501	0.30(0.29)	0.95	59854.0	10100.00

TOTAL AREA(ACRES) = 59854.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 26046.51 Tc(MIN.) = 120.015
EFFECTIVE AREA(ACRES) = 43828.12 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 59854.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.28
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.625
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	2.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 26046.99
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.39
AVERAGE FLOW DEPTH(FEET) = 9.28 TRAVEL TIME(MIN.) = 1.39
Tc(MIN.) = 121.41
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 0.96
EFFECTIVE AREA(ACRES) = 43831.43 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59857.3 PEAK FLOW RATE(CFS) = 26046.51
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.28 FLOW VELOCITY(FEET/SEC.) = 11.39
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124119.34 FEET.

****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==

****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==
PEAK FLOWRATE TABLE FILE NAME: RU10EV36.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	30.81	0.30(0.27)	0.90	1440.9	110.00
2	1573.72	33.19	0.30(0.27)	0.90	1597.0	100.00
3	1590.73	34.56	0.30(0.27)	0.90	1678.1	100.00
4	1600.63	37.85	0.30(0.27)	0.91	1850.3	130.00
5	1651.13	52.91	0.30(0.28)	0.93	2602.0	20100.00
6	1611.81	59.35	0.30(0.28)	0.93	2797.2	13600.00
7	1408.16	100.08	0.30(0.28)	0.93	3789.3	13510.00
8	1318.82	111.28	0.30(0.28)	0.93	3859.7	13500.00

TOTAL AREA(ACRES) = 3859.7

****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11535.61	11.97	2.252	0.30(0.24)	0.79	2021.4	429.00
2	12143.58	13.62	2.037	0.30(0.24)	0.79	2356.8	425.00
3	12209.08	13.90	2.001	0.30(0.24)	0.79	2413.1	400.00
4	12384.04	15.53	1.830	0.30(0.24)	0.79	2740.1	300.00
5	13505.77	21.04	1.548	0.30(0.24)	0.79	3831.8	210.00
6	13905.44	23.02	1.468	0.30(0.24)	0.79	4207.8	410.00
7	14129.45	24.26	1.418	0.30(0.24)	0.79	4441.7	200.00
8	14227.74	24.95	1.390	0.30(0.24)	0.79	4572.5	230.00
9	14285.07	25.56	1.372	0.30(0.24)	0.80	4681.5	50700.00
10	14332.90	26.12	1.357	0.30(0.24)	0.80	4776.9	220.50
11	14360.03	26.70	1.340	0.30(0.24)	0.80	4873.9	50600.00
12	14390.53	26.87	1.336	0.30(0.24)	0.80	4911.5	50500.00
13	16322.14	39.35	1.078	0.30(0.24)	0.81	7668.2	50330.00
14	17314.14	45.96	0.996	0.30(0.25)	0.83	9750.1	150.00
15	18649.07	55.89	0.896	0.30(0.25)	0.85	12610.2	600.00
16	19144.75	60.14	0.859	0.30(0.26)	0.86	14203.7	31100.00
17	20789.21	73.70	0.792	0.30(0.27)	0.89	19349.4	40100.00
18	21515.05	82.57	0.749	0.30(0.27)	0.90	22593.8	11801.00
19	22871.83	95.88	0.695	0.30(0.27)	0.92	28290.6	11530.00

20	23798.22	103.91	0.673	0.30(0.28)	0.92	32602.6	11900.00
21	25302.01	113.32	0.646	0.30(0.28)	0.93	38744.3	11330.00
22	26046.51	121.41	0.625	0.30(0.28)	0.94	43831.4	10630.00
23	25874.65	127.00	0.615	0.30(0.28)	0.94	46421.3	12330.00
24	25698.38	133.63	0.604	0.30(0.28)	0.95	49563.7	11600.00
25	25394.54	139.43	0.594	0.30(0.28)	0.95	51798.1	11111.00
26	25049.41	145.59	0.583	0.30(0.28)	0.95	53731.9	12201.00
27	24236.58	154.62	0.568	0.30(0.29)	0.95	55820.2	12231.00
28	23482.74	162.19	0.555	0.30(0.29)	0.95	57231.7	10400.00
29	22274.21	173.74	0.536	0.30(0.29)	0.95	58852.5	10320.00
30	21649.14	178.69	0.527	0.30(0.29)	0.95	59078.0	10210.00
31	21102.61	183.63	0.522	0.30(0.29)	0.95	59240.3	12000.00
32	18341.08	213.24	0.499	0.30(0.29)	0.95	59857.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124119.34 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	30.81	1.233	0.30(0.27)	0.90	1440.9	110.00
2	1573.72	33.19	1.190	0.30(0.27)	0.90	1597.0	100.00
3	1590.73	34.56	1.165	0.30(0.27)	0.90	1678.1	100.00
4	1600.63	37.85	1.105	0.30(0.27)	0.91	1850.3	130.00
5	1651.13	52.91	0.922	0.30(0.28)	0.93	2602.0	20100.00
6	1611.81	59.35	0.866	0.30(0.28)	0.93	2797.2	13600.00
7	1408.16	100.08	0.683	0.30(0.28)	0.93	3789.3	13510.00
8	1318.82	111.28	0.652	0.30(0.28)	0.93	3859.7	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12752.18	11.97	2.252	0.30(0.24)	0.81	2581.3	429.00
2	13378.46	13.62	2.037	0.30(0.24)	0.81	2994.0	425.00
3	13443.46	13.90	2.001	0.30(0.24)	0.81	3063.4	400.00
4	13627.07	15.53	1.830	0.30(0.24)	0.81	3466.7	300.00
5	14884.63	21.04	1.548	0.30(0.24)	0.81	4815.7	210.00
6	15319.71	23.02	1.468	0.30(0.24)	0.82	5284.6	410.00
7	15557.53	24.26	1.418	0.30(0.24)	0.82	5576.2	200.00
8	15660.81	24.95	1.390	0.30(0.24)	0.82	5739.6	230.00
9	15729.89	25.56	1.372	0.30(0.25)	0.82	5876.9	50700.00
10	15788.39	26.12	1.357	0.30(0.25)	0.82	5998.5	220.50
11	15825.66	26.70	1.340	0.30(0.25)	0.82	6122.8	50600.00
12	15858.90	26.87	1.336	0.30(0.25)	0.82	6168.2	50500.00
13	16521.74	30.81	1.233	0.30(0.25)	0.82	7222.1	110.00
14	16942.30	33.19	1.190	0.30(0.25)	0.82	7904.3	100.00
15	17171.82	34.56	1.165	0.30(0.25)	0.82	8288.7	100.00
16	17691.24	37.85	1.105	0.30(0.25)	0.83	9188.1	130.00
17	17927.79	39.35	1.078	0.30(0.25)	0.83	9593.2	50330.00
18	18941.97	45.96	0.996	0.30(0.25)	0.84	12005.4	150.00
19	19899.02	52.91	0.922	0.30(0.26)	0.86	14352.7	20100.00
20	20282.00	55.89	0.896	0.30(0.26)	0.86	15302.6	600.00
21	20664.67	59.35	0.866	0.30(0.26)	0.87	16705.6	13600.00
22	20752.62	60.14	0.859	0.30(0.26)	0.87	17020.2	31100.00
23	22329.26	73.70	0.792	0.30(0.27)	0.90	22496.2	40100.00
24	23010.75	82.57	0.749	0.30(0.27)	0.91	25956.6	11801.00
25	24300.99	95.88	0.695	0.30(0.28)	0.92	31977.7	11530.00
26	24764.01	100.08	0.683	0.30(0.28)	0.92	34332.9	13510.00
27	25175.78	103.91	0.673	0.30(0.28)	0.93	36416.1	11900.00

```
     28    26294.06  111.28    0.652  0.30( 0.28) 0.93   41269.4   13500.00
     29    26600.27  113.32    0.646  0.30( 0.28) 0.93   42603.9   11330.00
     30    27269.15  121.41    0.625  0.30( 0.28) 0.94   47691.1   10630.00
     31    27063.55  127.00    0.615  0.30( 0.28) 0.94   50281.0   12330.00
     32    26847.30  133.63    0.604  0.30( 0.28) 0.95   53423.4   11600.00
     33    26508.46  139.43    0.594  0.30( 0.28) 0.95   55657.8   11111.00
     34    26126.16  145.59    0.583  0.30( 0.28) 0.95   57591.6   12201.00
     35    25258.89  154.62    0.568  0.30( 0.28) 0.95   59679.9   12231.00
     36    24459.41  162.19    0.555  0.30( 0.29) 0.95   61091.4   10400.00
     37    23181.16  173.74    0.536  0.30( 0.29) 0.95   62712.2   10320.00
     38    22526.27  178.69    0.527  0.30( 0.29) 0.95   62937.6   10210.00
     39    21961.88  183.63    0.522  0.30( 0.29) 0.95   63100.0   12000.00
     40    19119.21  213.24    0.499  0.30( 0.29) 0.95   63717.0   10100.00
   TOTAL AREA(ACRES) =     63717.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    27269.15  Tc(MIN.) =  121.409
  EFFECTIVE AREA(ACRES) =  47691.11  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =    63717.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.92
  CHANNEL FLOW THRU SUBAREA(CFS) =   27269.15
  FLOW VELOCITY(FEET/SEC.) =  16.79   FLOW DEPTH(FEET) =   6.92
  TRAVEL TIME(MIN.) =   0.17   Tc(MIN.) =  121.58
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101E.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      366.95   40.42  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
```



```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12752.18   12.19    2.223  0.30( 0.24) 0.81    2581.3     429.00
      2    13378.46   13.84    2.009  0.30( 0.24) 0.81    2994.0     425.00
      3    13443.46   14.12    1.973  0.30( 0.24) 0.81    3063.4     400.00
      4    13627.07   15.75    1.819  0.30( 0.24) 0.81    3466.7     300.00
      5    14884.63   21.24    1.540  0.30( 0.24) 0.81    4815.7     210.00
      6    15319.71   23.23    1.460  0.30( 0.24) 0.82    5284.6     410.00
      7    15557.53   24.46    1.410  0.30( 0.24) 0.82    5576.2     200.00
      8    15660.81   25.16    1.384  0.30( 0.24) 0.82    5739.6     230.00
      9    15729.89   25.76    1.367  0.30( 0.25) 0.82    5876.9   50700.00
     10    15788.39   26.32    1.351  0.30( 0.25) 0.82    5998.5     220.50
     11    15825.66   26.90    1.335  0.30( 0.25) 0.82    6122.8   50600.00
     12    15858.90   27.07    1.330  0.30( 0.25) 0.82    6168.2   50500.00
     13    16521.74   31.01    1.230  0.30( 0.25) 0.82    7222.1     110.00
     14    16942.30   33.38    1.186  0.30( 0.25) 0.82    7904.3     100.00
     15    17171.82   34.76    1.161  0.30( 0.25) 0.82    8288.7     100.00
     16    17691.24   38.05    1.102  0.30( 0.25) 0.83    9188.1     130.00
     17    17927.79   39.54    1.074  0.30( 0.25) 0.83    9593.2   50330.00
     18    18941.97   46.15    0.993  0.30( 0.25) 0.84   12005.4     150.00
     19    19899.02   53.09    0.921  0.30( 0.26) 0.86   14352.7   20100.00
     20    20282.00   56.07    0.895  0.30( 0.26) 0.86   15302.6     600.00
     21    20664.67   59.54    0.864  0.30( 0.26) 0.87   16705.6   13600.00
     22    20752.62   60.33    0.858  0.30( 0.26) 0.87   17020.2   31100.00
     23    22329.26   73.88    0.792  0.30( 0.27) 0.90   22496.2   40100.00
     24    23010.75   82.75    0.748  0.30( 0.27) 0.91   25956.6   11801.00
     25    24300.99   96.05    0.695  0.30( 0.28) 0.92   31977.7   11530.00
     26    24764.01  100.25    0.683  0.30( 0.28) 0.92   34332.9   13510.00
     27    25175.78  104.09    0.672  0.30( 0.28) 0.93   36416.1   11900.00
     28    26294.06  111.45    0.651  0.30( 0.28) 0.93   41269.4   13500.00
     29    26600.27  113.49    0.645  0.30( 0.28) 0.93   42603.9   11330.00
     30    27269.15  121.58    0.624  0.30( 0.28) 0.94   47691.1   10630.00
     31    27063.55  127.17    0.615  0.30( 0.28) 0.94   50281.0   12330.00
     32    26847.30  133.80    0.604  0.30( 0.28) 0.95   53423.4   11600.00
     33    26508.46  139.60    0.594  0.30( 0.28) 0.95   55657.8   11111.00
     34    26126.16  145.77    0.583  0.30( 0.28) 0.95   57591.6   12201.00
     35    25258.89  154.79    0.568  0.30( 0.28) 0.95   59679.9   12231.00
     36    24459.41  162.36    0.555  0.30( 0.29) 0.95   61091.4   10400.00
     37    23181.16  173.92    0.535  0.30( 0.29) 0.95   62712.2   10320.00
     38    22526.27  178.87    0.527  0.30( 0.29) 0.95   62937.6   10210.00
     39    21961.88  183.81    0.522  0.30( 0.29) 0.95   63100.0   12000.00
     40    19119.21  213.43    0.499  0.30( 0.29) 0.95   63717.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      366.95   40.42    1.061  0.30( 0.30) 0.98     591.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	13030.73	12.19	2.223	0.30(0.25)	0.82	2759.5	429.00
2	13659.64	13.84	2.009	0.30(0.25)	0.82	3196.4	425.00
3	13724.25	14.12	1.973	0.30(0.25)	0.82	3269.8	400.00
4	13911.45	15.75	1.819	0.30(0.25)	0.82	3696.9	300.00
5	15198.00	21.24	1.540	0.30(0.25)	0.82	5126.3	210.00
6	15640.28	23.23	1.460	0.30(0.25)	0.83	5624.1	410.00
7	15880.68	24.46	1.410	0.30(0.25)	0.83	5933.8	200.00
8	15985.35	25.16	1.384	0.30(0.25)	0.83	6107.4	230.00
9	16057.07	25.76	1.367	0.30(0.25)	0.83	6253.6	50700.00
10	16117.78	26.32	1.351	0.30(0.25)	0.83	6383.3	220.50
11	16157.14	26.90	1.335	0.30(0.25)	0.83	6516.1	50600.00
12	16190.95	27.07	1.330	0.30(0.25)	0.83	6564.0	50500.00
13	16865.19	31.01	1.230	0.30(0.25)	0.83	7675.4	110.00
14	17294.97	33.38	1.186	0.30(0.25)	0.83	8392.4	100.00
15	17528.69	34.76	1.161	0.30(0.25)	0.83	8796.8	100.00
16	18054.90	38.05	1.102	0.30(0.25)	0.84	9744.3	130.00
17	18292.98	39.54	1.074	0.30(0.25)	0.84	10171.3	50330.00
18	18430.36	40.42	1.061	0.30(0.25)	0.84	10506.8	10100.00
19	19276.55	46.15	0.993	0.30(0.25)	0.85	12596.4	150.00
20	20198.80	53.09	0.921	0.30(0.26)	0.86	14943.7	20100.00
21	20569.21	56.07	0.895	0.30(0.26)	0.87	15893.6	600.00
22	20937.28	59.54	0.864	0.30(0.26)	0.87	17296.6	13600.00
23	21022.51	60.33	0.858	0.30(0.26)	0.88	17611.2	31100.00
24	22567.12	73.88	0.792	0.30(0.27)	0.90	23087.2	40100.00
25	23227.65	82.75	0.748	0.30(0.27)	0.91	26547.6	11801.00
26	24492.54	96.05	0.695	0.30(0.28)	0.92	32568.7	11530.00
27	24949.86	100.25	0.683	0.30(0.28)	0.92	34923.9	13510.00
28	25356.42	104.09	0.672	0.30(0.28)	0.93	37007.1	11900.00
29	26464.70	111.45	0.651	0.30(0.28)	0.93	41860.4	13500.00
30	26768.14	113.49	0.645	0.30(0.28)	0.93	43194.9	11330.00
31	27426.90	121.58	0.624	0.30(0.28)	0.94	48282.1	10630.00
32	27216.75	127.17	0.615	0.30(0.28)	0.94	50872.0	12330.00
33	26995.11	133.80	0.604	0.30(0.28)	0.95	54014.4	11600.00
34	26651.53	139.60	0.594	0.30(0.28)	0.95	56248.8	11111.00
35	26264.21	145.77	0.583	0.30(0.28)	0.95	58182.6	12201.00
36	25389.60	154.79	0.568	0.30(0.28)	0.95	60270.9	12231.00
37	24583.95	162.36	0.555	0.30(0.29)	0.95	61682.4	10400.00
38	23296.29	173.92	0.535	0.30(0.29)	0.95	63303.2	10320.00
39	22637.37	178.87	0.527	0.30(0.29)	0.95	63528.6	10210.00
40	22070.64	183.81	0.522	0.30(0.29)	0.95	63691.0	12000.00
41	19217.01	213.43	0.499	0.30(0.29)	0.95	64308.0	10100.00

TOTAL AREA(ACRES) = 64308.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 27426.90 Tc(MIN.) = 121.577
EFFECTIVE AREA(ACRES) = 48282.11 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 64308.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 170.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0266

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.31
CHANNEL FLOW THRU SUBAREA(CFS) = 27426.90
FLOW VELOCITY(FEET/SEC.) = 22.79 FLOW DEPTH(FEET) = 5.31
TRAVEL TIME(MIN.) = 0.19 Tc(MIN.) = 121.77
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: P508XX10.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	124.05	23.35	0.30(0.30)	0.99	131.3	50800.00

TOTAL AREA(ACRES) = 131.3

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13030.73	12.44	2.191	0.30(0.25)	0.82	2759.5	429.00
2	13659.64	14.08	1.978	0.30(0.25)	0.82	3196.4	425.00
3	13724.25	14.36	1.942	0.30(0.25)	0.82	3269.8	400.00
4	13911.45	15.99	1.806	0.30(0.25)	0.82	3696.9	300.00
5	15198.00	21.48	1.530	0.30(0.25)	0.82	5126.3	210.00
6	15640.28	23.46	1.450	0.30(0.25)	0.83	5624.1	410.00
7	15880.68	24.69	1.400	0.30(0.25)	0.83	5933.8	200.00
8	15985.35	25.39	1.377	0.30(0.25)	0.83	6107.4	230.00
9	16057.07	25.99	1.360	0.30(0.25)	0.83	6253.6	50700.00
10	16117.78	26.55	1.345	0.30(0.25)	0.83	6383.3	220.50
11	16157.14	27.13	1.328	0.30(0.25)	0.83	6516.1	50600.00
12	16190.95	27.30	1.324	0.30(0.25)	0.83	6564.0	50500.00
13	16865.19	31.23	1.226	0.30(0.25)	0.83	7675.4	110.00
14	17294.97	33.61	1.182	0.30(0.25)	0.83	8392.4	100.00
15	17528.69	34.98	1.157	0.30(0.25)	0.83	8796.8	100.00
16	18054.90	38.27	1.098	0.30(0.25)	0.84	9744.3	130.00
17	18292.98	39.76	1.070	0.30(0.25)	0.84	10171.3	50330.00
18	18430.36	40.64	1.058	0.30(0.25)	0.84	10506.8	10100.00
19	19276.55	46.37	0.991	0.30(0.25)	0.85	12596.4	150.00
20	20198.80	53.30	0.919	0.30(0.26)	0.86	14943.7	20100.00
21	20569.21	56.29	0.893	0.30(0.26)	0.87	15893.6	600.00
22	20937.28	59.75	0.862	0.30(0.26)	0.87	17296.6	13600.00
23	21022.51	60.54	0.857	0.30(0.26)	0.88	17611.2	31100.00

24	22567.12	74.09	0.791	0.30(0.27)	0.90	23087.2	40100.00
25	23227.65	82.95	0.747	0.30(0.27)	0.91	26547.6	11801.00
26	24492.54	96.25	0.694	0.30(0.28)	0.92	32568.7	11530.00
27	24949.86	100.45	0.682	0.30(0.28)	0.92	34923.9	13510.00
28	25356.42	104.28	0.672	0.30(0.28)	0.93	37007.1	11900.00
29	26464.70	111.64	0.651	0.30(0.28)	0.93	41860.4	13500.00
30	26768.14	113.69	0.645	0.30(0.28)	0.93	43194.9	11330.00
31	27426.90	121.77	0.624	0.30(0.28)	0.94	48282.1	10630.00
32	27216.75	127.36	0.614	0.30(0.28)	0.94	50872.0	12330.00
33	26995.11	133.99	0.603	0.30(0.28)	0.95	54014.4	11600.00
34	26651.53	139.79	0.593	0.30(0.28)	0.95	56248.8	11111.00
35	26264.21	145.96	0.583	0.30(0.28)	0.95	58182.6	12201.00
36	25389.60	154.99	0.568	0.30(0.28)	0.95	60270.9	12231.00
37	24583.95	162.56	0.555	0.30(0.29)	0.95	61682.4	10400.00
38	23296.29	174.12	0.535	0.30(0.29)	0.95	63303.2	10320.00
39	22637.37	179.07	0.527	0.30(0.29)	0.95	63528.6	10210.00
40	22070.64	184.02	0.522	0.30(0.29)	0.95	63691.0	12000.00
41	19217.01	213.65	0.499	0.30(0.29)	0.95	64308.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	124.05	23.35	1.455	0.30(0.30)	0.99	131.3	50800.00

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13138.83	12.44	2.191	0.30(0.25)	0.83	2829.5	429.00
2	13768.25	14.08	1.978	0.30(0.25)	0.83	3275.6	425.00
3	13832.64	14.36	1.942	0.30(0.25)	0.83	3350.6	400.00
4	14022.15	15.99	1.806	0.30(0.25)	0.83	3786.8	300.00
5	15319.56	21.48	1.530	0.30(0.25)	0.83	5247.1	210.00
6	15739.46	23.35	1.455	0.30(0.25)	0.83	5727.4	50800.00
7	15763.85	23.46	1.450	0.30(0.25)	0.83	5755.4	410.00
8	15998.92	24.69	1.400	0.30(0.25)	0.83	6065.1	200.00
9	16101.09	25.39	1.377	0.30(0.25)	0.83	6238.7	230.00
10	16170.99	25.99	1.360	0.30(0.25)	0.83	6384.9	50700.00
11	16230.03	26.55	1.345	0.30(0.25)	0.83	6514.6	220.50
12	16267.64	27.13	1.328	0.30(0.25)	0.83	6647.4	50600.00
13	16300.95	27.30	1.324	0.30(0.25)	0.83	6695.3	50500.00
14	16964.69	31.23	1.226	0.30(0.25)	0.83	7806.7	110.00
15	17389.84	33.61	1.182	0.30(0.25)	0.83	8523.7	100.00
16	17620.89	34.98	1.157	0.30(0.25)	0.83	8928.1	100.00
17	18140.69	38.27	1.098	0.30(0.25)	0.84	9875.6	130.00
18	18375.86	39.76	1.070	0.30(0.25)	0.84	10302.6	50330.00
19	18511.96	40.64	1.058	0.30(0.25)	0.84	10638.1	10100.00
20	19350.92	46.37	0.991	0.30(0.26)	0.85	12727.7	150.00
21	20265.47	53.30	0.919	0.30(0.26)	0.86	15075.0	20100.00
22	20633.07	56.29	0.893	0.30(0.26)	0.87	16024.9	600.00
23	20997.87	59.75	0.862	0.30(0.26)	0.87	17427.9	13600.00
24	21082.58	60.54	0.857	0.30(0.26)	0.88	17742.5	31100.00
25	22620.03	74.09	0.791	0.30(0.27)	0.90	23218.5	40100.00
26	23275.88	82.95	0.747	0.30(0.27)	0.91	26678.9	11801.00
27	24535.15	96.25	0.694	0.30(0.28)	0.92	32700.0	11530.00
28	24991.19	100.45	0.682	0.30(0.28)	0.92	35055.2	13510.00
29	25396.59	104.28	0.672	0.30(0.28)	0.93	37138.4	11900.00

30	26502.64	111.64	0.651	0.30(0.28)	0.93	41991.7	13500.00
31	26805.46	113.69	0.645	0.30(0.28)	0.94	43326.2	11330.00
32	27461.98	121.77	0.624	0.30(0.28)	0.94	48413.4	10630.00
33	27250.81	127.36	0.614	0.30(0.28)	0.94	51003.3	12330.00
34	27027.96	133.99	0.603	0.30(0.28)	0.95	54145.7	11600.00
35	26683.33	139.79	0.593	0.30(0.28)	0.95	56380.1	11111.00
36	26294.89	145.96	0.583	0.30(0.28)	0.95	58313.9	12201.00
37	25418.63	154.99	0.568	0.30(0.29)	0.95	60402.2	12231.00
38	24611.60	162.56	0.555	0.30(0.29)	0.95	61813.7	10400.00
39	23321.84	174.12	0.535	0.30(0.29)	0.95	63434.5	10320.00
40	22662.02	179.07	0.527	0.30(0.29)	0.95	63659.9	10210.00
41	22094.79	184.02	0.522	0.30(0.29)	0.95	63822.3	12000.00
42	19238.71	213.65	0.499	0.30(0.29)	0.95	64439.3	10100.00

TOTAL AREA(ACRES) = 64439.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 27461.98 Tc(MIN.) = 121.767
EFFECTIVE AREA(ACRES) = 48413.41 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64439.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 64439.3 TC(MIN.) = 121.77
EFFECTIVE AREA(ACRES) = 48413.41 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 27461.98

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13138.83	12.44	2.191	0.30(0.25)	0.83	2829.5	429.00
2	13768.25	14.08	1.978	0.30(0.25)	0.83	3275.6	425.00
3	13832.64	14.36	1.942	0.30(0.25)	0.83	3350.6	400.00
4	14022.15	15.99	1.806	0.30(0.25)	0.83	3786.8	300.00
5	15319.56	21.48	1.530	0.30(0.25)	0.83	5247.1	210.00
6	15739.46	23.35	1.455	0.30(0.25)	0.83	5727.4	50800.00
7	15763.85	23.46	1.450	0.30(0.25)	0.83	5755.4	410.00
8	15998.92	24.69	1.400	0.30(0.25)	0.83	6065.1	200.00
9	16101.09	25.39	1.377	0.30(0.25)	0.83	6238.7	230.00
10	16170.99	25.99	1.360	0.30(0.25)	0.83	6384.9	50700.00
11	16230.03	26.55	1.345	0.30(0.25)	0.83	6514.6	220.50
12	16267.64	27.13	1.328	0.30(0.25)	0.83	6647.4	50600.00
13	16300.95	27.30	1.324	0.30(0.25)	0.83	6695.3	50500.00
14	16964.69	31.23	1.226	0.30(0.25)	0.83	7806.7	110.00
15	17389.84	33.61	1.182	0.30(0.25)	0.83	8523.7	100.00
16	17620.89	34.98	1.157	0.30(0.25)	0.83	8928.1	100.00
17	18140.69	38.27	1.098	0.30(0.25)	0.84	9875.6	130.00
18	18375.86	39.76	1.070	0.30(0.25)	0.84	10302.6	50330.00
19	18511.96	40.64	1.058	0.30(0.25)	0.84	10638.1	10100.00
20	19350.92	46.37	0.991	0.30(0.26)	0.85	12727.7	150.00
21	20265.47	53.30	0.919	0.30(0.26)	0.86	15075.0	20100.00
22	20633.07	56.29	0.893	0.30(0.26)	0.87	16024.9	600.00
23	20997.87	59.75	0.862	0.30(0.26)	0.87	17427.9	13600.00
24	21082.58	60.54	0.857	0.30(0.26)	0.88	17742.5	31100.00
25	22620.03	74.09	0.791	0.30(0.27)	0.90	23218.5	40100.00
26	23275.88	82.95	0.747	0.30(0.27)	0.91	26678.9	11801.00
27	24535.15	96.25	0.694	0.30(0.28)	0.92	32700.0	11530.00

28	24991.19	100.45	0.682	0.30(0.28)	0.92	35055.2	13510.00
29	25396.59	104.28	0.672	0.30(0.28)	0.93	37138.4	11900.00
30	26502.64	111.64	0.651	0.30(0.28)	0.93	41991.7	13500.00
31	26805.46	113.69	0.645	0.30(0.28)	0.94	43326.2	11330.00
32	27461.98	121.77	0.624	0.30(0.28)	0.94	48413.4	10630.00
33	27250.81	127.36	0.614	0.30(0.28)	0.94	51003.3	12330.00
34	27027.96	133.99	0.603	0.30(0.28)	0.95	54145.7	11600.00
35	26683.33	139.79	0.593	0.30(0.28)	0.95	56380.1	11111.00
36	26294.89	145.96	0.583	0.30(0.28)	0.95	58313.9	12201.00
37	25418.63	154.99	0.568	0.30(0.29)	0.95	60402.2	12231.00
38	24611.60	162.56	0.555	0.30(0.29)	0.95	61813.7	10400.00
39	23321.84	174.12	0.535	0.30(0.29)	0.95	63434.5	10320.00
40	22662.02	179.07	0.527	0.30(0.29)	0.95	63659.9	10210.00
41	22094.79	184.02	0.522	0.30(0.29)	0.95	63822.3	12000.00
42	19238.71	213.65	0.499	0.30(0.29)	0.95	64439.3	10100.00

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 10-YR EV MAY 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RU10EV36.DAT
  TIME/DATE OF STUDY: 14:10 05/11/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.720
   2)   10.00;  2.487
   3)   15.00;  1.851
   4)   20.00;  1.582
   5)   25.00;  1.382
   6)   30.00;  1.244
   7)   40.00;  1.061
   8)   50.00;  0.944
   9)   60.00;  0.855
  10)   90.00;  0.707
  11)  120.00;  0.622
  12)  180.00;  0.520
  13)  360.00;  0.381
  14) 1200.00;  0.166
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.360
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    65   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      6.29
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      6.29

************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.101
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.41
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   2.04
  Tc(MIN.) =   13.04
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   12.07
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      17.57
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.42   FLOW VELOCITY(FEET/SEC.) =   3.89
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.77
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.806
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.62
  AVERAGE FLOW DEPTH(FEET) =   0.73   TRAVEL TIME(MIN.) =   2.81
  Tc(MIN.) =   15.84
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   41.96
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      56.64
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   5.26
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.614
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.56
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   3.56
  Tc(MIN.) =   19.40
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   27.63
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =      77.08
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   5.72
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.500
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.44
  AVERAGE FLOW DEPTH(FEET) =   1.29   TRAVEL TIME(MIN.) =   2.64
  Tc(MIN.) =   22.04
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   22.95
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =      93.35
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.33

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.33   FLOW VELOCITY(FEET/SEC.) =   5.53
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X10.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      688.52   58.84  0.30( 0.28) 0.95    1509.5   13510.00
      2      640.29   69.13  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      688.52   58.84  0.30( 0.28) 0.95    1509.5   13510.00
      2      640.29   69.13  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.87
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.844
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     695.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.42
```



```
  AVERAGE FLOW DEPTH(FEET) =   1.87   TRAVEL TIME(MIN.) =   3.30
  Tc(MIN.) =   62.14
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   12.99
  EFFECTIVE AREA(ACRES) =   1535.98     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =     774.35
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.99   FLOW VELOCITY(FEET/SEC.) =  10.79
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      774.35   62.14    0.844  0.30( 0.28) 0.95    1536.0   13510.00
      2      736.87   72.51    0.793  0.30( 0.28) 0.95    1606.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =     774.35  Tc(MIN.) =   62.14
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1535.98

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   62.14
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.844
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    0.71
  EFFECTIVE AREA(ACRES) =   1537.43   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =     775.06

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      775.06   62.14    0.844  0.30( 0.28) 0.95    1537.4   13510.00
      2      737.52   72.51    0.793  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1        93.35   22.04    1.500  0.30( 0.30) 1.00       86.4   13600.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       690.20   22.04    1.500  0.30( 0.29) 0.96      631.7   13600.00
     2       817.40   62.14    0.844  0.30( 0.29) 0.95     1623.8   13510.00
     3       775.88   72.51    0.793  0.30( 0.28) 0.95     1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      817.40  Tc(MIN.) =   62.136
 EFFECTIVE AREA(ACRES) =   1623.83  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
 TOTAL AREA(ACRES) =     1694.2
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.10
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.834
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.39      0.30     1.000     -
 USER-DEFINED               -       16.30      0.30     1.000     -
 USER-DEFINED               -        4.08      0.30     1.000     -
 USER-DEFINED               -       12.36      0.30     1.000     -
 USER-DEFINED               -       11.23      0.30     1.000     -
 USER-DEFINED               -        5.16      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     830.51
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.89
 AVERAGE FLOW DEPTH(FEET) =   2.10   TRAVEL TIME(MIN.) =   2.12
 Tc(MIN.) =   64.26
 SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   26.21
 EFFECTIVE AREA(ACRES) =   1678.35     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =     828.33
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.10   FLOW VELOCITY(FEET/SEC.) =  10.90
```



```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       694.12   24.27    1.411  0.30( 0.29) 0.96      686.3   13600.00
     2       828.33   64.26    0.834  0.30( 0.29) 0.95     1678.3   13510.00
     3       783.33   74.67    0.783  0.30( 0.28) 0.95     1748.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     828.33  Tc(MIN.) =   64.26
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1678.35

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.26
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.834
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.93      0.30     1.000     -
 USER-DEFINED               -        0.45      0.30     1.000     -
 USER-DEFINED               -        3.98      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   28.05
 EFFECTIVE AREA(ACRES) =   1736.71   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =     856.39

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P201XX10.DNA
 MEMORY BANK #  3 DEFINED AS FOLLOWS:
  STREAM        Q      Tc       Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
     1       158.08   17.90  0.30( 0.26) 0.85      133.8   20100.00
   TOTAL AREA(ACRES) =      133.8

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       752.50   24.27    1.411  0.30( 0.29) 0.96      744.6   13600.00
     2       856.39   64.26    0.834  0.30( 0.29) 0.95     1736.7   13510.00
     3       808.68   74.67    0.783  0.30( 0.29) 0.95     1807.1   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.
```

```
 ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      158.08   17.90    1.695  0.30( 0.26) 0.85     133.8   20100.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      853.43   17.90    1.695  0.30( 0.28) 0.94     683.2   20100.00
     2      879.44   24.27    1.411  0.30( 0.28) 0.95     878.4   13600.00
     3      919.88   64.26    0.834  0.30( 0.28) 0.95    1870.5   13510.00
     4      866.53   74.67    0.783  0.30( 0.28) 0.94    1940.9   13500.00
   TOTAL AREA(ACRES) =      1940.9

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      919.88  Tc(MIN.) =   64.255
 EFFECTIVE AREA(ACRES) =   1870.51  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1940.9
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.85
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     935.24
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.51
 AVERAGE FLOW DEPTH(FEET) =   2.85   TRAVEL TIME(MIN.) =   5.86
 Tc(MIN.) =   70.12
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   30.72
 EFFECTIVE AREA(ACRES) =   1938.09     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =     919.88
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.83
```



```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.83   FLOW VELOCITY(FEET/SEC.) =   8.46
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      853.43   23.86    1.428  0.30( 0.28) 0.95     750.8   20100.00
     2      879.44   30.19    1.241  0.30( 0.28) 0.95     946.0   13600.00
     3      919.88   70.12    0.805  0.30( 0.28) 0.95    1938.1   13510.00
     4      866.53   80.65    0.753  0.30( 0.28) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     919.88  Tc(MIN.) =   70.12
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1938.09

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.12
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   47.60
 EFFECTIVE AREA(ACRES) =   2042.79   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =     955.58

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   70.12
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.805
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    3.65
 EFFECTIVE AREA(ACRES) =   2050.82   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =     959.23
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.10
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -       24.24      0.30     1.000     -
  USER-DEFINED               -        1.34      0.30     1.000     -
  USER-DEFINED               -       74.98      0.30     1.000     -
  USER-DEFINED               -      101.12      0.30     1.000     -
  USER-DEFINED               -       16.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1006.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.26
  AVERAGE FLOW DEPTH(FEET) =   3.10   TRAVEL TIME(MIN.) =   5.68
  Tc(MIN.) =   75.80
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =   94.15
  EFFECTIVE AREA(ACRES) =   2270.07     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1001.67
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.09   FLOW VELOCITY(FEET/SEC.) =   8.26
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      942.27   29.58    1.256  0.30( 0.29) 0.96    1082.8   20100.00
      2      974.92   35.88    1.136  0.30( 0.29) 0.96    1278.0   13600.00
      3     1001.67   75.80    0.777  0.30( 0.29) 0.96    2270.1   13510.00
      4      923.24   86.45    0.725  0.30( 0.29) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1001.67  Tc(MIN.) =   75.80
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2270.07

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   75.80
```



```
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.777
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =   92.52
  EFFECTIVE AREA(ACRES) =   2485.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    1094.18

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1127.58   29.58    1.256  0.30( 0.29) 0.97    1298.2   20100.00
      2     1137.09   35.88    1.136  0.30( 0.29) 0.97    1493.4   13600.00
      3     1094.18   75.80    0.777  0.30( 0.29) 0.96    2485.5   13510.00
      4     1005.57   86.45    0.725  0.30( 0.29) 0.96    2555.9   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1137.09  Tc(MIN.) =   35.88
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1493.41

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.88
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.136
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   12.59
  EFFECTIVE AREA(ACRES) =   1510.13   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    1149.68

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
```

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.25
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.048
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	2.17	0.30	1.000	-
USER-DEFINED	-	9.19	0.30	1.000	-
USER-DEFINED	-	67.57	0.30	1.000	-
USER-DEFINED	-	35.19	0.30	1.000	-
USER-DEFINED	-	30.67	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1198.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.29
AVERAGE FLOW DEPTH(FEET) = 3.25 TRAVEL TIME(MIN.) = 5.22
Tc(MIN.) = 41.11
SUBAREA AREA(ACRES) = 145.01 SUBAREA RUNOFF(CFS) = 97.63
EFFECTIVE AREA(ACRES) = 1655.14 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 2717.6 PEAK FLOW RATE(CFS) = 1149.68
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.17 FLOW VELOCITY(FEET/SEC.) = 9.18
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1141.97	34.79	1.156	0.30(0.29)	0.97	1459.9	20100.00
2	1149.68	41.11	1.048	0.30(0.29)	0.97	1655.1	13600.00
3	1101.36	81.12	0.751	0.30(0.29)	0.96	2647.2	13510.00
4	1011.96	91.91	0.702	0.30(0.29)	0.96	2717.6	13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1149.68 Tc(MIN.) = 41.11
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1655.14

****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 41.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.048
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.30	1.000	-
USER-DEFINED	-	20.65	0.30	1.000	-
USER-DEFINED	-	2.69	0.30	1.000	-
USER-DEFINED	-	8.45	0.30	1.000	-

USER-DEFINED	-	96.93	0.30	1.000	-
USER-DEFINED	-	13.19	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 142.80 SUBAREA RUNOFF(CFS) = 96.14
EFFECTIVE AREA(ACRES) = 1797.94 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 2860.4 PEAK FLOW RATE(CFS) = 1223.45

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1246.17	34.79	1.156	0.30(0.29)	0.97	1602.7	20100.00
2	1223.45	41.11	1.048	0.30(0.29)	0.97	1797.9	13600.00
3	1159.10	81.12	0.751	0.30(0.29)	0.96	2790.0	13510.00
4	1062.94	91.91	0.702	0.30(0.29)	0.96	2860.4	13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1246.17 Tc(MIN.) = 34.79
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1602.73

****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 34.79
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.156
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	42.54	0.30	1.000	-
USER-DEFINED	-	16.96	0.30	1.000	-
USER-DEFINED	-	80.60	0.30	1.000	-
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	2.00	0.30	1.000	-
USER-DEFINED	-	3.11	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 146.77 SUBAREA RUNOFF(CFS) = 113.12
EFFECTIVE AREA(ACRES) = 1749.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3007.2 PEAK FLOW RATE(CFS) = 1359.28

****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.15
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.113
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.89      0.30      1.000     -
  USER-DEFINED             -       23.73      0.30      1.000     -
  USER-DEFINED             -        0.27      0.30      1.000     -
  USER-DEFINED             -       19.87      0.30      1.000     -
  USER-DEFINED             -        6.40      0.30      1.000     -
  USER-DEFINED             -        3.14      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1379.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.11
  AVERAGE FLOW DEPTH(FEET) =   3.15   TRAVEL TIME(MIN.) =   2.39
  Tc(MIN.) =   37.18
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   39.72
  EFFECTIVE AREA(ACRES) =   1803.80     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    1359.28
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.12   FLOW VELOCITY(FEET/SEC.) =  11.08
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1359.28   37.18    1.113  0.30( 0.29) 0.98    1803.8   20100.00
      2     1322.27   43.52    1.020  0.30( 0.29) 0.98    1999.0   13600.00
      3     1218.66   83.59    0.739  0.30( 0.29) 0.97    2991.1   13510.00
      4     1115.99   94.45    0.694  0.30( 0.29) 0.96    3061.5   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1359.28  Tc(MIN.) =   37.18
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1803.80

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.67      0.30      1.000     -
  USER-DEFINED             -        9.52      0.30      1.000     -
  USER-DEFINED             -        0.71      0.30      1.000     -
  USER-DEFINED             -        0.22      0.30      1.000     -
  USER-DEFINED             -       39.42      0.30      1.000     -
  USER-DEFINED             -        0.62      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   37.42
  EFFECTIVE AREA(ACRES) =   1854.96   AREA-AVERAGED Fm(INCH/HR) =  0.29
```



```
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    1367.67

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.113
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED             -        0.11      0.30      1.000     -
  USER-DEFINED             -        0.77      0.30      1.000     -
  USER-DEFINED             -        0.22      0.30      1.000     -
  USER-DEFINED             -        2.69      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    2.77
  EFFECTIVE AREA(ACRES) =   1858.75   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    1370.44

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P10EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      369.81   15.08  0.30( 0.11) 0.36     172.7     110.00
      2      370.44   17.62  0.30( 0.11) 0.37     203.0     100.00
      3      361.39   19.04  0.30( 0.11) 0.38     213.7     100.00
      4      316.02   22.37  0.30( 0.12) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN  87.0 INCH PIPE IS  70.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  38.17
  ESTIMATED PIPE DIAMETER(INCH) =  87.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    1370.44
  PIPE TRAVEL TIME(MIN.) =   0.38    Tc(MIN.) =   37.56
```

```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1370.44   37.56    1.106  0.30( 0.29) 0.98    1858.7   20100.00
     2     1343.78   43.90    1.015  0.30( 0.29) 0.98    2054.0   13600.00
     3     1229.56   83.98    0.737  0.30( 0.29) 0.97    3046.0   13510.00
     4     1135.31   94.85    0.693  0.30( 0.29) 0.97    3116.4   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      369.81   15.08    1.847  0.30( 0.11) 0.36     172.7     110.00
     2      370.44   17.62    1.710  0.30( 0.11) 0.37     203.0     100.00
     3      361.39   19.04    1.634  0.30( 0.11) 0.38     213.7     100.00
     4      316.02   22.37    1.487  0.30( 0.12) 0.40     221.1     130.00
 LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1421.87   15.08    1.847  0.30( 0.26) 0.86     918.7     110.00
     2     1491.67   17.62    1.710  0.30( 0.26) 0.86    1074.8     100.00
     3     1507.68   19.04    1.634  0.30( 0.26) 0.87    1155.9     100.00
     4     1515.65   22.37    1.487  0.30( 0.26) 0.88    1328.1     130.00
     5     1598.25   37.56    1.106  0.30( 0.28) 0.92    2079.8   20100.00
     6     1550.73   43.90    1.015  0.30( 0.28) 0.92    2275.1   13600.00
     7     1372.07   83.98    0.737  0.30( 0.28) 0.93    3267.1   13510.00
     8     1267.78   94.85    0.693  0.30( 0.28) 0.93    3337.5   13500.00
   TOTAL AREA(ACRES) =      3337.5

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1598.25  Tc(MIN.) =   37.564
 EFFECTIVE AREA(ACRES) =   2079.85  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
 TOTAL AREA(ACRES) =     3337.5
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   37.56
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.106
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        1.11      0.30     1.000    86
```



```
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        0.44      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        1.49      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        1.70      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.09      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       18.57      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   17.69
 EFFECTIVE AREA(ACRES) =   2104.25   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    1598.25
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   37.56
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.106
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B       12.39      0.30     1.000    65
 AGRICULTURAL FAIR COVER
 "ORCHARDS"                 B        2.30      0.30     1.000    65
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        5.19      0.30     1.000    79
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B       28.71      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.17      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   35.35
 EFFECTIVE AREA(ACRES) =   2153.01   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    1607.75

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.19
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.22      0.30      1.000     -
 USER-DEFINED               -        9.23      0.30      1.000     -
 USER-DEFINED               -        0.54      0.30      1.000     -
 USER-DEFINED               -        5.66      0.30      1.000     -
 USER-DEFINED               -        3.66      0.30      1.000     -
 USER-DEFINED               -        0.67      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1614.71
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
 AVERAGE FLOW DEPTH(FEET) =   4.19   TRAVEL TIME(MIN.) =   1.72
 Tc(MIN.) =   39.28
 SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   13.92
 EFFECTIVE AREA(ACRES) =   2172.99     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
 TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    1607.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.18

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.18   FLOW VELOCITY(FEET/SEC.) =   9.05
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1421.87   16.86    1.751  0.30( 0.26) 0.88    1011.8     110.00
     2     1496.44   19.37    1.616  0.30( 0.26) 0.87    1168.0     100.00
     3     1516.47   20.79    1.550  0.30( 0.26) 0.88    1249.0     100.00
     4     1539.45   24.11    1.418  0.30( 0.27) 0.89    1421.3     130.00
     5     1607.75   39.28    1.074  0.30( 0.28) 0.92    2173.0   20100.00
     6     1560.66   45.63    0.995  0.30( 0.28) 0.92    2368.2   13600.00
     7     1375.63   85.78    0.728  0.30( 0.28) 0.93    3360.3   13510.00
     8     1272.00   96.70    0.688  0.30( 0.28) 0.93    3430.6   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1607.75  Tc(MIN.) =   39.28
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2172.99

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.56      0.30      1.000     -
 USER-DEFINED               -        9.40      0.30      1.000     -
 USER-DEFINED               -        2.76      0.30      1.000     -
 USER-DEFINED               -       17.38      0.30      1.000     -
 USER-DEFINED               -        2.46      0.30      1.000     -
```



```
 USER-DEFINED               -        5.56      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   27.26
 EFFECTIVE AREA(ACRES) =   2212.11   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    1607.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.65      0.30      1.000     -
 USER-DEFINED               -        1.70      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    1.64
 EFFECTIVE AREA(ACRES) =   2214.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    1607.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.28
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.29      0.30      1.000     -
 USER-DEFINED               -       31.25      0.30      1.000     -
 USER-DEFINED               -        0.22      0.30      1.000     -
 USER-DEFINED               -        6.26      0.30      1.000     -
 USER-DEFINED               -        0.07      0.30      1.000     -
 USER-DEFINED               -        0.22      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   30.18
 EFFECTIVE AREA(ACRES) =   2257.77   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    1619.86
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.30     0.850     -
  USER-DEFINED               -        3.06      0.30     0.850     -
  USER-DEFINED               -       17.76      0.30     0.500     -
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   30.89
  EFFECTIVE AREA(ACRES) =   2296.93   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    1650.76

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.28
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.074
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.37
  EFFECTIVE AREA(ACRES) =   2297.46   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    1651.13

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.99
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        5.28      0.30     1.000     -
```



```
  USER-DEFINED               -        0.52      0.30     1.000     -
  USER-DEFINED               -        3.61      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        1.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1654.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.87
  AVERAGE FLOW DEPTH(FEET) =   3.99   TRAVEL TIME(MIN.) =   4.83
  Tc(MIN.) =   44.11
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =    7.49
  EFFECTIVE AREA(ACRES) =   2309.13     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.99   FLOW VELOCITY(FEET/SEC.) =   9.87
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     1521.80   21.81    1.510  0.30( 0.26) 0.88    1148.0     110.00
      2     1573.72   24.27    1.411  0.30( 0.26) 0.88    1304.1     100.00
      3     1590.73   25.67    1.363  0.30( 0.26) 0.88    1385.2     100.00
      4     1600.63   28.98    1.272  0.30( 0.27) 0.89    1557.4     130.00
      5     1651.13   44.11    1.013  0.30( 0.28) 0.92    2309.1   20100.00
      6     1611.81   50.50    0.940  0.30( 0.28) 0.92    2504.3   13600.00
      7     1408.16   90.85    0.705  0.30( 0.28) 0.93    3496.4   13510.00
      8     1310.02  101.87    0.673  0.30( 0.28) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1651.13  Tc(MIN.) =   44.11
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2309.13

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.30     1.000     -
  USER-DEFINED               -       23.04      0.30     1.000     -
  USER-DEFINED               -        1.18      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -       53.20      0.30     1.000     -
  USER-DEFINED               -        2.08      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   56.44
```

```
  EFFECTIVE AREA(ACRES) =   2397.09   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.01      0.30     1.000     -
  USER-DEFINED               -        0.18      0.30     1.000     -
  USER-DEFINED               -        0.38      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        7.73      0.30     1.000     -
  USER-DEFINED               -        4.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =    8.27
  EFFECTIVE AREA(ACRES) =   2409.98   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.57      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.97      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.98      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.39      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.67      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =    8.07
  EFFECTIVE AREA(ACRES) =   2422.56   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.44      0.30     1.000    66
  PUBLIC PARK                B        2.65      0.30     0.850    56
  PUBLIC PARK                B        1.16      0.30     0.850    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.47      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.25      0.30     0.500    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
  SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   16.43
  EFFECTIVE AREA(ACRES) =   2447.77   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.11
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.08      0.30     1.000     -
  USER-DEFINED               -        6.75      0.30     1.000     -
  USER-DEFINED               -        0.02      0.30     1.000     -
  USER-DEFINED               -        0.93      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =    9.48
  EFFECTIVE AREA(ACRES) =   2462.55   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
```

CHANNEL LENGTH THRU SUBAREA(FEET) = 2526.22 CHANNEL SLOPE = 0.0132
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.22
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.30	1.000	-
USER-DEFINED	-	13.31	0.30	1.000	-
USER-DEFINED	-	0.87	0.30	1.000	-
USER-DEFINED	-	20.26	0.30	1.000	-
USER-DEFINED	-	1.21	0.30	1.000	-
USER-DEFINED	-	0.05	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1664.24
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.24
AVERAGE FLOW DEPTH(FEET) = 4.22 TRAVEL TIME(MIN.) = 4.56
Tc(MIN.) = 48.67
SUBAREA AREA(ACRES) = 44.19 SUBAREA RUNOFF(CFS) = 26.24
EFFECTIVE AREA(ACRES) = 2506.74 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3764.4 PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 4.20 FLOW VELOCITY(FEET/SEC.) = 9.23
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	26.46	1.342	0.30(0.27)	0.90	1345.6	110.00
2	1573.72	28.89	1.275	0.30(0.27)	0.89	1501.7	100.00
3	1590.73	30.27	1.239	0.30(0.27)	0.89	1582.8	100.00
4	1600.63	33.57	1.179	0.30(0.27)	0.90	1755.0	130.00
5	1651.13	48.67	0.960	0.30(0.28)	0.93	2506.7	20100.00
6	1611.81	55.09	0.899	0.30(0.28)	0.93	2701.9	13600.00
7	1408.16	95.63	0.691	0.30(0.28)	0.93	3694.0	13510.00
8	1318.82	106.75	0.660	0.30(0.28)	0.93	3764.4	13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1651.13 Tc(MIN.) = 48.67
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2506.74

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 48.67
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.56	0.30	1.000	-
USER-DEFINED	-	0.81	0.30	1.000	-
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	0.59	0.30	1.000	-
USER-DEFINED	-	3.04	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 18.12 SUBAREA RUNOFF(CFS) = 10.76
EFFECTIVE AREA(ACRES) = 2524.86 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3782.5 PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 48.67
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.30	0.30	0.850	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.70	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
PUBLIC PARK	B	2.90	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835
SUBAREA AREA(ACRES) = 6.20 SUBAREA RUNOFF(CFS) = 3.96
EFFECTIVE AREA(ACRES) = 2531.06 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3788.7 PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 48.67
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
CONDOMINIUMS	B	0.10	0.30	0.350	56
PUBLIC PARK	B	6.90	0.30	0.850	56
PUBLIC PARK	B	0.40	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839

```
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    4.78
  EFFECTIVE AREA(ACRES) =   2538.56   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.67
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.960
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.55      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.01      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.35      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.44      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        0.67      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.06      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    3.61
  EFFECTIVE AREA(ACRES) =   2544.64   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.67
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.960
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.16      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.45      0.30     1.000    66
  NATURAL FAIR COVER
```



```
  "OPEN BRUSH"               B        6.15      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.34      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       18.46      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        4.13      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   20.59
  EFFECTIVE AREA(ACRES) =   2579.33   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.67
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.960
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        8.69      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.73      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.41      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.37      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.11      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =    8.49
  EFFECTIVE AREA(ACRES) =   2593.64   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    1651.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.92
  CHANNEL FLOW THRU SUBAREA(CFS) =    1651.13
  FLOW VELOCITY(FEET/SEC.) =  14.56   FLOW DEPTH(FEET) =   2.92
  TRAVEL TIME(MIN.) =   0.33   Tc(MIN.) =   49.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.
```

```
 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1521.80   26.80    1.332  0.30( 0.27) 0.90    1432.5     110.00
     2     1573.72   29.22    1.265  0.30( 0.27) 0.90    1588.6     100.00
     3     1590.73   30.61    1.233  0.30( 0.27) 0.90    1669.7     100.00
     4     1600.63   33.91    1.172  0.30( 0.27) 0.91    1841.9     130.00
     5     1651.13   49.00    0.956  0.30( 0.28) 0.93    2593.6   20100.00
     6     1611.81   55.42    0.896  0.30( 0.28) 0.93    2788.8   13600.00
     7     1408.16   95.98    0.690  0.30( 0.28) 0.93    3780.9   13510.00
     8     1318.82  107.10    0.659  0.30( 0.28) 0.93    3851.3   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1651.13  Tc(MIN.) =   49.00
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2593.64

****************************************************************************
 FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.75
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.918
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.23      0.30     1.000     -
 USER-DEFINED               -        1.52      0.30     1.000     -
 USER-DEFINED               -        0.06      0.30     1.000     -
 USER-DEFINED               -        0.13      0.30     1.000     -
 USER-DEFINED               -        6.45      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1653.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.87
 AVERAGE FLOW DEPTH(FEET) =   4.75   TRAVEL TIME(MIN.) =   3.91
 Tc(MIN.) =   52.91
 SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    4.67
 EFFECTIVE AREA(ACRES) =   2602.03     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.75

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.75   FLOW VELOCITY(FEET/SEC.) =   7.86
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
```



```
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1521.80   30.81    1.229  0.30( 0.27) 0.90    1440.9     110.00
     2     1573.72   33.19    1.186  0.30( 0.27) 0.90    1597.0     100.00
     3     1590.73   34.56    1.161  0.30( 0.27) 0.90    1678.1     100.00
     4     1600.63   37.85    1.100  0.30( 0.27) 0.91    1850.3     130.00
     5     1651.13   52.91    0.918  0.30( 0.28) 0.93    2602.0   20100.00
     6     1611.81   59.35    0.861  0.30( 0.28) 0.93    2797.2   13600.00
     7     1408.16  100.08    0.678  0.30( 0.28) 0.93    3789.3   13510.00
     8     1318.82  111.28    0.647  0.30( 0.28) 0.93    3859.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1651.13  Tc(MIN.) =   52.91
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2602.03
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =     3859.7  TC(MIN.) =     52.91
 EFFECTIVE AREA(ACRES) =   2602.03  AREA-AVERAGED Fm(INCH/HR)=  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.927
 PEAK FLOW RATE(CFS)   =    1651.13

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1521.80   30.81    1.229  0.30( 0.27) 0.90    1440.9     110.00
     2     1573.72   33.19    1.186  0.30( 0.27) 0.90    1597.0     100.00
     3     1590.73   34.56    1.161  0.30( 0.27) 0.90    1678.1     100.00
     4     1600.63   37.85    1.100  0.30( 0.27) 0.91    1850.3     130.00
     5     1651.13   52.91    0.918  0.30( 0.28) 0.93    2602.0   20100.00
     6     1611.81   59.35    0.861  0.30( 0.28) 0.93    2797.2   13600.00
     7     1408.16  100.08    0.678  0.30( 0.28) 0.93    3789.3   13510.00
     8     1318.82  111.28    0.647  0.30( 0.28) 0.93    3859.7   13500.00
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 10-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RU10EV37.DAT
  TIME/DATE OF STUDY: 00:16 08/11/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.709
   2)   10.00;  2.481
   3)   15.00;  1.848
   4)   20.00;  1.580
   5)   25.00;  1.381
   6)   30.00;  1.243
   7)   40.00;  1.060
   8)   50.00;  0.942
   9)   60.00;  0.854
  10)   90.00;  0.706
  11)  120.00;  0.620
  12)  180.00;  0.519
  13)  360.00;  0.379
  14) 1200.00;  0.165
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    14022.15   15.99  0.30( 0.25) 0.83    3786.8     300.00
      2    17620.89   34.98  0.30( 0.25) 0.83    8928.1     100.00
      3    18511.96   40.64  0.30( 0.25) 0.84   10638.1   10100.00
      4    19350.92   46.37  0.30( 0.26) 0.85   12727.7     150.00
      5    21082.58   60.54  0.30( 0.26) 0.88   17742.5   31100.00
      6    22620.03   74.09  0.30( 0.27) 0.90   23218.5   40100.00
      7    23275.88   82.95  0.30( 0.27) 0.91   26678.9   11801.00
      8    24535.15   96.25  0.30( 0.28) 0.92   32700.0   11530.00
      9    25396.59  104.28  0.30( 0.28) 0.93   37138.4   11900.00
     10    26805.46  113.69  0.30( 0.28) 0.94   43326.2   11330.00
     11    27461.98  121.77  0.30( 0.28) 0.94   48413.4   10630.00
     12    27250.81  127.36  0.30( 0.28) 0.94   51003.3   12330.00
     13    27027.96  133.99  0.30( 0.28) 0.95   54145.7   11600.00
     14    26683.33  139.79  0.30( 0.28) 0.95   56380.1   11111.00
     15    26294.89  145.96  0.30( 0.28) 0.95   58313.9   12201.00
     16    25418.63  154.99  0.30( 0.29) 0.95   60402.2   12231.00
     17    24611.60  162.56  0.30( 0.29) 0.95   61813.7   10400.00
     18    23321.84  174.12  0.30( 0.29) 0.95   63434.5   10320.00
     19    22094.79  184.02  0.30( 0.29) 0.95   63822.3   12000.00
     20    19238.71  213.65  0.30( 0.29) 0.95   64439.3   10100.00
    TOTAL AREA(ACRES) =    64439.3

************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    14022.15   15.99  0.30( 0.25) 0.83    3786.8     300.00
      2    17620.89   34.98  0.30( 0.25) 0.83    8928.1     100.00
      3    18511.96   40.64  0.30( 0.25) 0.84   10638.1   10100.00
      4    19350.92   46.37  0.30( 0.26) 0.85   12727.7     150.00
      5    21082.58   60.54  0.30( 0.26) 0.88   17742.5   31100.00
      6    22620.03   74.09  0.30( 0.27) 0.90   23218.5   40100.00
      7    23275.88   82.95  0.30( 0.27) 0.91   26678.9   11801.00
      8    24535.15   96.25  0.30( 0.28) 0.92   32700.0   11530.00
      9    25396.59  104.28  0.30( 0.28) 0.93   37138.4   11900.00
     10    26805.46  113.69  0.30( 0.28) 0.94   43326.2   11330.00
     11    27461.98  121.77  0.30( 0.28) 0.94   48413.4   10630.00
     12    27250.81  127.36  0.30( 0.28) 0.94   51003.3   12330.00
     13    27027.96  133.99  0.30( 0.28) 0.95   54145.7   11600.00
```

```
     14    26683.33  139.79  0.30( 0.28) 0.95   56380.1   11111.00
     15    26294.89  145.96  0.30( 0.28) 0.95   58313.9   12201.00
     16    25418.63  154.99  0.30( 0.29) 0.95   60402.2   12231.00
     17    24611.60  162.56  0.30( 0.29) 0.95   61813.7   10400.00
     18    23321.84  174.12  0.30( 0.29) 0.95   63434.5   10320.00
     19    22094.79  184.02  0.30( 0.29) 0.95   63822.3   12000.00
     20    19238.71  213.65  0.30( 0.29) 0.95   64439.3   10100.00
    TOTAL AREA(ACRES) =     64439.3

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.62
  CHANNEL FLOW THRU SUBAREA(CFS) =   27461.98
  FLOW VELOCITY(FEET/SEC.) =  10.22   FLOW DEPTH(FEET) =  10.62
  TRAVEL TIME(MIN.) =   3.09   Tc(MIN.) =  124.85
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      239.83   16.06  0.30( 0.29) 0.96     193.8   10230.00
      2      217.18   25.14  0.30( 0.29) 0.95     240.5   10250.00
      3      216.13   25.45  0.30( 0.29) 0.95     241.8   10200.00
      4      200.96   29.41  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    14022.15   19.84    1.588  0.30( 0.25) 0.83    3786.8     300.00
      2    17620.89   38.55    1.087  0.30( 0.25) 0.83    8928.1     100.00
      3    18511.96   44.15    1.011  0.30( 0.25) 0.84   10638.1   10100.00
```



```
      4    19350.92   49.82    0.944  0.30( 0.26) 0.85   12727.7     150.00
      5    21082.58   63.90    0.835  0.30( 0.26) 0.88   17742.5   31100.00
      6    22620.03   77.37    0.768  0.30( 0.27) 0.90   23218.5   40100.00
      7    23275.88   86.20    0.725  0.30( 0.27) 0.91   26678.9   11801.00
      8    24535.15   99.45    0.679  0.30( 0.28) 0.92   32700.0   11530.00
      9    25396.59  107.45    0.656  0.30( 0.28) 0.93   37138.4   11900.00
     10    26805.46  116.79    0.629  0.30( 0.28) 0.94   43326.2   11330.00
     11    27461.98  124.85    0.612  0.30( 0.28) 0.94   48413.4   10630.00
     12    27250.81  130.45    0.602  0.30( 0.28) 0.94   51003.3   12330.00
     13    27027.96  137.09    0.591  0.30( 0.28) 0.95   54145.7   11600.00
     14    26683.33  142.91    0.581  0.30( 0.28) 0.95   56380.1   11111.00
     15    26294.89  149.09    0.571  0.30( 0.28) 0.95   58313.9   12201.00
     16    25418.63  158.15    0.556  0.30( 0.29) 0.95   60402.2   12231.00
     17    24611.60  165.75    0.543  0.30( 0.29) 0.95   61813.7   10400.00
     18    23321.84  177.38    0.523  0.30( 0.29) 0.95   63434.5   10320.00
     19    22094.79  187.33    0.513  0.30( 0.29) 0.95   63822.3   12000.00
     20    19238.71  217.11    0.490  0.30( 0.29) 0.95   64439.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      239.83   16.06    1.791  0.30( 0.29) 0.96     193.8   10230.00
    2      217.18   25.14    1.377  0.30( 0.29) 0.95     240.5   10250.00
    3      216.13   25.45    1.369  0.30( 0.29) 0.95     241.8   10200.00
    4      200.96   29.41    1.259  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    13307.45   16.06    1.791  0.30( 0.25) 0.84    3259.6   10230.00
    2    14252.56   19.84    1.588  0.30( 0.25) 0.83    4000.1     300.00
    3    15259.16   25.14    1.377  0.30( 0.25) 0.84    5484.3   10250.00
    4    15317.63   25.45    1.369  0.30( 0.25) 0.84    5570.6   10200.00
    5    16064.36   29.41    1.259  0.30( 0.25) 0.84    6663.5   10220.00
    6    17786.21   38.55    1.087  0.30( 0.25) 0.84    9174.4     100.00
    7    18661.67   44.15    1.011  0.30( 0.25) 0.84   10884.3   10100.00
    8    19486.80   49.82    0.944  0.30( 0.26) 0.85   12973.9     150.00
    9    21195.89   63.90    0.835  0.30( 0.26) 0.88   17988.7   31100.00
   10    22719.61   77.37    0.768  0.30( 0.27) 0.90   23464.8   40100.00
   11    23366.47   86.20    0.725  0.30( 0.27) 0.91   26925.2   11801.00
   12    24616.27   99.45    0.679  0.30( 0.28) 0.92   32946.2   11530.00
   13    25472.98  107.45    0.656  0.30( 0.28) 0.93   37384.6   11900.00
   14    26876.31  116.79    0.629  0.30( 0.28) 0.94   43572.5   11330.00
   15    27529.26  124.85    0.612  0.30( 0.28) 0.94   48659.7   10630.00
   16    27316.14  130.45    0.602  0.30( 0.28) 0.94   51249.5   12330.00
   17    27090.98  137.09    0.591  0.30( 0.28) 0.95   54392.0   11600.00
   18    26744.32  142.91    0.581  0.30( 0.28) 0.95   56626.3   11111.00
   19    26353.74  149.09    0.571  0.30( 0.28) 0.95   58560.2   12201.00
   20    25474.33  158.15    0.556  0.30( 0.29) 0.95   60648.4   12231.00
   21    24664.66  165.75    0.543  0.30( 0.29) 0.95   62060.0   10400.00
   22    23370.85  177.38    0.523  0.30( 0.29) 0.95   63680.7   10320.00
   23    22141.72  187.33    0.513  0.30( 0.29) 0.95   64068.6   12000.00
   24    19280.85  217.11    0.490  0.30( 0.29) 0.95   64685.5   10100.00
  TOTAL AREA(ACRES) =     64685.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    27529.26  Tc(MIN.) =  124.853
  EFFECTIVE AREA(ACRES) =  48659.67  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    64685.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.91
  CHANNEL FLOW THRU SUBAREA(CFS) =   27529.26
  FLOW VELOCITY(FEET/SEC.) =   9.92   FLOW DEPTH(FEET) =  10.91
  TRAVEL TIME(MIN.) =   3.48   Tc(MIN.) =  128.33
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      489.59   19.32  0.30( 0.23) 0.76     401.6   10300.00
      2      490.14   20.03  0.30( 0.23) 0.76     412.9   10380.00
      3      480.40   22.78  0.30( 0.23) 0.76     441.7   10320.00
      4      464.91   24.67  0.30( 0.23) 0.76     451.8   10360.00
      5      436.74   27.62  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13307.45   20.48    1.561  0.30( 0.25) 0.84    3259.6   10230.00
      2    14252.56   24.16    1.415  0.30( 0.25) 0.83    4000.1     300.00
      3    15259.16   29.36    1.261  0.30( 0.25) 0.84    5484.3   10250.00
      4    15317.63   29.66    1.252  0.30( 0.25) 0.84    5570.6   10200.00
      5    16064.36   33.56    1.178  0.30( 0.25) 0.84    6663.5   10220.00
```



```
      6    17786.21   42.55    1.030  0.30( 0.25) 0.84    9174.4     100.00
      7    18661.67   48.10    0.964  0.30( 0.25) 0.84   10884.3   10100.00
      8    19486.80   53.71    0.909  0.30( 0.26) 0.85   12973.9     150.00
      9    21195.89   67.68    0.816  0.30( 0.26) 0.88   17988.7   31100.00
     10    22719.61   81.07    0.750  0.30( 0.27) 0.90   23464.8   40100.00
     11    23366.47   89.87    0.707  0.30( 0.27) 0.91   26925.2   11801.00
     12    24616.27  103.05    0.669  0.30( 0.28) 0.92   32946.2   11530.00
     13    25472.98  111.01    0.646  0.30( 0.28) 0.93   37384.6   11900.00
     14    26876.31  120.30    0.620  0.30( 0.28) 0.94   43572.5   11330.00
     15    27529.26  128.33    0.606  0.30( 0.28) 0.94   48659.7   10630.00
     16    27316.14  133.94    0.597  0.30( 0.28) 0.94   51249.5   12330.00
     17    27090.98  140.58    0.585  0.30( 0.28) 0.95   54392.0   11600.00
     18    26744.32  146.42    0.576  0.30( 0.28) 0.95   56626.3   11111.00
     19    26353.74  152.61    0.565  0.30( 0.28) 0.95   58560.2   12201.00
     20    25474.33  161.71    0.550  0.30( 0.29) 0.95   60648.4   12231.00
     21    24664.66  169.35    0.537  0.30( 0.29) 0.95   62060.0   10400.00
     22    23370.85  181.04    0.518  0.30( 0.29) 0.95   63680.7   10320.00
     23    22141.72  191.05    0.510  0.30( 0.29) 0.95   64068.6   12000.00
     24    19280.85  221.01    0.487  0.30( 0.29) 0.95   64685.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      489.59   19.32    1.617  0.30( 0.23) 0.76     401.6   10300.00
      2      490.14   20.03    1.579  0.30( 0.23) 0.76     412.9   10380.00
      3      480.40   22.78    1.469  0.30( 0.23) 0.76     441.7   10320.00
      4      464.91   24.67    1.394  0.30( 0.23) 0.76     451.8   10360.00
      5      436.74   27.62    1.309  0.30( 0.23) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13575.38   19.32    1.617  0.30( 0.25) 0.83    3476.3   10300.00
      2    13684.08   20.03    1.579  0.30( 0.25) 0.83    3601.5   10380.00
      3    13796.01   20.48    1.561  0.30( 0.25) 0.83    3677.2   10230.00
      4    14378.97   22.78    1.469  0.30( 0.25) 0.83    4164.5   10320.00
      5    14721.67   24.16    1.415  0.30( 0.25) 0.83    4449.2     300.00
      6    14816.73   24.67    1.394  0.30( 0.25) 0.83    4598.3   10360.00
      7    15359.49   27.62    1.309  0.30( 0.25) 0.83    5449.1   10340.00
      8    15676.48   29.36    1.261  0.30( 0.25) 0.83    5945.1   10250.00
      9    15731.57   29.66    1.252  0.30( 0.25) 0.83    6031.4   10200.00
     10    16448.19   33.56    1.178  0.30( 0.25) 0.83    7124.3   10220.00
     11    18110.17   42.55    1.030  0.30( 0.25) 0.83    9635.2     100.00
     12    18959.16   48.10    0.964  0.30( 0.25) 0.84   11345.1   10100.00
     13    19762.00   53.71    0.909  0.30( 0.25) 0.85   13434.7     150.00
     14    21433.38   67.68    0.816  0.30( 0.26) 0.87   18449.5   31100.00
     15    22930.38   81.07    0.750  0.30( 0.27) 0.90   23925.6   40100.00
     16    23559.67   89.87    0.707  0.30( 0.27) 0.91   27386.0   11801.00
     17    24794.08  103.05    0.669  0.30( 0.28) 0.92   33407.0   11530.00
     18    25641.56  111.01    0.646  0.30( 0.28) 0.92   37845.4   11900.00
     19    27034.26  120.30    0.620  0.30( 0.28) 0.93   44033.3   11330.00
     20    27681.74  128.33    0.606  0.30( 0.28) 0.94   49120.5   10630.00
     21    27464.80  133.94    0.597  0.30( 0.28) 0.94   51710.3   12330.00
     22    27235.11  140.58    0.585  0.30( 0.28) 0.94   54852.8   11600.00
     23    26884.49  146.42    0.576  0.30( 0.28) 0.95   57087.1   11111.00
     24    26489.68  152.61    0.565  0.30( 0.28) 0.95   59021.0   12201.00
```

```
     25    25604.07  161.71    0.550  0.30( 0.28) 0.95   61109.2   12231.00
     26    24789.20  169.35    0.537  0.30( 0.28) 0.95   62520.8   10400.00
     27    23487.82  181.04    0.518  0.30( 0.29) 0.95   64141.5   10320.00
     28    22255.53  191.05    0.510  0.30( 0.29) 0.95   64529.4   12000.00
     29    19385.24  221.01    0.487  0.30( 0.29) 0.95   65146.3   10100.00
    TOTAL AREA(ACRES) =     65146.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    27681.74  Tc(MIN.) =  128.328
  EFFECTIVE AREA(ACRES) =  49120.47  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    65146.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.33
  CHANNEL FLOW THRU SUBAREA(CFS) =   27681.74
  FLOW VELOCITY(FEET/SEC.) =  34.91   FLOW DEPTH(FEET) =   6.33
  TRAVEL TIME(MIN.) =   0.17   Tc(MIN.) =  128.50
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104E.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       49.20   20.74  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13575.38   19.54    1.605  0.30( 0.25) 0.83    3476.3   10300.00
```



```
      2    13684.08   20.25    1.570  0.30( 0.25) 0.83    3601.5   10380.00
      3    13796.01   20.70    1.552  0.30( 0.25) 0.83    3677.2   10230.00
      4    14378.97   22.99    1.461  0.30( 0.25) 0.83    4164.5   10320.00
      5    14721.67   24.37    1.406  0.30( 0.25) 0.83    4449.2     300.00
      6    14816.73   24.88    1.386  0.30( 0.25) 0.83    4598.3   10360.00
      7    15359.49   27.83    1.303  0.30( 0.25) 0.83    5449.1   10340.00
      8    15676.48   29.57    1.255  0.30( 0.25) 0.83    5945.1   10250.00
      9    15731.57   29.87    1.247  0.30( 0.25) 0.83    6031.4   10200.00
     10    16448.19   33.76    1.174  0.30( 0.25) 0.83    7124.3   10220.00
     11    18110.17   42.75    1.028  0.30( 0.25) 0.83    9635.2     100.00
     12    18959.16   48.29    0.962  0.30( 0.25) 0.84   11345.1   10100.00
     13    19762.00   53.91    0.908  0.30( 0.25) 0.85   13434.7     150.00
     14    21433.38   67.87    0.815  0.30( 0.26) 0.87   18449.5   31100.00
     15    22930.38   81.25    0.749  0.30( 0.27) 0.90   23925.6   40100.00
     16    23559.67   90.05    0.706  0.30( 0.27) 0.91   27386.0   11801.00
     17    24794.08  103.23    0.668  0.30( 0.28) 0.92   33407.0   11530.00
     18    25641.56  111.19    0.645  0.30( 0.28) 0.92   37845.4   11900.00
     19    27034.26  120.47    0.619  0.30( 0.28) 0.93   44033.3   11330.00
     20    27681.74  128.50    0.606  0.30( 0.28) 0.94   49120.5   10630.00
     21    27464.80  134.11    0.596  0.30( 0.28) 0.94   51710.3   12330.00
     22    27235.11  140.76    0.585  0.30( 0.28) 0.94   54852.8   11600.00
     23    26884.49  146.59    0.575  0.30( 0.28) 0.95   57087.1   11111.00
     24    26489.68  152.79    0.565  0.30( 0.28) 0.95   59021.0   12201.00
     25    25604.07  161.89    0.549  0.30( 0.28) 0.95   61109.2   12231.00
     26    24789.20  169.54    0.537  0.30( 0.28) 0.95   62520.8   10400.00
     27    23487.82  181.22    0.518  0.30( 0.29) 0.95   64141.5   10320.00
     28    22255.53  191.24    0.510  0.30( 0.29) 0.95   64529.4   12000.00
     29    19385.24  221.21    0.487  0.30( 0.29) 0.95   65146.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       49.20   20.74    1.551  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    13623.65   19.54    1.605  0.30( 0.25) 0.83    3518.1   10300.00
    2    13732.84   20.25    1.570  0.30( 0.25) 0.83    3644.8   10380.00
    3    13845.18   20.70    1.552  0.30( 0.25) 0.83    3721.4   10230.00
    4    13854.64   20.74    1.551  0.30( 0.25) 0.83    3729.4   10400.00
    5    14424.80   22.99    1.461  0.30( 0.25) 0.83    4208.8   10320.00
    6    14765.44   24.37    1.406  0.30( 0.25) 0.83    4493.5     300.00
    7    14859.74   24.88    1.386  0.30( 0.25) 0.83    4642.6   10360.00
    8    15399.39   27.83    1.303  0.30( 0.25) 0.83    5493.4   10340.00
    9    15714.58   29.57    1.255  0.30( 0.25) 0.83    5989.4   10250.00
   10    15769.36   29.87    1.247  0.30( 0.25) 0.83    6075.7   10200.00
   11    16483.26   33.76    1.174  0.30( 0.25) 0.83    7168.6   10220.00
   12    18139.74   42.75    1.028  0.30( 0.25) 0.83    9679.5     100.00
   13    18986.28   48.29    0.962  0.30( 0.25) 0.84   11389.4   10100.00
   14    19787.07   53.91    0.908  0.30( 0.25) 0.85   13479.0     150.00
   15    21454.98   67.87    0.815  0.30( 0.26) 0.87   18493.8   31100.00
   16    22949.50   81.25    0.749  0.30( 0.27) 0.90   23969.9   40100.00
   17    23577.17   90.05    0.706  0.30( 0.27) 0.91   27430.3   11801.00
   18    24810.16  103.23    0.668  0.30( 0.28) 0.92   33451.3   11530.00
   19    25656.79  111.19    0.645  0.30( 0.28) 0.92   37889.7   11900.00
```

20	27048.51	120.47	0.619	0.30(0.28)	0.93	44077.6	11330.00
21	27695.48	128.50	0.606	0.30(0.28)	0.94	49164.8	10630.00
22	27478.19	134.11	0.596	0.30(0.28)	0.94	51754.6	12330.00
23	27248.08	140.76	0.585	0.30(0.28)	0.94	54897.1	11600.00
24	26897.09	146.59	0.575	0.30(0.28)	0.95	57131.4	11111.00
25	26501.89	152.79	0.565	0.30(0.28)	0.95	59065.3	12201.00
26	25615.71	161.89	0.549	0.30(0.28)	0.95	61153.5	12231.00
27	24800.35	169.54	0.537	0.30(0.28)	0.95	62565.1	10400.00
28	23498.27	181.22	0.518	0.30(0.29)	0.95	64185.8	10320.00
29	22265.69	191.24	0.510	0.30(0.29)	0.95	64573.7	12000.00
30	19394.53	221.21	0.487	0.30(0.29)	0.95	65190.6	10100.00

TOTAL AREA(ACRES) = 65190.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 27695.48 Tc(MIN.) = 128.502
EFFECTIVE AREA(ACRES) = 49164.77 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 65190.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128872.66 FEET.

****
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.04
CHANNEL FLOW THRU SUBAREA(CFS) = 27695.48
FLOW VELOCITY(FEET/SEC.) = 13.96 FLOW DEPTH(FEET) = 13.04
TRAVEL TIME(MIN.) = 1.83 Tc(MIN.) = 130.33
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506105L.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	263.73	15.21	0.30(0.27)	0.90	203.7	10520.00
2	303.03	33.18	0.30(0.28)	0.93	403.6	10500.00

TOTAL AREA(ACRES) = 403.6

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13623.65	21.80	1.508	0.30(0.25)	0.83	3518.1	10300.00
2	13732.84	22.51	1.480	0.30(0.25)	0.83	3644.8	10380.00
3	13845.18	22.95	1.463	0.30(0.25)	0.83	3721.4	10230.00
4	13854.64	22.99	1.461	0.30(0.25)	0.83	3729.4	10400.00
5	14424.80	25.22	1.375	0.30(0.25)	0.83	4208.8	10320.00
6	14765.44	26.58	1.337	0.30(0.25)	0.83	4493.5	300.00
7	14859.74	27.09	1.323	0.30(0.25)	0.83	4642.6	10360.00
8	15399.39	30.01	1.243	0.30(0.25)	0.83	5493.4	10340.00
9	15714.58	31.73	1.211	0.30(0.25)	0.83	5989.4	10250.00
10	15769.36	32.04	1.206	0.30(0.25)	0.83	6075.7	10200.00
11	16483.26	35.90	1.135	0.30(0.25)	0.83	7168.6	10220.00
12	18139.74	44.83	1.003	0.30(0.25)	0.83	9679.5	100.00
13	18986.28	50.34	0.939	0.30(0.25)	0.84	11389.4	10100.00
14	19787.07	55.93	0.890	0.30(0.25)	0.85	13479.0	150.00
15	21454.98	69.84	0.805	0.30(0.26)	0.87	18493.8	31100.00
16	22949.50	83.19	0.740	0.30(0.27)	0.90	23969.9	40100.00
17	23577.17	91.97	0.700	0.30(0.27)	0.91	27430.3	11801.00
18	24810.16	105.12	0.663	0.30(0.28)	0.92	33451.3	11530.00
19	25656.79	113.06	0.640	0.30(0.28)	0.92	37889.7	11900.00
20	27048.51	122.31	0.616	0.30(0.28)	0.93	44077.6	11330.00
21	27695.48	130.33	0.603	0.30(0.28)	0.94	49164.8	10630.00
22	27478.19	135.95	0.593	0.30(0.28)	0.94	51754.6	12330.00
23	27248.08	142.60	0.582	0.30(0.28)	0.94	54897.1	11600.00
24	26897.09	148.44	0.572	0.30(0.28)	0.95	57131.4	11111.00
25	26501.89	154.64	0.562	0.30(0.28)	0.95	59065.3	12201.00
26	25615.71	163.76	0.546	0.30(0.28)	0.95	61153.5	12231.00
27	24800.35	171.43	0.533	0.30(0.28)	0.95	62565.1	10400.00
28	23498.27	183.14	0.517	0.30(0.29)	0.95	64185.8	10320.00
29	22265.69	193.19	0.509	0.30(0.29)	0.95	64573.7	12000.00
30	19394.53	223.24	0.485	0.30(0.29)	0.95	65190.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	263.73	15.21	1.837	0.30(0.27)	0.90	203.7	10520.00
2	303.03	33.18	1.185	0.30(0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12245.78	15.21	1.837	0.30(0.25)	0.83	2658.5	10520.00
2	13901.79	21.80	1.508	0.30(0.25)	0.83	3795.1	10300.00
3	14012.53	22.51	1.480	0.30(0.25)	0.83	3929.7	10380.00
4	14125.83	22.95	1.463	0.30(0.25)	0.83	4011.2	10230.00
5	14135.38	22.99	1.461	0.30(0.25)	0.83	4019.6	10400.00
6	14710.42	25.22	1.375	0.30(0.25)	0.83	4523.8	10320.00
7	15054.03	26.58	1.337	0.30(0.25)	0.83	4823.6	300.00
8	15149.44	27.09	1.323	0.30(0.25)	0.83	4978.4	10360.00
9	15695.48	30.01	1.243	0.30(0.25)	0.83	5861.7	10340.00
10	16014.44	31.73	1.211	0.30(0.25)	0.84	6376.9	10250.00

11	16069.88	32.04	1.206	0.30(0.25)	0.84	6466.5	10200.00
12	16284.42	33.18	1.185	0.30(0.25)	0.84	6803.9	10500.00
13	16769.68	35.90	1.135	0.30(0.25)	0.84	7572.2	10220.00
14	18382.04	44.83	1.003	0.30(0.25)	0.84	10083.1	100.00
15	19207.19	50.34	0.939	0.30(0.25)	0.84	11793.0	10100.00
16	19991.54	55.93	0.890	0.30(0.26)	0.85	13882.6	150.00
17	21631.26	69.84	0.805	0.30(0.26)	0.88	18897.4	31100.00
18	23103.77	83.19	0.740	0.30(0.27)	0.90	24373.5	40100.00
19	23718.32	91.97	0.700	0.30(0.27)	0.91	27833.9	11801.00
20	24938.71	105.12	0.663	0.30(0.28)	0.92	33854.9	11530.00
21	25777.73	113.06	0.640	0.30(0.28)	0.92	38293.3	11900.00
22	27161.50	122.31	0.616	0.30(0.28)	0.93	44481.2	11330.00
23	27803.96	130.33	0.603	0.30(0.28)	0.94	49568.4	10630.00
24	27583.51	135.95	0.593	0.30(0.28)	0.94	52158.2	12330.00
25	27349.66	142.60	0.582	0.30(0.28)	0.94	55300.7	11600.00
26	26995.38	148.44	0.572	0.30(0.28)	0.95	57535.0	11111.00
27	26596.70	154.64	0.562	0.30(0.28)	0.95	59468.9	12201.00
28	25705.38	163.76	0.546	0.30(0.28)	0.95	61557.1	12231.00
29	24885.72	171.43	0.533	0.30(0.28)	0.95	62968.7	10400.00
30	23578.00	183.14	0.517	0.30(0.29)	0.95	64589.4	10320.00
31	22342.80	193.19	0.509	0.30(0.29)	0.95	64977.3	12000.00
32	19463.83	223.24	0.485	0.30(0.29)	0.95	65594.2	10100.00

TOTAL AREA(ACRES) = 65594.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 27803.96 Tc(MIN.) = 130.333
EFFECTIVE AREA(ACRES) = 49568.37 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 65594.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 134.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0000
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 38.67
CHANNEL FLOW THRU SUBAREA(CFS) = 27803.96
FLOW VELOCITY(FEET/SEC.) = 2.82 FLOW DEPTH(FEET) = 38.67
TRAVEL TIME(MIN.) = 1.22 Tc(MIN.) = 131.56
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==

PEAK FLOWRATE TABLE FILE NAME: 0506106E.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.15	18.06	0.30(0.20)	0.67	36.9	10600.00

TOTAL AREA(ACRES) = 36.9

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12245.78	16.73	1.755	0.30(0.25)	0.83	2658.5	10520.00
2	13901.79	23.27	1.450	0.30(0.25)	0.83	3795.1	10300.00
3	14012.53	23.97	1.422	0.30(0.25)	0.83	3929.7	10380.00
4	14125.83	24.41	1.404	0.30(0.25)	0.83	4011.2	10230.00
5	14135.38	24.45	1.403	0.30(0.25)	0.83	4019.6	10400.00
6	14710.42	26.66	1.335	0.30(0.25)	0.83	4523.8	10320.00
7	15054.03	28.02	1.298	0.30(0.25)	0.83	4823.6	300.00
8	15149.44	28.52	1.284	0.30(0.25)	0.83	4978.4	10360.00
9	15695.48	31.43	1.217	0.30(0.25)	0.83	5861.7	10340.00
10	16014.44	33.15	1.185	0.30(0.25)	0.84	6376.9	10250.00
11	16069.88	33.45	1.180	0.30(0.25)	0.84	6466.5	10200.00
12	16284.42	34.59	1.159	0.30(0.25)	0.84	6803.9	10500.00
13	16769.68	37.30	1.109	0.30(0.25)	0.84	7572.2	10220.00
14	18382.04	46.19	0.987	0.30(0.25)	0.84	10083.1	100.00
15	19207.19	51.69	0.927	0.30(0.25)	0.84	11793.0	10100.00
16	19991.54	57.26	0.878	0.30(0.26)	0.85	13882.6	150.00
17	21631.26	71.14	0.799	0.30(0.26)	0.88	18897.4	31100.00
18	23103.77	84.47	0.733	0.30(0.27)	0.90	24373.5	40100.00
19	23718.32	93.24	0.697	0.30(0.27)	0.91	27833.9	11801.00
20	24938.71	106.38	0.659	0.30(0.28)	0.92	33854.9	11530.00
21	25777.73	114.31	0.636	0.30(0.28)	0.92	38293.3	11900.00
22	27161.50	123.54	0.614	0.30(0.28)	0.93	44481.2	11330.00
23	27803.96	131.56	0.601	0.30(0.28)	0.94	49568.4	10630.00
24	27583.51	137.17	0.591	0.30(0.28)	0.94	52158.2	12330.00
25	27349.66	143.83	0.580	0.30(0.28)	0.94	55300.7	11600.00
26	26995.38	149.67	0.570	0.30(0.28)	0.95	57535.0	11111.00
27	26596.70	155.88	0.560	0.30(0.28)	0.95	59468.9	12201.00
28	25705.38	165.01	0.544	0.30(0.28)	0.95	61557.1	12231.00
29	24885.72	172.68	0.531	0.30(0.28)	0.95	62968.7	10400.00
30	23578.00	184.42	0.516	0.30(0.29)	0.95	64589.4	10320.00
31	22342.80	194.49	0.508	0.30(0.29)	0.95	64977.3	12000.00
32	19463.83	224.59	0.484	0.30(0.29)	0.95	65594.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.15	18.06	1.684	0.30(0.20)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	12289.62	16.73	1.755	0.30(0.25)	0.83	2692.6	10520.00
2	12629.02	18.06	1.684	0.30(0.25)	0.83	2927.4	10600.00
3	13939.83	23.27	1.450	0.30(0.25)	0.83	3832.0	10300.00
4	14049.71	23.97	1.422	0.30(0.25)	0.83	3966.6	10380.00
5	14162.48	24.41	1.404	0.30(0.25)	0.83	4048.1	10230.00
6	14171.98	24.45	1.403	0.30(0.25)	0.83	4056.5	10400.00
7	14744.95	26.66	1.335	0.30(0.25)	0.83	4560.7	10320.00
8	15087.43	28.02	1.298	0.30(0.25)	0.83	4860.5	300.00
9	15182.42	28.52	1.284	0.30(0.25)	0.83	5015.3	10360.00
10	15726.42	31.43	1.217	0.30(0.25)	0.83	5898.6	10340.00
11	16044.42	33.15	1.185	0.30(0.25)	0.83	6413.8	10250.00
12	16099.69	33.45	1.180	0.30(0.25)	0.83	6503.4	10200.00
13	16313.59	34.59	1.159	0.30(0.25)	0.83	6840.8	10500.00
14	16797.35	37.30	1.109	0.30(0.25)	0.84	7609.1	10220.00
15	18405.97	46.19	0.987	0.30(0.25)	0.84	10120.0	100.00
16	19229.30	51.69	0.927	0.30(0.25)	0.84	11829.9	10100.00
17	20012.16	57.26	0.878	0.30(0.26)	0.85	13919.5	150.00
18	21649.47	71.14	0.799	0.30(0.26)	0.87	18934.3	31100.00
19	23119.98	84.47	0.733	0.30(0.27)	0.90	24410.4	40100.00
20	23733.42	93.24	0.697	0.30(0.27)	0.91	27870.8	11801.00
21	24952.65	106.38	0.659	0.30(0.28)	0.92	33891.8	11530.00
22	25790.99	114.31	0.636	0.30(0.28)	0.92	38330.2	11900.00
23	27174.08	123.54	0.614	0.30(0.28)	0.93	44518.1	11330.00
24	27816.13	131.56	0.601	0.30(0.28)	0.94	49605.3	10630.00
25	27595.39	137.17	0.591	0.30(0.28)	0.94	52195.1	12330.00
26	27361.20	143.83	0.580	0.30(0.28)	0.94	55337.6	11600.00
27	27006.62	149.67	0.570	0.30(0.28)	0.95	57571.9	11111.00
28	26607.62	155.88	0.560	0.30(0.28)	0.95	59505.8	12201.00
29	25715.84	165.01	0.544	0.30(0.28)	0.95	61594.0	12231.00
30	24895.78	172.68	0.531	0.30(0.28)	0.95	63005.6	10400.00
31	23587.58	184.42	0.516	0.30(0.29)	0.95	64626.3	10320.00
32	22352.15	194.49	0.508	0.30(0.29)	0.95	65014.2	12000.00
33	19472.46	224.59	0.484	0.30(0.29)	0.95	65631.1	10100.00

TOTAL AREA(ACRES) = 65631.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 27816.13 Tc(MIN.) = 131.556
EFFECTIVE AREA(ACRES) = 49605.27 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 65631.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 65631.1 TC(MIN.) = 131.56
EFFECTIVE AREA(ACRES) = 49605.27 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.939
PEAK FLOW RATE(CFS) = 27816.13

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12289.62	16.73	1.755	0.30(0.25)	0.83	2692.6	10520.00
2	12629.02	18.06	1.684	0.30(0.25)	0.83	2927.4	10600.00
3	13939.83	23.27	1.450	0.30(0.25)	0.83	3832.0	10300.00
4	14049.71	23.97	1.422	0.30(0.25)	0.83	3966.6	10380.00
5	14162.48	24.41	1.404	0.30(0.25)	0.83	4048.1	10230.00
6	14171.98	24.45	1.403	0.30(0.25)	0.83	4056.5	10400.00
7	14744.95	26.66	1.335	0.30(0.25)	0.83	4560.7	10320.00
8	15087.43	28.02	1.298	0.30(0.25)	0.83	4860.5	300.00
9	15182.42	28.52	1.284	0.30(0.25)	0.83	5015.3	10360.00
10	15726.42	31.43	1.217	0.30(0.25)	0.83	5898.6	10340.00
11	16044.42	33.15	1.185	0.30(0.25)	0.83	6413.8	10250.00
12	16099.69	33.45	1.180	0.30(0.25)	0.83	6503.4	10200.00
13	16313.59	34.59	1.159	0.30(0.25)	0.83	6840.8	10500.00
14	16797.35	37.30	1.109	0.30(0.25)	0.84	7609.1	10220.00
15	18405.97	46.19	0.987	0.30(0.25)	0.84	10120.0	100.00
16	19229.30	51.69	0.927	0.30(0.25)	0.84	11829.9	10100.00
17	20012.16	57.26	0.878	0.30(0.26)	0.85	13919.5	150.00
18	21649.47	71.14	0.799	0.30(0.26)	0.87	18934.3	31100.00
19	23119.98	84.47	0.733	0.30(0.27)	0.90	24410.4	40100.00
20	23733.42	93.24	0.697	0.30(0.27)	0.91	27870.8	11801.00
21	24952.65	106.38	0.659	0.30(0.28)	0.92	33891.8	11530.00
22	25790.99	114.31	0.636	0.30(0.28)	0.92	38330.2	11900.00
23	27174.08	123.54	0.614	0.30(0.28)	0.93	44518.1	11330.00
24	27816.13	131.56	0.601	0.30(0.28)	0.94	49605.3	10630.00
25	27595.39	137.17	0.591	0.30(0.28)	0.94	52195.1	12330.00
26	27361.20	143.83	0.580	0.30(0.28)	0.94	55337.6	11600.00
27	27006.62	149.67	0.570	0.30(0.28)	0.95	57571.9	11111.00
28	26607.62	155.88	0.560	0.30(0.28)	0.95	59505.8	12201.00
29	25715.84	165.01	0.544	0.30(0.28)	0.95	61594.0	12231.00
30	24895.78	172.68	0.531	0.30(0.28)	0.95	63005.6	10400.00
31	23587.58	184.42	0.516	0.30(0.29)	0.95	64626.3	10320.00
32	22352.15	194.49	0.508	0.30(0.29)	0.95	65014.2	12000.00
33	19472.46	224.59	0.484	0.30(0.29)	0.95	65631.1	10100.00

==========

END OF RATIONAL METHOD ANALYSIS

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 10-YR EV AUG 2023 ROKAMOTO                                           *
 **********************************************************************

  FILE NAME: RU10EV38.DAT
  TIME/DATE OF STUDY: 00:17 08/11/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.698
   2)   10.00;  2.475
   3)   15.00;  1.846
   4)   20.00;  1.578
   5)   25.00;  1.379
   6)   30.00;  1.242
   7)   40.00;  1.059
   8)   50.00;  0.941
   9)   60.00;  0.852
  10)   90.00;  0.704
  11)  120.00;  0.619
  12)  180.00;  0.517
  13)  360.00;  0.378
  14) 1200.00;  0.165
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    12629.02   18.06  0.30( 0.25) 0.83    2927.4   10600.00
      2    14171.98   24.45  0.30( 0.25) 0.83    4056.5   10400.00
      3    16797.35   37.30  0.30( 0.25) 0.84    7609.1   10220.00
      4    20012.16   57.26  0.30( 0.26) 0.85   13919.5     150.00
      5    21649.47   71.14  0.30( 0.26) 0.87   18934.3   31100.00
      6    23119.98   84.47  0.30( 0.27) 0.90   24410.4   40100.00
      7    23733.42   93.24  0.30( 0.27) 0.91   27870.8   11801.00
      8    24952.65  106.38  0.30( 0.28) 0.92   33891.8   11530.00
      9    25790.99  114.31  0.30( 0.28) 0.92   38330.2   11900.00
     10    27174.08  123.54  0.30( 0.28) 0.93   44518.1   11330.00
     11    27816.13  131.56  0.30( 0.28) 0.94   49605.3   10630.00
     12    27595.39  137.17  0.30( 0.28) 0.94   52195.1   12330.00
     13    27361.20  143.83  0.30( 0.28) 0.94   55337.6   11600.00
     14    27006.62  149.67  0.30( 0.28) 0.95   57571.9   11111.00
     15    26607.62  155.88  0.30( 0.28) 0.95   59505.8   12201.00
     16    25715.84  165.01  0.30( 0.28) 0.95   61594.0   12231.00
     17    24895.78  172.68  0.30( 0.28) 0.95   63005.6   10400.00
     18    23587.58  184.42  0.30( 0.29) 0.95   64626.3   10320.00
     19    22352.15  194.49  0.30( 0.29) 0.95   65014.2   12000.00
     20    19472.46  224.59  0.30( 0.29) 0.95   65631.1   10100.00
   TOTAL AREA(ACRES) =    65631.1

**************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    12629.02   18.06  0.30( 0.25) 0.83    2927.4   10600.00
      2    14171.98   24.45  0.30( 0.25) 0.83    4056.5   10400.00
      3    16797.35   37.30  0.30( 0.25) 0.84    7609.1   10220.00
      4    20012.16   57.26  0.30( 0.26) 0.85   13919.5     150.00
      5    21649.47   71.14  0.30( 0.26) 0.87   18934.3   31100.00
      6    23119.98   84.47  0.30( 0.27) 0.90   24410.4   40100.00
      7    23733.42   93.24  0.30( 0.27) 0.91   27870.8   11801.00
      8    24952.65  106.38  0.30( 0.28) 0.92   33891.8   11530.00
      9    25790.99  114.31  0.30( 0.28) 0.92   38330.2   11900.00
     10    27174.08  123.54  0.30( 0.28) 0.93   44518.1   11330.00
     11    27816.13  131.56  0.30( 0.28) 0.94   49605.3   10630.00
     12    27595.39  137.17  0.30( 0.28) 0.94   52195.1   12330.00
     13    27361.20  143.83  0.30( 0.28) 0.94   55337.6   11600.00
```

```
     14    27006.62  149.67  0.30( 0.28) 0.95   57571.9   11111.00
     15    26607.62  155.88  0.30( 0.28) 0.95   59505.8   12201.00
     16    25715.84  165.01  0.30( 0.28) 0.95   61594.0   12231.00
     17    24895.78  172.68  0.30( 0.28) 0.95   63005.6   10400.00
     18    23587.58  184.42  0.30( 0.29) 0.95   64626.3   10320.00
     19    22352.15  194.49  0.30( 0.29) 0.95   65014.2   12000.00
     20    19472.46  224.59  0.30( 0.29) 0.95   65631.1   10100.00
    TOTAL AREA(ACRES) =     65631.1

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.30
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   27820.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.78
  AVERAGE FLOW DEPTH(FEET) =  18.30   TRAVEL TIME(MIN.) =   1.76
  Tc(MIN.) =  133.32
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =    8.53
  EFFECTIVE AREA(ACRES) =  49636.71     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65662.6         PEAK FLOW RATE(CFS) =   27816.13
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  18.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 18.29   FLOW VELOCITY(FEET/SEC.) =   8.78
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  133.32
  RAINFALL INTENSITY(INCH/HR) =   0.60
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49636.71
  TOTAL STREAM AREA(ACRES) =   65662.59
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   27816.13

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.187
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    65   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.47
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =      9.47

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.914
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.35
  AVERAGE FLOW DEPTH(FEET) =   0.35   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   14.46
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   21.48
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4          PEAK FLOW RATE(CFS) =      29.59
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.44

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   6.19
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.737
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.40
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   2.58
  Tc(MIN.) =   17.04
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   23.81
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      50.14
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   4.70
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.568
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.68
  AVERAGE FLOW DEPTH(FEET) =   0.85   TRAVEL TIME(MIN.) =   3.20
  Tc(MIN.) =   20.24
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   32.89
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =      77.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   7.01
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  18.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.58
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      77.16
  PIPE TRAVEL TIME(MIN.) =   1.95    Tc(MIN.) =   22.19
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   22.19
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.491
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =   99.35
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     171.84

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   22.19
  RAINFALL INTENSITY(INCH/HR) =   1.49
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
```

```
TOTAL STREAM AREA(ACRES) =     150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE =     171.84

** CONFLUENCE DATA **
 STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    12629.02   20.27    1.567  0.30( 0.25) 0.83    2958.9   10600.00
    1    14171.98   26.58    1.336  0.30( 0.25) 0.83    4087.9   10400.00
    1    16797.35   39.32    1.071  0.30( 0.25) 0.84    7640.6   10220.00
    1    20012.16   59.19    0.859  0.30( 0.26) 0.85   13951.0     150.00
    1    21649.47   73.03    0.788  0.30( 0.26) 0.88   18965.8   31100.00
    1    23119.98   86.32    0.722  0.30( 0.27) 0.90   24441.8   40100.00
    1    23733.42   95.08    0.690  0.30( 0.27) 0.91   27902.2   11801.00
    1    24952.65  108.20    0.652  0.30( 0.28) 0.92   33923.3   11530.00
    1    25790.99  116.10    0.630  0.30( 0.28) 0.92   38361.7   11900.00
    1    27174.08  125.32    0.610  0.30( 0.28) 0.93   44549.5   11330.00
    1    27816.13  133.32    0.596  0.30( 0.28) 0.94   49636.7   10630.00
    1    27595.39  138.94    0.587  0.30( 0.28) 0.94   52226.6   12330.00
    1    27361.20  145.59    0.575  0.30( 0.28) 0.94   55369.0   11600.00
    1    27006.62  151.44    0.566  0.30( 0.28) 0.95   57603.4   11111.00
    1    26607.62  157.66    0.555  0.30( 0.28) 0.95   59537.2   12201.00
    1    25715.84  166.81    0.539  0.30( 0.28) 0.95   61625.5   12231.00
    1    24895.78  174.50    0.526  0.30( 0.28) 0.95   63037.0   10400.00
    1    23587.58  186.26    0.512  0.30( 0.29) 0.95   64657.8   10320.00
    1    22352.15  196.36    0.504  0.30( 0.29) 0.95   65045.6   12000.00
    1    19472.46  226.53    0.481  0.30( 0.29) 0.95   65662.6   10100.00
    2      171.84   22.19    1.491  0.30( 0.22) 0.73     150.3   13810.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    12795.42   20.27    1.567  0.30( 0.25) 0.83    3096.1   10600.00
    2    13271.61   22.19    1.491  0.30( 0.25) 0.83    3453.6   13810.00
    3    14322.87   26.58    1.336  0.30( 0.25) 0.83    4238.2   10400.00
    4    16912.47   39.32    1.071  0.30( 0.25) 0.83    7790.9   10220.00
    5    20098.59   59.19    0.859  0.30( 0.26) 0.85   14101.3     150.00
    6    21726.22   73.03    0.788  0.30( 0.26) 0.87   19116.1   31100.00
    7    23187.86   86.32    0.722  0.30( 0.27) 0.90   24592.1   40100.00
    8    23796.90   95.08    0.690  0.30( 0.27) 0.90   28052.5   11801.00
    9    25011.11  108.20    0.652  0.30( 0.27) 0.92   34073.6   11530.00
   10    25846.42  116.10    0.630  0.30( 0.28) 0.92   38512.0   11900.00
   11    27226.79  125.32    0.610  0.30( 0.28) 0.93   44699.8   11330.00
   12    27867.00  133.32    0.596  0.30( 0.28) 0.94   49787.0   10630.00
   13    27644.97  138.94    0.587  0.30( 0.28) 0.94   52376.9   12330.00
   14    27409.25  145.59    0.575  0.30( 0.28) 0.94   55519.3   11600.00
   15    27053.33  151.44    0.566  0.30( 0.28) 0.95   57753.6   11111.00
   16    26652.89  157.66    0.555  0.30( 0.28) 0.95   59687.5   12201.00
   17    25759.01  166.81    0.539  0.30( 0.28) 0.95   61775.7   12231.00
   18    24937.18  174.50    0.526  0.30( 0.28) 0.95   63187.3   10400.00
   19    23627.06  186.26    0.512  0.30( 0.28) 0.95   64808.1   10320.00
   20    22390.58  196.36    0.504  0.30( 0.29) 0.95   65195.9   12000.00
   21    19507.73  226.53    0.481  0.30( 0.29) 0.95   65812.9   10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =   27867.00    Tc(MIN.) =   133.32
```



```
  EFFECTIVE AREA(ACRES) =   49787.00   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    65812.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13820.00 TO NODE  13840.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    137.00  DOWNSTREAM(FEET) =    133.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1261.34   CHANNEL SLOPE =  0.0032
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.83
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.594
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.60      0.30     0.683     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.683
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   27872.53
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.98
  AVERAGE FLOW DEPTH(FEET) =  13.83   TRAVEL TIME(MIN.) =   1.62
  Tc(MIN.) =  134.94
  SUBAREA AREA(ACRES) =    31.60       SUBAREA RUNOFF(CFS) =   11.06
  EFFECTIVE AREA(ACRES) =  49818.60     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65844.5          PEAK FLOW RATE(CFS) =   27867.00
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.83   FLOW VELOCITY(FEET/SEC.) =  12.98
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132801.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13820.00 TO NODE  13840.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  134.94
  RAINFALL INTENSITY(INCH/HR) =   0.59
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49818.60
  TOTAL STREAM AREA(ACRES) =   65844.48
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   27867.00

****************************************************************************
  FLOW PROCESS FROM NODE  13830.00 TO NODE  13831.00 IS CODE =  21
```

```
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.990
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    65   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.70
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =      7.70

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.716
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
  AVERAGE FLOW DEPTH(FEET) =   0.51   TRAVEL TIME(MIN.) =   3.56
  Tc(MIN.) =   17.42
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   41.52
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      47.97
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   6.04
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.81
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.505
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.10
  AVERAGE FLOW DEPTH(FEET) =   0.80   TRAVEL TIME(MIN.) =   4.42
  Tc(MIN.) =   21.84
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   34.95
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =      75.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   7.47
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.418
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      89.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.25
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   2.17
  Tc(MIN.) =   24.01
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   27.69
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =      98.02
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   7.46
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.49
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.305
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     140.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.45
  AVERAGE FLOW DEPTH(FEET) =   1.46   TRAVEL TIME(MIN.) =   3.69
  Tc(MIN.) =   27.70
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =   85.23
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     173.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.64

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.64   FLOW VELOCITY(FEET/SEC.) =   7.94
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.44
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.216
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     269.53
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.59
  AVERAGE FLOW DEPTH(FEET) =   2.40   TRAVEL TIME(MIN.) =   3.72
  Tc(MIN.) =   31.42
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  192.31
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     350.25
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.76   FLOW VELOCITY(FEET/SEC.) =   8.18
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.111
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     401.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.35
  AVERAGE FLOW DEPTH(FEET) =   3.29   TRAVEL TIME(MIN.) =   5.73
  Tc(MIN.) =   37.15
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  102.70
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     412.84
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.34

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.34   FLOW VELOCITY(FEET/SEC.) =   7.41
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
```

```
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  43.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  30.24
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     412.84
  PIPE TRAVEL TIME(MIN.) =   0.63    Tc(MIN.) =   37.79
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   37.79
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.099
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.97      0.30     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =    4.91
  EFFECTIVE AREA(ACRES) =    565.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      565.5       PEAK FLOW RATE(CFS) =     412.84
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   37.79
  RAINFALL INTENSITY(INCH/HR) =   1.10
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =     565.50
  TOTAL STREAM AREA(ACRES) =     565.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     412.84

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    12795.42   22.31    1.486  0.30( 0.25) 0.83    3127.7   10600.00
      1    13271.61   24.21    1.410  0.30( 0.25) 0.83    3485.2   13810.00
      1    14322.87   28.55    1.282  0.30( 0.25) 0.83    4269.8   10400.00
      1    16912.47   41.20    1.045  0.30( 0.25) 0.83    7822.5   10220.00
      1    20098.59   60.97    0.847  0.30( 0.26) 0.85   14132.9     150.00
      1    21726.22   74.77    0.779  0.30( 0.26) 0.87   19147.7   31100.00
      1    23187.86   88.03    0.714  0.30( 0.27) 0.90   24623.7   40100.00
      1    23796.90   96.78    0.685  0.30( 0.27) 0.90   28084.1   11801.00
      1    25011.11  109.87    0.648  0.30( 0.27) 0.92   34105.2   11530.00
      1    25846.42  117.76    0.625  0.30( 0.28) 0.92   38543.6   11900.00
      1    27226.79  126.95    0.607  0.30( 0.28) 0.93   44731.4   11330.00
      1    27867.00  134.94    0.594  0.30( 0.28) 0.94   49818.6   10630.00
```



```
      1    27644.97  140.56    0.584  0.30( 0.28) 0.94   52408.5   12330.00
      1    27409.25  147.22    0.573  0.30( 0.28) 0.94   55550.9   11600.00
      1    27053.33  153.08    0.563  0.30( 0.28) 0.95   57785.2   11111.00
      1    26652.89  159.30    0.552  0.30( 0.28) 0.95   59719.1   12201.00
      1    25759.01  168.47    0.537  0.30( 0.28) 0.95   61807.3   12231.00
      1    24937.18  176.17    0.524  0.30( 0.28) 0.95   63218.9   10400.00
      1    23627.06  187.96    0.511  0.30( 0.28) 0.95   64839.7   10320.00
      1    22390.58  198.08    0.503  0.30( 0.29) 0.95   65227.5   12000.00
      1    19507.73  228.33    0.480  0.30( 0.29) 0.95   65844.5   10100.00
      2      412.84   37.79    1.099  0.30( 0.29) 0.97     565.5   13830.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13155.58   22.31    1.486  0.30( 0.25) 0.84    3461.5   10600.00
      2    13637.74   24.21    1.410  0.30( 0.25) 0.84    3847.5   13810.00
      3    14705.02   28.55    1.282  0.30( 0.25) 0.84    4697.0   10400.00
      4    16626.95   37.79    1.099  0.30( 0.25) 0.84    7429.9   13830.00
      5    17297.44   41.20    1.045  0.30( 0.25) 0.84    8388.0   10220.00
      6    20382.75   60.97    0.847  0.30( 0.26) 0.85   14698.4     150.00
      7    21975.65   74.77    0.779  0.30( 0.26) 0.88   19713.2   31100.00
      8    23403.92   88.03    0.714  0.30( 0.27) 0.90   25189.2   40100.00
      9    23998.21   96.78    0.685  0.30( 0.27) 0.91   28649.6   11801.00
     10    25193.50  109.87    0.648  0.30( 0.28) 0.92   34670.7   11530.00
     11    26017.40  117.76    0.625  0.30( 0.28) 0.92   39109.1   11900.00
     12    27388.52  126.95    0.607  0.30( 0.28) 0.93   45296.9   11330.00
     13    28021.79  134.94    0.594  0.30( 0.28) 0.94   50384.1   10630.00
     14    27794.89  140.56    0.584  0.30( 0.28) 0.94   52974.0   12330.00
     15    27553.39  147.22    0.573  0.30( 0.28) 0.94   56116.4   11600.00
     16    27192.39  153.08    0.563  0.30( 0.28) 0.95   58350.7   11111.00
     17    26786.56  159.30    0.552  0.30( 0.28) 0.95   60284.6   12201.00
     18    25884.72  168.47    0.537  0.30( 0.28) 0.95   62372.8   12231.00
     19    25056.21  176.17    0.524  0.30( 0.28) 0.95   63784.4   10400.00
     20    23739.64  187.96    0.511  0.30( 0.28) 0.95   65405.2   10320.00
     21    22499.17  198.08    0.503  0.30( 0.29) 0.95   65793.0   12000.00
     22    19604.41  228.33    0.480  0.30( 0.29) 0.95   66410.0   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   28021.79    Tc(MIN.) =   134.94
  EFFECTIVE AREA(ACRES) =   50384.10   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    66410.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132801.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    133.00  DOWNSTREAM(FEET) =    130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   654.44   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.58
```

```
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.592
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        6.61      0.30     0.975     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   28022.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.81
 AVERAGE FLOW DEPTH(FEET) =  12.58   TRAVEL TIME(MIN.) =   0.74
 Tc(MIN.) =  135.67
 SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    1.78
 EFFECTIVE AREA(ACRES) =  50390.71     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    66416.6         PEAK FLOW RATE(CFS) =   28021.79
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  12.58

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 12.58   FLOW VELOCITY(FEET/SEC.) =  14.81
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  135.67
 RAINFALL INTENSITY(INCH/HR) =   0.59
 AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.94
 EFFECTIVE STREAM AREA(ACRES) =   50390.71
 TOTAL STREAM AREA(ACRES) =   66416.59
 PEAK FLOW RATE(CFS) AT CONFLUENCE =   28021.79

****************************************************************************
 FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
 ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.206
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    65   12.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```



```
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =      8.49
 TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =      8.49

****************************************************************************
 FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
 CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.29
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.015
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        4.02      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.85
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.52
 Tc(MIN.) =   13.66
 SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    6.20
 EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      13.84
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.32

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   4.10
 LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
 CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.45
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.803
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        7.17      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.98
```

```
  AVERAGE FLOW DEPTH(FEET) =   0.43   TRAVEL TIME(MIN.) =   2.15
  Tc(MIN.) =   15.80
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =    9.70
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      21.83
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.48   FLOW VELOCITY(FEET/SEC.) =   4.19
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.715
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.52
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.64
  Tc(MIN.) =   17.44
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =    8.61
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      29.17
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   4.69
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.67
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.559
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.29
  AVERAGE FLOW DEPTH(FEET) =   0.66   TRAVEL TIME(MIN.) =   3.03
  Tc(MIN.) =   20.47
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   20.58
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      46.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.73

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.73   FLOW VELOCITY(FEET/SEC.) =   5.58
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.409
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.43
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   3.77
  Tc(MIN.) =   24.24
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   39.95
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =      80.95
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.13

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.13   FLOW VELOCITY(FEET/SEC.) =   5.82
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  23.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.52
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      80.95
  PIPE TRAVEL TIME(MIN.) =   2.11    Tc(MIN.) =   26.35
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.35
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.342
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   44.14
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     120.26

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   26.35
  RAINFALL INTENSITY(INCH/HR) =   1.34
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     120.26

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    13155.58   23.23    1.449  0.30( 0.25) 0.84    3468.2   10600.00
      1    13637.74   25.12    1.376  0.30( 0.25) 0.84    3854.1   13810.00
      1    14705.02   29.44    1.257  0.30( 0.25) 0.84    4703.6   10400.00
      1    16626.95   38.65    1.084  0.30( 0.25) 0.84    7436.5   13830.00
```



```
      1    17297.44   42.05    1.035  0.30( 0.25) 0.84    8394.6   10220.00
      1    20382.75   61.78    0.843  0.30( 0.26) 0.85   14705.0     150.00
      1    21975.65   75.56    0.775  0.30( 0.26) 0.88   19719.8   31100.00
      1    23403.92   88.81    0.710  0.30( 0.27) 0.90   25195.8   40100.00
      1    23998.21   97.55    0.683  0.30( 0.27) 0.91   28656.2   11801.00
      1    25193.50  110.63    0.646  0.30( 0.28) 0.92   34677.3   11530.00
      1    26017.40  118.51    0.623  0.30( 0.28) 0.92   39115.7   11900.00
      1    27388.52  127.69    0.606  0.30( 0.28) 0.93   45303.5   11330.00
      1    28021.79  135.67    0.592  0.30( 0.28) 0.94   50390.7   10630.00
      1    27794.89  141.30    0.583  0.30( 0.28) 0.94   52980.6   12330.00
      1    27553.39  147.96    0.571  0.30( 0.28) 0.94   56123.0   11600.00
      1    27192.39  153.82    0.562  0.30( 0.28) 0.95   58357.4   11111.00
      1    26786.56  160.05    0.551  0.30( 0.28) 0.95   60291.2   12201.00
      1    25884.72  169.22    0.535  0.30( 0.28) 0.95   62379.5   12231.00
      1    25056.21  176.93    0.522  0.30( 0.28) 0.95   63791.0   10400.00
      1    23739.64  188.73    0.510  0.30( 0.28) 0.95   65411.8   10320.00
      1    22499.17  198.87    0.502  0.30( 0.29) 0.95   65799.6   12000.00
      1    19604.41  229.15    0.479  0.30( 0.29) 0.95   66416.6   10100.00
      2      120.26   26.35    1.342  0.30( 0.26) 0.86     123.2   13850.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1    13272.10   23.23    1.449  0.30( 0.25) 0.84    3576.8   10600.00
      2    13755.95   25.12    1.376  0.30( 0.25) 0.84    3971.6   13810.00
      3    14061.52   26.35    1.342  0.30( 0.25) 0.84    4218.9   13850.00
      4    14815.89   29.44    1.257  0.30( 0.25) 0.84    4826.9   10400.00
      5    16718.57   38.65    1.084  0.30( 0.25) 0.84    7559.7   13830.00
      6    17383.64   42.05    1.035  0.30( 0.25) 0.84    8517.8   10220.00
      7    20447.70   61.78    0.843  0.30( 0.26) 0.85   14828.2     150.00
      8    22033.06   75.56    0.775  0.30( 0.26) 0.88   19843.0   31100.00
      9    23454.08   88.81    0.710  0.30( 0.27) 0.90   25319.0   40100.00
     10    24045.34   97.55    0.683  0.30( 0.27) 0.91   28779.4   11801.00
     11    25236.53  110.63    0.646  0.30( 0.28) 0.92   34800.5   11530.00
     12    26057.96  118.51    0.623  0.30( 0.28) 0.92   39238.9   11900.00
     13    27427.15  127.69    0.606  0.30( 0.28) 0.93   45426.8   11330.00
     14    28058.92  135.67    0.592  0.30( 0.28) 0.94   50513.9   10630.00
     15    27830.96  141.30    0.583  0.30( 0.28) 0.94   53103.8   12330.00
     16    27588.20  147.96    0.571  0.30( 0.28) 0.94   56246.2   11600.00
     17    27226.09  153.82    0.562  0.30( 0.28) 0.95   58480.6   11111.00
     18    26819.09  160.05    0.551  0.30( 0.28) 0.95   60414.4   12201.00
     19    25915.53  169.22    0.535  0.30( 0.28) 0.95   62502.7   12231.00
     20    25085.56  176.93    0.522  0.30( 0.28) 0.95   63914.2   10400.00
     21    23767.66  188.73    0.510  0.30( 0.28) 0.95   65535.0   10320.00
     22    22526.32  198.87    0.502  0.30( 0.29) 0.95   65922.8   12000.00
     23    19628.97  229.15    0.479  0.30( 0.29) 0.95   66539.8   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   28058.92    Tc(MIN.) =   135.67
  EFFECTIVE AREA(ACRES) =   50513.93   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    66539.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

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

```
 FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
 CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.08
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.592
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        4.89      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   28059.56
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.68
 AVERAGE FLOW DEPTH(FEET) =   9.08   TRAVEL TIME(MIN.) =   0.45
 Tc(MIN.) =  136.12
 SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    1.28
 EFFECTIVE AREA(ACRES) =  50518.82     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    66544.7         PEAK FLOW RATE(CFS) =   28058.92
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.07

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  9.07   FLOW VELOCITY(FEET/SEC.) =  22.69
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =  136.12
 RAINFALL INTENSITY(INCH/HR) =   0.59
 AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.94
 EFFECTIVE STREAM AREA(ACRES) =   50518.82
 TOTAL STREAM AREA(ACRES) =   66544.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE =   28058.92

****************************************************************************
 FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
 ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47
```



```
 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.808
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 NATURAL FAIR COVER
 "GRASS"                    -        7.32      0.30     1.000    65   15.70
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =      9.94
 TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =      9.94

****************************************************************************
 FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
 CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.40
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.635
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       13.01      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.77
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.27
 AVERAGE FLOW DEPTH(FEET) =   0.39   TRAVEL TIME(MIN.) =   3.23
 Tc(MIN.) =   18.93
 SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   15.63
 EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      24.43
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.46   FLOW VELOCITY(FEET/SEC.) =   4.83
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.485
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.30     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.13
  AVERAGE FLOW DEPTH(FEET) =   0.72   TRAVEL TIME(MIN.) =   3.41
  Tc(MIN.) =   22.34
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   35.86
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      57.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   5.67
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.358
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.30     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      72.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.37
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   3.43
  Tc(MIN.) =   25.78
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   30.29
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =      81.74
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.90   FLOW VELOCITY(FEET/SEC.) =   7.67
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.31
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.281
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.30     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.46
  AVERAGE FLOW DEPTH(FEET) =   2.28   TRAVEL TIME(MIN.) =   2.81
  Tc(MIN.) =   28.59
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =   66.42
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     142.31
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.56   FLOW VELOCITY(FEET/SEC.) =   3.68
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  32.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.65
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     142.31
  PIPE TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =   30.45
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   30.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.234
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       34.90      0.30     0.743     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.743
  SUBAREA AREA(ACRES) =   34.90      SUBAREA RUNOFF(CFS) =   31.76
  EFFECTIVE AREA(ACRES) =    192.83   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =      192.8       PEAK FLOW RATE(CFS) =     167.41

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   30.45
  RAINFALL INTENSITY(INCH/HR) =   1.23
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =     192.83
  TOTAL STREAM AREA(ACRES) =     192.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     167.41

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13272.10   23.80    1.427  0.30( 0.25) 0.84    3581.7   10600.00
      1    13755.95   25.69    1.360  0.30( 0.25) 0.84    3976.5   13810.00
      1    14061.52   26.91    1.327  0.30( 0.25) 0.84    4223.8   13850.00
      1    14815.89   29.99    1.242  0.30( 0.25) 0.84    4831.8   10400.00
      1    16718.57   39.18    1.074  0.30( 0.25) 0.84    7564.6   13830.00
      1    17383.64   42.57    1.029  0.30( 0.25) 0.84    8522.7   10220.00
      1    20447.70   62.27    0.841  0.30( 0.26) 0.85   14833.1     150.00
      1    22033.06   76.05    0.773  0.30( 0.26) 0.88   19847.9   31100.00
      1    23454.08   89.28    0.708  0.30( 0.27) 0.90   25323.9   40100.00
      1    24045.34   98.02    0.681  0.30( 0.27) 0.91   28784.3   11801.00
      1    25236.53  111.09    0.644  0.30( 0.28) 0.92   34805.4   11530.00
      1    26057.96  118.97    0.622  0.30( 0.28) 0.92   39243.8   11900.00
      1    27427.15  128.14    0.605  0.30( 0.28) 0.93   45431.6   11330.00
      1    28058.92  136.12    0.592  0.30( 0.28) 0.94   50518.8   10630.00
      1    27830.96  141.75    0.582  0.30( 0.28) 0.94   53108.7   12330.00
      1    27588.20  148.41    0.571  0.30( 0.28) 0.94   56251.1   11600.00
      1    27226.09  154.27    0.561  0.30( 0.28) 0.95   58485.5   11111.00
      1    26819.09  160.50    0.550  0.30( 0.28) 0.95   60419.3   12201.00
      1    25915.53  169.68    0.535  0.30( 0.28) 0.95   62507.6   12231.00
      1    25085.56  177.40    0.521  0.30( 0.28) 0.95   63919.1   10400.00
      1    23767.66  189.21    0.510  0.30( 0.28) 0.95   65539.9   10320.00
      1    22526.32  199.35    0.502  0.30( 0.29) 0.95   65927.7   12000.00
      1    19628.97  229.65    0.479  0.30( 0.29) 0.95   66544.7   10100.00
      2      167.41   30.45    1.234  0.30( 0.27) 0.90     192.8   13870.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
```



```
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    13429.14   23.80    1.427  0.30( 0.25) 0.84    3732.4   10600.00
      2    13915.69   25.69    1.360  0.30( 0.25) 0.84    4139.2   13810.00
      3    14223.73   26.91    1.327  0.30( 0.25) 0.84    4394.3   13850.00
      4    14982.24   29.99    1.242  0.30( 0.25) 0.84    5021.7   10400.00
      5    15077.54   30.45    1.234  0.30( 0.25) 0.84    5159.9   13870.00
      6    16858.25   39.18    1.074  0.30( 0.25) 0.84    7757.4   13830.00
      7    17515.44   42.57    1.029  0.30( 0.25) 0.84    8715.5   10220.00
      8    20546.89   62.27    0.841  0.30( 0.26) 0.86   15025.9     150.00
      9    22120.46   76.05    0.773  0.30( 0.26) 0.88   20040.7   31100.00
     10    23530.15   89.28    0.708  0.30( 0.27) 0.90   25516.7   40100.00
     11    24116.86   98.02    0.681  0.30( 0.27) 0.91   28977.2   11801.00
     12    25301.62  111.09    0.644  0.30( 0.27) 0.92   34998.2   11530.00
     13    26119.17  118.97    0.622  0.30( 0.28) 0.92   39436.6   11900.00
     14    27485.46  128.14    0.605  0.30( 0.28) 0.93   45624.5   11330.00
     15    28114.87  136.12    0.592  0.30( 0.28) 0.94   50711.6   10630.00
     16    27885.25  141.75    0.582  0.30( 0.28) 0.94   53301.5   12330.00
     17    27640.53  148.41    0.571  0.30( 0.28) 0.94   56444.0   11600.00
     18    27276.69  154.27    0.561  0.30( 0.28) 0.95   58678.3   11111.00
     19    26867.85  160.50    0.550  0.30( 0.28) 0.95   60612.1   12201.00
     20    25961.58  169.68    0.535  0.30( 0.28) 0.95   62700.4   12231.00
     21    25129.34  177.40    0.521  0.30( 0.28) 0.95   64111.9   10400.00
     22    23809.43  189.21    0.510  0.30( 0.28) 0.95   65732.7   10320.00
     23    22566.73  199.35    0.502  0.30( 0.28) 0.95   66120.5   12000.00
     24    19665.32  229.65    0.479  0.30( 0.29) 0.95   66737.5   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   28114.87    Tc(MIN.) =   136.12
  EFFECTIVE AREA(ACRES) =   50711.65   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    66737.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    120.57  DOWNSTREAM(FEET) =    119.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1190.21   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  20.25
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.587
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      117.69      0.30     0.724     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.724
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   28134.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.68
  AVERAGE FLOW DEPTH(FEET) =  20.25   TRAVEL TIME(MIN.) =   2.58
  Tc(MIN.) =  138.70
  SUBAREA AREA(ACRES) =   117.69       SUBAREA RUNOFF(CFS) =   39.20
  EFFECTIVE AREA(ACRES) =  50829.34     AREA-AVERAGED Fm(INCH/HR) =   0.28
```

```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    66855.2         PEAK FLOW RATE(CFS) =   28114.87
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  20.24

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 20.24   FLOW VELOCITY(FEET/SEC.) =   7.68
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  138.70
  RAINFALL INTENSITY(INCH/HR) =   0.59
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   50829.34
  TOTAL STREAM AREA(ACRES) =   66855.21
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   28114.87

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.215
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    65    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =      7.98
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =      7.98

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.37
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.825
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.56
  AVERAGE FLOW DEPTH(FEET) =   0.35   TRAVEL TIME(MIN.) =   1.59
  Tc(MIN.) =    8.57
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   18.49
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1          PEAK FLOW RATE(CFS) =      25.41
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.45

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.45   FLOW VELOCITY(FEET/SEC.) =   5.24
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.51
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.455
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      37.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.93
  AVERAGE FLOW DEPTH(FEET) =   0.49   TRAVEL TIME(MIN.) =   1.59
  Tc(MIN.) =   10.16
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   24.24
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6          PEAK FLOW RATE(CFS) =      45.93
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   7.46
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.70
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.187
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      59.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.67
  AVERAGE FLOW DEPTH(FEET) =   0.68   TRAVEL TIME(MIN.) =   2.13
  Tc(MIN.) =   12.29
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   26.95
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =      67.18
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   7.97
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.94
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.891
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.63
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.12
  AVERAGE FLOW DEPTH(FEET) =   0.91   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =   14.64
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   40.81
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =      97.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.97   FLOW VELOCITY(FEET/SEC.) =   8.40
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.93
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      97.48
  PIPE TRAVEL TIME(MIN.) =   1.99    Tc(MIN.) =   16.63
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.63
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.759
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69       SUBAREA RUNOFF(CFS) =   16.50
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6         PEAK FLOW RATE(CFS) =     105.88

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.63
  RAINFALL INTENSITY(INCH/HR) =   1.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 105.88

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13429.14	26.98	1.325	0.30(0.25)	0.84	3850.1	10600.00
1	13915.69	28.83	1.274	0.30(0.25)	0.84	4256.9	13810.00
1	14223.73	30.04	1.241	0.30(0.25)	0.84	4512.0	13850.00
1	14982.24	33.07	1.186	0.30(0.25)	0.84	5139.4	10400.00
1	15077.54	33.52	1.178	0.30(0.25)	0.84	5277.6	13870.00
1	16858.25	42.15	1.034	0.30(0.25)	0.84	7875.1	13830.00
1	17515.44	45.52	0.994	0.30(0.25)	0.84	8833.2	10220.00
1	20546.89	65.09	0.827	0.30(0.26)	0.85	15143.6	150.00
1	22120.46	78.81	0.759	0.30(0.26)	0.88	20158.4	31100.00
1	23530.15	92.00	0.698	0.30(0.27)	0.90	25634.4	40100.00
1	24116.86	100.71	0.674	0.30(0.27)	0.90	29094.8	11801.00
1	25301.62	113.75	0.637	0.30(0.27)	0.92	35115.9	11530.00
1	26119.17	121.61	0.616	0.30(0.28)	0.92	39554.3	11900.00
1	27485.46	130.74	0.601	0.30(0.28)	0.93	45742.2	11330.00
1	28114.87	138.70	0.587	0.30(0.28)	0.94	50829.3	10630.00
1	27885.25	144.34	0.578	0.30(0.28)	0.94	53419.2	12330.00
1	27640.53	151.01	0.566	0.30(0.28)	0.94	56561.7	11600.00
1	27276.69	156.88	0.556	0.30(0.28)	0.94	58796.0	11111.00
1	26867.85	163.12	0.546	0.30(0.28)	0.95	60729.8	12201.00
1	25961.58	172.32	0.530	0.30(0.28)	0.95	62818.1	12231.00
1	25129.34	180.06	0.517	0.30(0.28)	0.95	64229.6	10400.00
1	23809.43	191.91	0.508	0.30(0.28)	0.95	65850.4	10320.00
1	22566.73	202.09	0.500	0.30(0.28)	0.95	66238.2	12000.00
1	19665.32	232.50	0.476	0.30(0.28)	0.95	66855.2	10100.00
2	105.88	16.63	1.759	0.30(0.28)	0.94	79.6	13889.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11729.60	16.63	1.759	0.30(0.25)	0.84	2452.3	13889.00
2	13503.92	26.98	1.325	0.30(0.25)	0.84	3929.7	10600.00
3	13986.83	28.83	1.274	0.30(0.25)	0.84	4336.5	13810.00
4	14292.52	30.04	1.241	0.30(0.25)	0.84	4591.6	13850.00
5	15047.05	33.07	1.186	0.30(0.25)	0.84	5219.0	10400.00
6	15141.76	33.52	1.178	0.30(0.25)	0.84	5357.2	13870.00
7	16912.16	42.15	1.034	0.30(0.25)	0.84	7954.7	13830.00
8	17566.50	45.52	0.994	0.30(0.25)	0.84	8912.8	10220.00
9	20585.99	65.09	0.827	0.30(0.26)	0.85	15223.2	150.00
10	22154.71	78.81	0.759	0.30(0.26)	0.88	20238.0	31100.00
11	23560.03	92.00	0.698	0.30(0.27)	0.90	25714.0	40100.00
12	24144.97	100.71	0.674	0.30(0.27)	0.90	29174.5	11801.00
13	25327.09	113.75	0.637	0.30(0.27)	0.92	35195.5	11530.00
14	26143.17	121.61	0.616	0.30(0.28)	0.92	39633.9	11900.00
15	27508.35	130.74	0.601	0.30(0.28)	0.93	45821.8	11330.00
16	28136.79	138.70	0.587	0.30(0.28)	0.94	50909.0	10630.00
17	27906.48	144.34	0.578	0.30(0.28)	0.94	53498.8	12330.00
18	27660.95	151.01	0.566	0.30(0.28)	0.94	56641.3	11600.00
19	27296.39	156.88	0.556	0.30(0.28)	0.94	58875.6	11111.00
20	26886.79	163.12	0.546	0.30(0.28)	0.95	60809.5	12201.00
21	25979.40	172.32	0.530	0.30(0.28)	0.95	62897.7	12231.00

22	25146.22	180.06	0.517	0.30(0.28)	0.95	64309.3	10400.00
23	23825.66	191.91	0.508	0.30(0.28)	0.95	65930.0	10320.00
24	22582.40	202.09	0.500	0.30(0.28)	0.95	66317.8	12000.00
25	19679.30	232.50	0.476	0.30(0.28)	0.95	66934.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 28136.79 Tc(MIN.) = 138.70
EFFECTIVE AREA(ACRES) = 50908.96 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66934.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66934.8 TC(MIN.) = 138.70
EFFECTIVE AREA(ACRES) = 50908.96 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.938
PEAK FLOW RATE(CFS) = 28136.79

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11729.60	16.63	1.759	0.30(0.25)	0.84	2452.3	13889.00
2	13503.92	26.98	1.325	0.30(0.25)	0.84	3929.7	10600.00
3	13986.83	28.83	1.274	0.30(0.25)	0.84	4336.5	13810.00
4	14292.52	30.04	1.241	0.30(0.25)	0.84	4591.6	13850.00
5	15047.05	33.07	1.186	0.30(0.25)	0.84	5219.0	10400.00
6	15141.76	33.52	1.178	0.30(0.25)	0.84	5357.2	13870.00
7	16912.16	42.15	1.034	0.30(0.25)	0.84	7954.7	13830.00
8	17566.50	45.52	0.994	0.30(0.25)	0.84	8912.8	10220.00
9	20585.99	65.09	0.827	0.30(0.26)	0.85	15223.2	150.00
10	22154.71	78.81	0.759	0.30(0.26)	0.88	20238.0	31100.00
11	23560.03	92.00	0.698	0.30(0.27)	0.90	25714.0	40100.00
12	24144.97	100.71	0.674	0.30(0.27)	0.90	29174.5	11801.00
13	25327.09	113.75	0.637	0.30(0.27)	0.92	35195.5	11530.00
14	26143.17	121.61	0.616	0.30(0.28)	0.92	39633.9	11900.00
15	27508.35	130.74	0.601	0.30(0.28)	0.93	45821.8	11330.00
16	28136.79	138.70	0.587	0.30(0.28)	0.94	50909.0	10630.00
17	27906.48	144.34	0.578	0.30(0.28)	0.94	53498.8	12330.00
18	27660.95	151.01	0.566	0.30(0.28)	0.94	56641.3	11600.00
19	27296.39	156.88	0.556	0.30(0.28)	0.94	58875.6	11111.00
20	26886.79	163.12	0.546	0.30(0.28)	0.95	60809.5	12201.00
21	25979.40	172.32	0.530	0.30(0.28)	0.95	62897.7	12231.00
22	25146.22	180.06	0.517	0.30(0.28)	0.95	64309.3	10400.00
23	23825.66	191.91	0.508	0.30(0.28)	0.95	65930.0	10320.00
24	22582.40	202.09	0.500	0.30(0.28)	0.95	66317.8	12000.00
25	19679.30	232.50	0.476	0.30(0.28)	0.95	66934.8	10100.00

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 10-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RU10EV39.DAT
  TIME/DATE OF STUDY: 00:17 08/11/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  3.695
   2)   10.00;  2.473
   3)   15.00;  1.845
   4)   20.00;  1.577
   5)   25.00;  1.378
   6)   30.00;  1.242
   7)   40.00;  1.058
   8)   50.00;  0.941
   9)   60.00;  0.852
  10)   90.00;  0.704
  11)  120.00;  0.618
  12)  180.00;  0.516
  13)  360.00;  0.377
  14) 1200.00;  0.164
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.365
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    65   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      7.43
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      7.43

****************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.26
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.119
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.51
  AVERAGE FLOW DEPTH(FEET) =   0.25   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =   12.82
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   13.87
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      20.42
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.31   FLOW VELOCITY(FEET/SEC.) =   6.24
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.45
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.943
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.97
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   1.40
  Tc(MIN.) =   14.22
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   35.39
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      53.84
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.54

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.54   FLOW VELOCITY(FEET/SEC.) =   9.02
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  17.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  16.18
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      53.84
  PIPE TRAVEL TIME(MIN.) =   0.90    Tc(MIN.) =   15.12
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   15.12
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   29.51
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =      79.92

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  27.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  13.96
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      79.92
  PIPE TRAVEL TIME(MIN.) =   2.34    Tc(MIN.) =   17.46
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.46
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  1.713
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   59.49
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     132.90

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU10EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11729.60	16.63	0.30(0.25)	0.84	2452.3	13889.00
2	15141.76	33.52	0.30(0.25)	0.84	5357.2	13870.00
3	17566.50	45.52	0.30(0.25)	0.84	8912.8	10220.00
4	20585.99	65.09	0.30(0.26)	0.85	15223.2	150.00
5	22154.71	78.81	0.30(0.26)	0.88	20238.0	31100.00
6	23560.03	92.00	0.30(0.27)	0.90	25714.0	40100.00
7	24144.97	100.71	0.30(0.27)	0.90	29174.5	11801.00
8	25327.09	113.75	0.30(0.27)	0.92	35195.5	11530.00
9	26143.17	121.61	0.30(0.28)	0.92	39633.9	11900.00
10	27508.35	130.74	0.30(0.28)	0.93	45821.8	11330.00
11	28136.79	138.70	0.30(0.28)	0.94	50909.0	10630.00
12	27906.48	144.34	0.30(0.28)	0.94	53498.8	12330.00
13	27660.95	151.01	0.30(0.28)	0.94	56641.3	11600.00
14	27296.39	156.88	0.30(0.28)	0.94	58875.6	11111.00
15	26886.79	163.12	0.30(0.28)	0.95	60809.5	12201.00
16	25979.40	172.32	0.30(0.28)	0.95	62897.7	12231.00
17	25146.22	180.06	0.30(0.28)	0.95	64309.3	10400.00
18	23825.66	191.91	0.30(0.28)	0.95	65930.0	10320.00
19	22582.40	202.09	0.30(0.28)	0.95	66317.8	12000.00
20	19679.30	232.50	0.30(0.28)	0.95	66934.8	10100.00

TOTAL AREA(ACRES) = 66934.8

****

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11729.60	16.63	0.30(0.25)	0.84	2452.3	13889.00
2	15141.76	33.52	0.30(0.25)	0.84	5357.2	13870.00
3	17566.50	45.52	0.30(0.25)	0.84	8912.8	10220.00
4	20585.99	65.09	0.30(0.26)	0.85	15223.2	150.00
5	22154.71	78.81	0.30(0.26)	0.88	20238.0	31100.00
6	23560.03	92.00	0.30(0.27)	0.90	25714.0	40100.00
7	24144.97	100.71	0.30(0.27)	0.90	29174.5	11801.00
8	25327.09	113.75	0.30(0.27)	0.92	35195.5	11530.00
9	26143.17	121.61	0.30(0.28)	0.92	39633.9	11900.00
10	27508.35	130.74	0.30(0.28)	0.93	45821.8	11330.00
11	28136.79	138.70	0.30(0.28)	0.94	50909.0	10630.00
12	27906.48	144.34	0.30(0.28)	0.94	53498.8	12330.00
13	27660.95	151.01	0.30(0.28)	0.94	56641.3	11600.00
14	27296.39	156.88	0.30(0.28)	0.94	58875.6	11111.00
15	26886.79	163.12	0.30(0.28)	0.95	60809.5	12201.00
16	25979.40	172.32	0.30(0.28)	0.95	62897.7	12231.00
17	25146.22	180.06	0.30(0.28)	0.95	64309.3	10400.00
18	23825.66	191.91	0.30(0.28)	0.95	65930.0	10320.00
19	22582.40	202.09	0.30(0.28)	0.95	66317.8	12000.00
20	19679.30	232.50	0.30(0.28)	0.95	66934.8	10100.00

TOTAL AREA(ACRES) = 66934.8

****

FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>>TRAVELTIME THRU SUBAREA<<<<<

==========

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 17.74

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.582

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.09	0.30	0.535	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28155.02

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.28

AVERAGE FLOW DEPTH(FEET) = 17.74 TRAVEL TIME(MIN.) = 2.47

Tc(MIN.) = 141.18

SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 36.46

EFFECTIVE AREA(ACRES) = 51005.05 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 67030.9 PEAK FLOW RATE(CFS) = 28136.79

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 17.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 17.73 FLOW VELOCITY(FEET/SEC.) = 9.28

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

****

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11729.60	19.80	1.588	0.30(0.25)	0.83	2548.4	13889.00
2	15141.76	36.47	1.123	0.30(0.25)	0.84	5453.3	13870.00
3	17566.50	48.34	0.960	0.30(0.25)	0.84	9008.9	10220.00
4	20585.99	67.79	0.814	0.30(0.26)	0.85	15319.3	150.00
5	22154.71	81.45	0.746	0.30(0.26)	0.87	20334.1	31100.00
6	23560.03	94.59	0.691	0.30(0.27)	0.90	25810.1	40100.00
7	24144.97	103.29	0.666	0.30(0.27)	0.90	29270.6	11801.00
8	25327.09	116.29	0.629	0.30(0.27)	0.92	35291.6	11530.00
9	26143.17	124.13	0.611	0.30(0.28)	0.92	39730.0	11900.00
10	27508.35	133.23	0.596	0.30(0.28)	0.93	45917.9	11330.00
11	28136.79	141.18	0.582	0.30(0.28)	0.94	51005.1	10630.00
12	27906.48	146.81	0.572	0.30(0.28)	0.94	53594.9	12330.00
13	27660.95	153.49	0.561	0.30(0.28)	0.94	56737.4	11600.00
14	27296.39	159.37	0.551	0.30(0.28)	0.94	58971.7	11111.00
15	26886.79	165.62	0.540	0.30(0.28)	0.95	60905.5	12201.00
16	25979.40	174.85	0.525	0.30(0.28)	0.95	62993.8	12231.00

```
   17    25146.22  182.61    0.514  0.30( 0.28) 0.95   64405.3   10400.00
   18    23825.66  194.50    0.505  0.30( 0.28) 0.95   66026.1   10320.00
   19    22582.40  204.72    0.497  0.30( 0.28) 0.95   66413.9   12000.00
   20    19679.30  235.23    0.473  0.30( 0.28) 0.95   67030.9   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      132.90   17.46    1.713  0.30( 0.25) 0.84     101.1   13900.00
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    11445.94   17.46    1.713  0.30( 0.25) 0.83    2348.7   13900.00
     2    11851.09   19.80    1.588  0.30( 0.25) 0.83    2649.6   13889.00
     3    15220.95   36.47    1.123  0.30( 0.25) 0.84    5554.5   13870.00
     4    17630.89   48.34    0.960  0.30( 0.25) 0.84    9110.1   10220.00
     5    20637.00   67.79    0.814  0.30( 0.26) 0.85   15420.5     150.00
     6    22199.59   81.45    0.746  0.30( 0.26) 0.87   20435.3   31100.00
     7    23599.88   94.59    0.691  0.30( 0.27) 0.90   25911.3   40100.00
     8    24182.55  103.29    0.666  0.30( 0.27) 0.90   29371.7   11801.00
     9    25361.27  116.29    0.629  0.30( 0.27) 0.91   35392.8   11530.00
    10    26175.75  124.13    0.611  0.30( 0.28) 0.92   39831.1   11900.00
    11    27539.52  133.23    0.596  0.30( 0.28) 0.93   46019.0   11330.00
    12    28166.73  141.18    0.582  0.30( 0.28) 0.94   51106.2   10630.00
    13    27935.54  146.81    0.572  0.30( 0.28) 0.94   53696.1   12330.00
    14    27688.98  153.49    0.561  0.30( 0.28) 0.94   56838.5   11600.00
    15    27323.52  159.37    0.551  0.30( 0.28) 0.94   59072.8   11111.00
    16    26912.95  165.62    0.540  0.30( 0.28) 0.95   61006.7   12201.00
    17    26004.13  174.85    0.525  0.30( 0.28) 0.95   63094.9   12231.00
    18    25169.97  182.61    0.514  0.30( 0.28) 0.95   64506.5   10400.00
    19    23848.57  194.50    0.505  0.30( 0.28) 0.95   66127.2   10320.00
    20    22604.59  204.72    0.497  0.30( 0.28) 0.95   66515.1   12000.00
    21    19699.35  235.23    0.473  0.30( 0.28) 0.95   67132.1   10100.00
   TOTAL AREA(ACRES) =     67132.1

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    28166.73  Tc(MIN.) =  141.175
 EFFECTIVE AREA(ACRES) =  51106.19  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =    67132.1
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
 CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.84
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.581
 SUBAREA LOSS RATE DATA(AMC  II):
```



```
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -      134.30      0.30      0.658     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   28189.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.14
 AVERAGE FLOW DEPTH(FEET) =  10.84   TRAVEL TIME(MIN.) =   0.31
 Tc(MIN.) =  141.48
 SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   46.43
 EFFECTIVE AREA(ACRES) =  51240.49     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    67266.4         PEAK FLOW RATE(CFS) =   28166.73
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.83

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 10.83   FLOW VELOCITY(FEET/SEC.) =  18.14
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.99
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  0.580
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       96.27      0.30      0.723     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   28182.44
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.15
 AVERAGE FLOW DEPTH(FEET) =   9.99   TRAVEL TIME(MIN.) =   1.15
 Tc(MIN.) =  142.64
 SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   31.42
 EFFECTIVE AREA(ACRES) =  51336.76     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    67362.6         PEAK FLOW RATE(CFS) =   28166.73
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.99

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  9.99   FLOW VELOCITY(FEET/SEC.) =  20.15
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
 END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 67362.6 TC(MIN.) = 142.64
EFFECTIVE AREA(ACRES) = 51336.76 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.936
PEAK FLOW RATE(CFS) = 28166.73

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11445.94	19.40	1.609	0.30(0.25)	0.82	2579.3	13900.00
2	11851.09	21.71	1.509	0.30(0.25)	0.82	2880.1	13889.00
3	15220.95	38.23	1.091	0.30(0.25)	0.83	5785.0	13870.00
4	17630.89	50.03	0.941	0.30(0.25)	0.84	9340.6	10220.00
5	20637.00	69.40	0.806	0.30(0.26)	0.85	15651.0	150.00
6	22199.59	83.02	0.738	0.30(0.26)	0.87	20665.8	31100.00
7	23599.88	96.14	0.686	0.30(0.27)	0.89	26141.8	40100.00
8	24182.55	104.83	0.661	0.30(0.27)	0.90	29602.3	11801.00
9	25361.27	117.80	0.624	0.30(0.27)	0.91	35623.3	11530.00
10	26175.75	125.62	0.608	0.30(0.28)	0.92	40061.7	11900.00
11	27539.52	134.70	0.593	0.30(0.28)	0.93	46249.6	11330.00
12	28166.73	142.64	0.580	0.30(0.28)	0.94	51336.8	10630.00
13	27935.54	148.28	0.570	0.30(0.28)	0.94	53926.6	12330.00
14	27688.98	154.96	0.559	0.30(0.28)	0.94	57069.1	11600.00
15	27323.52	160.85	0.549	0.30(0.28)	0.94	59303.4	11111.00
16	26912.95	167.10	0.538	0.30(0.28)	0.94	61237.3	12201.00
17	26004.13	176.35	0.522	0.30(0.28)	0.95	63325.5	12231.00
18	25169.97	184.12	0.513	0.30(0.28)	0.95	64737.1	10400.00
19	23848.57	196.04	0.504	0.30(0.28)	0.95	66357.8	10320.00
20	22604.59	206.29	0.496	0.30(0.28)	0.95	66745.6	12000.00
21	19699.35	236.86	0.472	0.30(0.28)	0.95	67362.6	10100.00

==========
==========

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                        Analysis prepared by:

                      Michael Baker International
                    5 Hutton Centre Drive, Suite 500
                         Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP - NODE 119 COMPLEX              *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR RM EV APRIL 2019 FKAZI                                          *
 ************************************************************************

  FILE NAME: RU25EV19.DAT
  TIME/DATE OF STUDY: 10:56 04/01/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.002
   2)   10.00;  3.253
   3)   15.00;  2.474
   4)   20.00;  2.039
   5)   25.00;  1.776
   6)   30.00;  1.555
   7)   40.00;  1.357
   8)   50.00;  1.203
   9)   60.00;  1.080
  10)   90.00;  0.912
  11)  120.00;  0.803
  12)  180.00;  0.673
  13)  360.00;  0.500
  14) 1200.00;  0.221
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.231
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"          -        1.62      0.30      0.999     0    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      5.73
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      5.73

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.158
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.71
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.25
  AVERAGE FLOW DEPTH(FEET) =   0.47   TRAVEL TIME(MIN.) =   3.41
  Tc(MIN.) =   10.61
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   21.69
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      25.86
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.61   FLOW VELOCITY(FEET/SEC.) =   3.76
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.21
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.623
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.51
  AVERAGE FLOW DEPTH(FEET) =   1.13   TRAVEL TIME(MIN.) =   3.44
  Tc(MIN.) =   14.05
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   72.97
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =      94.03
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.42

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.42   FLOW VELOCITY(FEET/SEC.) =   5.14
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.19
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.210
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     114.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.75
  AVERAGE FLOW DEPTH(FEET) =   2.14   TRAVEL TIME(MIN.) =   3.98
```



```
  Tc(MIN.) =   18.03
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   40.93
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     118.47
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.18   FLOW VELOCITY(FEET/SEC.) =   3.77
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.860
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.96
  AVERAGE FLOW DEPTH(FEET) =   2.00   TRAVEL TIME(MIN.) =   5.38
  Tc(MIN.) =   23.41
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =   96.92
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     193.88
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.17   FLOW VELOCITY(FEET/SEC.) =   6.22
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.73
```

```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.707
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       63.15      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     233.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.18
  AVERAGE FLOW DEPTH(FEET) =   1.71   TRAVEL TIME(MIN.) =   3.16
  Tc(MIN.) =   26.57
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   79.96
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     255.05
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.80   FLOW VELOCITY(FEET/SEC.) =  10.45
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.584
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       84.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     304.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.96
  AVERAGE FLOW DEPTH(FEET) =   1.55   TRAVEL TIME(MIN.) =   2.78
  Tc(MIN.) =   29.35
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =   98.06
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     330.98
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.63   FLOW VELOCITY(FEET/SEC.) =  15.34
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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



```
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.474
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      199.43      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     436.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.89
  AVERAGE FLOW DEPTH(FEET) =   2.46   TRAVEL TIME(MIN.) =   4.72
  Tc(MIN.) =   34.07
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  210.79
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     513.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.68   FLOW VELOCITY(FEET/SEC.) =  12.48
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   34.07
  RAINFALL INTENSITY(INCH/HR) =   1.47
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     513.75

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.913
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000     0   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.14
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      8.14

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.33
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.669
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      14.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.24
  AVERAGE FLOW DEPTH(FEET) =   0.32   TRAVEL TIME(MIN.) =   1.56
  Tc(MIN.) =   13.75
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =   12.35
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      19.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.38   FLOW VELOCITY(FEET/SEC.) =   4.77
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.076
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.41
  AVERAGE FLOW DEPTH(FEET) =   0.99   TRAVEL TIME(MIN.) =   5.83
  Tc(MIN.) =   19.58
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   86.79
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =     101.57
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.28   FLOW VELOCITY(FEET/SEC.) =   6.29
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.902
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     148.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.79
  AVERAGE FLOW DEPTH(FEET) =   1.12   TRAVEL TIME(MIN.) =   3.02
  Tc(MIN.) =   22.60
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =   93.93
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     185.57
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.28   FLOW VELOCITY(FEET/SEC.) =  11.58
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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

```
 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.58
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.775
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     237.72
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.60
 AVERAGE FLOW DEPTH(FEET) =   1.56   TRAVEL TIME(MIN.) =   2.42
 Tc(MIN.) =   25.02
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =  104.24
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     275.07
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.70   FLOW VELOCITY(FEET/SEC.) =  12.11
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.27
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.630
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     317.28
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.74
 AVERAGE FLOW DEPTH(FEET) =   2.25   TRAVEL TIME(MIN.) =   3.27
 Tc(MIN.) =   28.29
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   84.40
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     332.54
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.31

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.31   FLOW VELOCITY(FEET/SEC.) =   9.85
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.29
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.543
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     462.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.02
 AVERAGE FLOW DEPTH(FEET) =   2.27   TRAVEL TIME(MIN.) =   2.31
 Tc(MIN.) =   30.60
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  259.78
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     570.46
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.54

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.54   FLOW VELOCITY(FEET/SEC.) =  14.91
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.25
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.471
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED               -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     628.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.79
  AVERAGE FLOW DEPTH(FEET) =   3.24   TRAVEL TIME(MIN.) =   3.62
  Tc(MIN.) =   34.23
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =  116.83
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     654.35
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.30

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.30   FLOW VELOCITY(FEET/SEC.) =  11.94
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   34.23
  RAINFALL INTENSITY(INCH/HR) =   1.47
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     654.35

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      513.75   34.07    1.474  0.30( 0.30) 0.98     484.1   11900.00
      2      654.35   34.23    1.471  0.30( 0.30) 1.00     620.7   11910.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1166.84   34.07    1.474  0.30( 0.30) 0.99    1102.0   11900.00
      2     1166.76   34.23    1.471  0.30( 0.30) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1166.84    Tc(MIN.) =    34.07
  EFFECTIVE AREA(ACRES) =    1101.97   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.66
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.428
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1221.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.13
  AVERAGE FLOW DEPTH(FEET) =   5.66   TRAVEL TIME(MIN.) =   2.33
  Tc(MIN.) =   36.41
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =  109.12
  EFFECTIVE AREA(ACRES) =   1209.44     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =    1230.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.68   FLOW VELOCITY(FEET/SEC.) =  10.14
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.78
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.373
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1396.39
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.27
  AVERAGE FLOW DEPTH(FEET) =   5.76   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   39.20
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  332.46
  EFFECTIVE AREA(ACRES) =   1553.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
```

```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1502.51
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.96   FLOW VELOCITY(FEET/SEC.) =  11.49
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.13
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.306
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1577.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.60
  AVERAGE FLOW DEPTH(FEET) =   6.12   TRAVEL TIME(MIN.) =   4.11
  Tc(MIN.) =   43.31
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  149.58
  EFFECTIVE AREA(ACRES) =   1718.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    1558.63
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.08   FLOW VELOCITY(FEET/SEC.) =  11.56
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.264
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



```
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1746.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.23
  AVERAGE FLOW DEPTH(FEET) =   6.67   TRAVEL TIME(MIN.) =   2.74
  Tc(MIN.) =   46.04
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  376.31
  EFFECTIVE AREA(ACRES) =   2152.62     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    1869.76
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.88   FLOW VELOCITY(FEET/SEC.) =  11.44
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.20
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1977.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.30
  AVERAGE FLOW DEPTH(FEET) =   7.18   TRAVEL TIME(MIN.) =   4.07
  Tc(MIN.) =   50.11
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  215.41
  EFFECTIVE AREA(ACRES) =   2418.04     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    1964.49
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.16   FLOW VELOCITY(FEET/SEC.) =  11.28
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.15
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.160
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2002.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.35
  AVERAGE FLOW DEPTH(FEET) =   8.14   TRAVEL TIME(MIN.) =   3.43
  Tc(MIN.) =   53.53
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   75.40
  EFFECTIVE AREA(ACRES) =   2515.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    1964.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.07   FLOW VELOCITY(FEET/SEC.) =   9.30
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.118
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1984.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.78
  AVERAGE FLOW DEPTH(FEET) =   7.41   TRAVEL TIME(MIN.) =   3.35
  Tc(MIN.) =   56.89
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   39.65
  EFFECTIVE AREA(ACRES) =   2569.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    1964.49
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.38   FLOW VELOCITY(FEET/SEC.) =  10.75
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XX25.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      738.86   26.31  0.30( 0.30) 1.00     624.3   40130.00
      2      730.65   28.19  0.30( 0.30) 1.00     654.2   40100.00
    TOTAL AREA(ACRES) =      654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1964.49   56.89    1.118  0.30( 0.30) 1.00    2569.3   11900.00
      2     1962.33   57.06    1.116  0.30( 0.30) 1.00    2572.1   11910.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      738.86   26.31    1.718  0.30( 0.30) 1.00     624.3   40130.00
      2      730.65   28.19    1.635  0.30( 0.30) 1.00     654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2312.56   26.31    1.718  0.30( 0.30) 1.00    1812.4   40130.00
      2     2318.12   28.19    1.635  0.30( 0.30) 1.00    1927.4   40100.00
      3     2412.36   56.89    1.118  0.30( 0.30) 1.00    3223.5   11900.00
      4     2409.06   57.06    1.116  0.30( 0.30) 1.00    3226.4   11910.00
    TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2412.36  Tc(MIN.) =   56.889
```

```
  EFFECTIVE AREA(ACRES) =   3223.53  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.28
  CHANNEL FLOW THRU SUBAREA(CFS) =    2412.36
  FLOW VELOCITY(FEET/SEC.) =   9.10   FLOW DEPTH(FEET) =   9.28
  TRAVEL TIME(MIN.) =   1.81   Tc(MIN.) =   58.69
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    6.02
  EFFECTIVE AREA(ACRES) =   3231.93   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    2412.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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



```
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.36
  EFFECTIVE AREA(ACRES) =   3232.43   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    2412.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   58.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.096
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.43
  EFFECTIVE AREA(ACRES) =   3234.43   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    2412.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
```

```
 CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.53
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.086
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.01      0.30     0.984     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2440.11
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.92
 AVERAGE FLOW DEPTH(FEET) =   7.53   TRAVEL TIME(MIN.) =   0.84
 Tc(MIN.) =   59.53
 SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   55.51
 EFFECTIVE AREA(ACRES) =   3312.44     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   7.49

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  7.49   FLOW VELOCITY(FEET/SEC.) =  12.88
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   59.53
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.086
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    1.20
 EFFECTIVE AREA(ACRES) =   3314.14   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
```



```
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.59
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.068
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       8.18      0.30     0.890     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2415.31
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.62
 AVERAGE FLOW DEPTH(FEET) =   9.59   TRAVEL TIME(MIN.) =   2.56
 Tc(MIN.) =   62.09
 SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    5.90
 EFFECTIVE AREA(ACRES) =   3322.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.59

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  9.59   FLOW VELOCITY(FEET/SEC.) =   8.62
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   62.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.068
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    1.73
 EFFECTIVE AREA(ACRES) =   3324.82   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    2412.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
```

>>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X25.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16891.05	38.90	0.30(0.30)	1.00	7699.7	11831.00
2	17269.04	41.07	0.30(0.30)	1.00	8149.8	11801.00
3	19484.28	52.56	0.30(0.30)	1.00	11111.4	11530.00
4	20384.42	59.71	0.30(0.30)	1.00	13605.9	11000.00
5	22298.73	70.25	0.30(0.30)	1.00	18738.3	11330.00
6	22627.08	72.15	0.30(0.30)	1.00	19721.6	11350.00
7	22975.81	75.44	0.30(0.30)	1.00	21433.1	11300.00
8	23115.65	77.03	0.30(0.30)	1.00	22200.3	11130.00
9	22643.41	86.92	0.30(0.30)	1.00	25590.3	11620.00
10	22485.53	89.04	0.30(0.30)	1.00	26262.8	11600.00
11	22019.00	94.91	0.30(0.30)	1.00	27853.1	11111.00
12	21832.20	97.18	0.30(0.30)	1.00	28360.1	10500.00
13	21473.90	101.65	0.30(0.30)	1.00	29218.6	10710.00
14	21235.80	103.95	0.30(0.30)	1.00	29569.4	10410.00
15	20918.29	108.69	0.30(0.30)	1.00	30244.3	10700.00
16	20477.99	115.41	0.30(0.30)	1.00	31136.9	10400.00
17	20244.15	118.03	0.30(0.30)	1.00	31425.5	10200.00
18	19628.83	124.41	0.30(0.30)	1.00	32019.9	10300.00
19	19047.00	129.43	0.30(0.30)	1.00	32209.8	10210.00
20	16600.03	158.26	0.30(0.30)	1.00	32916.6	10100.00

TOTAL AREA(ACRES) = 32916.6

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X25.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	0.30(0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.30(0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.30(0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.30(0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.30(0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.30(0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.30(0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.30(0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.30(0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.30(0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.30(0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.30(0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.30(0.29)	0.98	13237.1	12000.00

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	0.30(0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.30(0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.30(0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.30(0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.30(0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.30(0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.30(0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.30(0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.30(0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.30(0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.30(0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.30(0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.30(0.29)	0.98	13237.1	12000.00

TOTAL AREA(ACRES) = 13237.1

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	1.029	0.30(0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.951	0.30(0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.943	0.30(0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.927	0.30(0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.906	0.30(0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.888	0.30(0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.872	0.30(0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.857	0.30(0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.846	0.30(0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.835	0.30(0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.831	0.30(0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.794	0.30(0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.774	0.30(0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16891.05	38.90	1.379	0.30(0.30)	1.00	7699.7	11831.00
2	17269.04	41.07	1.340	0.30(0.30)	1.00	8149.8	11801.00
3	19484.28	52.56	1.172	0.30(0.30)	1.00	11111.4	11530.00
4	20384.42	59.71	1.084	0.30(0.30)	1.00	13605.9	11000.00
5	22298.73	70.25	1.023	0.30(0.30)	1.00	18738.3	11330.00
6	22627.08	72.15	1.012	0.30(0.30)	1.00	19721.6	11350.00
7	22975.81	75.44	0.994	0.30(0.30)	1.00	21433.1	11300.00
8	23115.65	77.03	0.985	0.30(0.30)	1.00	22200.3	11130.00
9	22643.41	86.92	0.929	0.30(0.30)	1.00	25590.3	11620.00
10	22485.53	89.04	0.917	0.30(0.30)	1.00	26262.8	11600.00
11	22019.00	94.91	0.894	0.30(0.30)	1.00	27853.1	11111.00
12	21832.20	97.18	0.886	0.30(0.30)	1.00	28360.1	10500.00
13	21473.90	101.65	0.870	0.30(0.30)	1.00	29218.6	10710.00

14	21235.80	103.95	0.861	0.30(0.30)	1.00	29569.4	10410.00
15	20918.29	108.69	0.844	0.30(0.30)	1.00	30244.3	10700.00
16	20477.99	115.41	0.820	0.30(0.30)	1.00	31136.9	10400.00
17	20244.15	118.03	0.810	0.30(0.30)	1.00	31425.5	10200.00
18	19628.83	124.41	0.793	0.30(0.30)	1.00	32019.9	10300.00
19	19047.00	129.43	0.783	0.30(0.30)	1.00	32209.8	10210.00
20	16600.03	158.26	0.720	0.30(0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21744.22	38.90	1.379	0.30(0.30)	0.99	11259.4	11831.00
2	22212.18	41.07	1.340	0.30(0.30)	0.99	11908.7	11801.00
3	24786.46	52.56	1.172	0.30(0.30)	0.99	15920.9	11530.00
4	25802.98	59.71	1.084	0.30(0.30)	0.99	19070.2	11000.00
5	27946.32	69.19	1.029	0.30(0.30)	0.99	24553.8	12500.00
6	28196.63	70.25	1.023	0.30(0.30)	0.99	25221.1	11330.00
7	28628.91	72.15	1.012	0.30(0.30)	0.99	26476.2	11350.00
8	29156.91	75.44	0.994	0.30(0.30)	0.99	28656.5	11300.00
9	29383.42	77.03	0.985	0.30(0.30)	0.99	29650.4	11130.00
10	29424.60	83.06	0.951	0.30(0.30)	0.99	32577.0	12300.00
11	29442.55	84.54	0.943	0.30(0.30)	0.99	33382.3	12330.00
12	29439.82	86.92	0.929	0.30(0.30)	0.99	34637.9	11620.00
13	29426.78	87.39	0.927	0.30(0.30)	0.99	34872.4	12410.00
14	29360.88	89.04	0.917	0.30(0.30)	0.99	35673.5	11600.00
15	29241.66	91.70	0.906	0.30(0.30)	0.99	36837.6	12400.00
16	29040.22	94.91	0.894	0.30(0.30)	0.99	38153.0	11111.00
17	28921.00	96.73	0.888	0.30(0.30)	0.99	38811.6	12211.00
18	28895.27	97.18	0.886	0.30(0.30)	0.99	38975.3	10500.00
19	28686.30	100.97	0.872	0.30(0.30)	0.99	40239.2	12201.00
20	28631.67	101.65	0.870	0.30(0.30)	0.99	40445.6	10710.00
21	28393.24	103.95	0.861	0.30(0.30)	0.99	41052.8	10410.00
22	28308.43	105.22	0.857	0.30(0.30)	0.99	41373.2	12111.00
23	28060.91	108.20	0.846	0.30(0.30)	0.99	42132.2	12231.00
24	28018.20	108.69	0.844	0.30(0.30)	0.99	42249.7	10700.00
25	27804.43	111.16	0.835	0.30(0.30)	0.99	42824.2	12101.10
26	27710.28	112.24	0.831	0.30(0.30)	0.99	43065.0	12261.00
27	27382.95	115.41	0.820	0.30(0.30)	0.99	43684.9	10400.00
28	27049.59	118.03	0.810	0.30(0.30)	0.99	44139.1	10200.00
29	26196.32	124.38	0.794	0.30(0.30)	0.99	45131.3	12010.00
30	26191.70	124.41	0.793	0.30(0.30)	0.99	45134.7	10300.00
31	25354.30	129.43	0.783	0.30(0.30)	0.99	45393.9	10210.00
32	24834.19	133.26	0.774	0.30(0.30)	0.99	45540.7	12000.00
33	22023.28	158.26	0.720	0.30(0.30)	0.99	46153.7	10100.00

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29442.55 Tc(MIN.) = 84.542
EFFECTIVE AREA(ACRES) = 33382.26 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

****
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.43
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.939
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.30	0.987	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29446.71
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.43
AVERAGE FLOW DEPTH(FEET) = 8.43 TRAVEL TIME(MIN.) = 0.61
Tc(MIN.) = 85.16
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 8.32
EFFECTIVE AREA(ACRES) = 33396.63 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 29442.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 8.43 FLOW VELOCITY(FEET/SEC.) = 14.43
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

****
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21744.22	39.58	1.365	0.30(0.30)	0.99	11273.8	11831.00
2	22212.18	41.75	1.330	0.30(0.30)	0.99	11923.1	11801.00
3	24786.46	53.21	1.164	0.30(0.30)	0.99	15935.3	11530.00
4	25802.98	60.35	1.078	0.30(0.30)	0.99	19084.6	11000.00
5	27946.32	69.81	1.025	0.30(0.30)	0.99	24568.2	12500.00
6	28196.63	70.87	1.019	0.30(0.30)	0.99	25235.5	11330.00
7	28628.91	72.77	1.008	0.30(0.30)	0.99	26490.6	11350.00
8	29156.91	76.06	0.990	0.30(0.30)	0.99	28670.9	11300.00
9	29383.42	77.64	0.981	0.30(0.30)	0.99	29664.8	11130.00
10	29424.60	83.67	0.947	0.30(0.30)	0.99	32591.4	12300.00
11	29442.55	85.16	0.939	0.30(0.30)	0.99	33396.6	12330.00
12	29439.82	87.54	0.926	0.30(0.30)	0.99	34652.2	11620.00
13	29426.78	88.01	0.923	0.30(0.30)	0.99	34886.8	12410.00
14	29360.88	89.66	0.914	0.30(0.30)	0.99	35687.9	11600.00
15	29241.66	92.31	0.904	0.30(0.30)	0.99	36852.0	12400.00
16	29040.22	95.53	0.892	0.30(0.30)	0.99	38167.4	11111.00
17	28921.00	97.35	0.885	0.30(0.30)	0.99	38826.0	12211.00
18	28895.27	97.80	0.884	0.30(0.30)	0.99	38989.7	10500.00

19	28686.30	101.59	0.870	0.30(0.30)	0.99	40253.5	12201.00
20	28631.67	102.27	0.867	0.30(0.30)	0.99	40460.0	10710.00
21	28393.24	104.58	0.859	0.30(0.30)	0.99	41067.2	10410.00
22	28308.43	105.84	0.854	0.30(0.30)	0.99	41387.6	12111.00
23	28060.91	108.83	0.844	0.30(0.30)	0.99	42146.6	12231.00
24	28018.20	109.31	0.842	0.30(0.30)	0.99	42264.1	10700.00
25	27804.43	111.79	0.833	0.30(0.30)	0.99	42838.6	12101.10
26	27710.28	112.87	0.829	0.30(0.30)	0.99	43079.4	12261.00
27	27382.95	116.04	0.817	0.30(0.30)	0.99	43699.3	10400.00
28	27049.59	118.66	0.808	0.30(0.30)	0.99	44153.4	10200.00
29	26196.32	125.02	0.792	0.30(0.30)	0.99	45145.7	12010.00
30	26191.70	125.05	0.792	0.30(0.30)	0.99	45149.1	10300.00
31	25354.30	130.08	0.781	0.30(0.30)	0.99	45408.3	10210.00
32	24834.19	133.91	0.773	0.30(0.30)	0.99	45555.1	12000.00
33	22023.28	158.94	0.719	0.30(0.30)	0.99	46168.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2312.56	31.56	1.524	0.30(0.30)	1.00	1913.7	40130.00
2	2318.12	33.44	1.487	0.30(0.30)	1.00	2028.7	40100.00
3	2412.36	62.09	1.068	0.30(0.30)	1.00	3324.8	11900.00
4	2409.06	62.26	1.067	0.30(0.30)	1.00	3327.6	11910.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22229.05	31.56	1.524	0.30(0.30)	0.99	10902.5	40130.00
2	22780.82	33.44	1.487	0.30(0.30)	0.99	11553.3	40100.00
3	24082.55	39.58	1.365	0.30(0.30)	0.99	13580.4	11831.00
4	24557.65	41.75	1.330	0.30(0.30)	0.99	14327.9	11801.00
5	27169.61	53.21	1.164	0.30(0.30)	0.99	18858.4	11530.00
6	28209.64	60.35	1.078	0.30(0.30)	0.99	22331.0	11000.00
7	28607.78	62.09	1.068	0.30(0.30)	0.99	23413.4	11900.00
8	28643.17	62.26	1.067	0.30(0.30)	0.99	23515.2	11910.00
9	30222.67	69.81	1.025	0.30(0.30)	0.99	27895.8	12500.00
10	30454.41	70.87	1.019	0.30(0.30)	0.99	28563.1	11330.00
11	30853.30	72.77	1.008	0.30(0.30)	0.99	29818.2	11350.00
12	31323.67	76.06	0.990	0.30(0.30)	0.99	31998.5	11300.00
13	31522.31	77.64	0.981	0.30(0.30)	0.99	32992.4	11130.00
14	31457.60	83.67	0.947	0.30(0.30)	0.99	35919.0	12300.00
15	31449.52	85.16	0.939	0.30(0.30)	0.99	36724.3	12330.00
16	31404.98	87.54	0.926	0.30(0.30)	0.99	37979.9	11620.00
17	31383.73	88.01	0.923	0.30(0.30)	0.99	38214.4	12410.00
18	31288.81	89.66	0.914	0.30(0.30)	0.99	39015.5	11600.00
19	31137.25	92.31	0.904	0.30(0.30)	0.99	40179.6	12400.00
20	30899.19	95.53	0.892	0.30(0.30)	0.99	41495.0	11111.00
21	30759.23	97.35	0.885	0.30(0.30)	0.99	42153.6	12211.00
22	30728.38	97.80	0.884	0.30(0.30)	0.99	42317.4	10500.00
23	30476.18	101.59	0.870	0.30(0.30)	0.99	43581.2	12201.00
24	30413.79	102.27	0.867	0.30(0.30)	0.99	43787.7	10710.00
25	30149.10	104.58	0.859	0.30(0.30)	0.99	44394.9	10410.00
26	30049.92	105.84	0.854	0.30(0.30)	0.99	44715.2	12111.00
27	29768.36	108.83	0.844	0.30(0.30)	0.99	45474.2	12231.00
28	29720.11	109.31	0.842	0.30(0.30)	0.99	45591.7	10700.00
29	29478.12	111.79	0.833	0.30(0.30)	0.99	46166.3	12101.10

30	29371.65	112.87	0.829	0.30(0.30)	0.99	46407.0	12261.00
31	29008.24	116.04	0.817	0.30(0.30)	0.99	47026.9	10400.00
32	28644.99	118.66	0.808	0.30(0.30)	0.99	47481.1	10200.00
33	27742.38	125.02	0.792	0.30(0.30)	0.99	48473.4	12010.00
34	27737.54	125.05	0.792	0.30(0.30)	0.99	48476.7	10300.00
35	26866.01	130.08	0.781	0.30(0.30)	0.99	48735.9	10210.00
36	26319.85	133.91	0.773	0.30(0.30)	0.99	48882.8	12000.00
37	23338.91	158.94	0.719	0.30(0.30)	0.99	49495.7	10100.00

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 31522.31 Tc(MIN.) = 77.644
EFFECTIVE AREA(ACRES) = 32992.41 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 77.64
EFFECTIVE AREA(ACRES) = 32992.41 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 31522.31

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22229.05	31.56	1.524	0.30(0.30)	0.99	10902.5	40130.00
2	22780.82	33.44	1.487	0.30(0.30)	0.99	11553.3	40100.00
3	24082.55	39.58	1.365	0.30(0.30)	0.99	13580.4	11831.00
4	24557.65	41.75	1.330	0.30(0.30)	0.99	14327.9	11801.00
5	27169.61	53.21	1.164	0.30(0.30)	0.99	18858.4	11530.00
6	28209.64	60.35	1.078	0.30(0.30)	0.99	22331.0	11000.00
7	28607.78	62.09	1.068	0.30(0.30)	0.99	23413.4	11900.00
8	28643.17	62.26	1.067	0.30(0.30)	0.99	23515.2	11910.00
9	30222.67	69.81	1.025	0.30(0.30)	0.99	27895.8	12500.00
10	30454.41	70.87	1.019	0.30(0.30)	0.99	28563.1	11330.00
11	30853.30	72.77	1.008	0.30(0.30)	0.99	29818.2	11350.00
12	31323.67	76.06	0.990	0.30(0.30)	0.99	31998.5	11300.00
13	31522.31	77.64	0.981	0.30(0.30)	0.99	32992.4	11130.00
14	31457.60	83.67	0.947	0.30(0.30)	0.99	35919.0	12300.00
15	31449.52	85.16	0.939	0.30(0.30)	0.99	36724.3	12330.00
16	31404.98	87.54	0.926	0.30(0.30)	0.99	37979.9	11620.00
17	31383.73	88.01	0.923	0.30(0.30)	0.99	38214.4	12410.00
18	31288.81	89.66	0.914	0.30(0.30)	0.99	39015.5	11600.00
19	31137.25	92.31	0.904	0.30(0.30)	0.99	40179.6	12400.00
20	30899.19	95.53	0.892	0.30(0.30)	0.99	41495.0	11111.00
21	30759.23	97.35	0.885	0.30(0.30)	0.99	42153.6	12211.00
22	30728.38	97.80	0.884	0.30(0.30)	0.99	42317.4	10500.00
23	30476.18	101.59	0.870	0.30(0.30)	0.99	43581.2	12201.00
24	30413.79	102.27	0.867	0.30(0.30)	0.99	43787.7	10710.00
25	30149.10	104.58	0.859	0.30(0.30)	0.99	44394.9	10410.00
26	30049.92	105.84	0.854	0.30(0.30)	0.99	44715.2	12111.00
27	29768.36	108.83	0.844	0.30(0.30)	0.99	45474.2	12231.00
28	29720.11	109.31	0.842	0.30(0.30)	0.99	45591.7	10700.00
29	29478.12	111.79	0.833	0.30(0.30)	0.99	46166.3	12101.10
30	29371.65	112.87	0.829	0.30(0.30)	0.99	46407.0	12261.00
31	29008.24	116.04	0.817	0.30(0.30)	0.99	47026.9	10400.00
32	28644.99	118.66	0.808	0.30(0.30)	0.99	47481.1	10200.00

33	27742.38	125.02	0.792	0.30(0.30)	0.99	48473.4	12010.00
34	27737.54	125.05	0.792	0.30(0.30)	0.99	48476.7	10300.00
35	26866.01	130.08	0.781	0.30(0.30)	0.99	48735.9	10210.00
36	26319.85	133.91	0.773	0.30(0.30)	0.99	48882.8	12000.00
37	23338.91	158.94	0.719	0.30(0.30)	0.99	49495.7	10100.00

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU25EV26.DAT
  TIME/DATE OF STUDY: 13:18 07/05/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.985
   2)   10.00;  3.243
   3)   15.00;  2.468
   4)   20.00;  2.035
   5)   25.00;  1.773
   6)   30.00;  1.553
   7)   40.00;  1.354
   8)   50.00;  1.201
   9)   60.00;  1.077
  10)   90.00;  0.909
  11)  120.00;  0.800
  12)  180.00;  0.670
  13)  360.00;  0.498
  14) 1200.00;  0.220
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22780.82   33.44  0.30( 0.30) 0.99   11553.3   40100.00
      2    24557.65   41.75  0.30( 0.30) 0.99   14327.9   11801.00
      3    27169.61   53.21  0.30( 0.30) 0.99   18858.4   11530.00
      4    28643.17   62.26  0.30( 0.30) 0.99   23515.2   11910.00
      5    30853.30   72.77  0.30( 0.30) 0.99   29818.2   11350.00
      6    31522.31   77.64  0.30( 0.30) 0.99   32992.4   11130.00
      7    31457.60   83.67  0.30( 0.30) 0.99   35919.0   12300.00
      8    31404.98   87.54  0.30( 0.30) 0.99   37979.9   11620.00
      9    31137.25   92.31  0.30( 0.30) 0.99   40179.6   12400.00
     10    30899.19   95.53  0.30( 0.30) 0.99   41495.0   11111.00
     11    30476.18  101.59  0.30( 0.30) 0.99   43581.2   12201.00
     12    30149.10  104.58  0.30( 0.30) 0.99   44394.9   10410.00
     13    29768.36  108.83  0.30( 0.30) 0.99   45474.2   12231.00
     14    29478.12  111.79  0.30( 0.30) 0.99   46166.3   12101.10
     15    29008.24  116.04  0.30( 0.30) 0.99   47026.9   10400.00
     16    28644.99  118.66  0.30( 0.30) 0.99   47481.1   10200.00
     17    27742.38  125.02  0.30( 0.30) 0.99   48473.4   12010.00
     18    26866.01  130.08  0.30( 0.30) 0.99   48735.9   10210.00
     19    26319.85  133.91  0.30( 0.30) 0.99   48882.8   12000.00
     20    23338.91  158.94  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22780.82   33.44  0.30( 0.30) 0.99   11553.3   40100.00
      2    24557.65   41.75  0.30( 0.30) 0.99   14327.9   11801.00
      3    27169.61   53.21  0.30( 0.30) 0.99   18858.4   11530.00
      4    28643.17   62.26  0.30( 0.30) 0.99   23515.2   11910.00
      5    30853.30   72.77  0.30( 0.30) 0.99   29818.2   11350.00
      6    31522.31   77.64  0.30( 0.30) 0.99   32992.4   11130.00
      7    31457.60   83.67  0.30( 0.30) 0.99   35919.0   12300.00
      8    31404.98   87.54  0.30( 0.30) 0.99   37979.9   11620.00
      9    31137.25   92.31  0.30( 0.30) 0.99   40179.6   12400.00
     10    30899.19   95.53  0.30( 0.30) 0.99   41495.0   11111.00
     11    30476.18  101.59  0.30( 0.30) 0.99   43581.2   12201.00
     12    30149.10  104.58  0.30( 0.30) 0.99   44394.9   10410.00
     13    29768.36  108.83  0.30( 0.30) 0.99   45474.2   12231.00
```

```
    14    29478.12  111.79  0.30( 0.30) 0.99   46166.3   12101.10
    15    29008.24  116.04  0.30( 0.30) 0.99   47026.9   10400.00
    16    28644.99  118.66  0.30( 0.30) 0.99   47481.1   10200.00
    17    27742.38  125.02  0.30( 0.30) 0.99   48473.4   12010.00
    18    26866.01  130.08  0.30( 0.30) 0.99   48735.9   10210.00
    19    26319.85  133.91  0.30( 0.30) 0.99   48882.8   12000.00
    20    23338.91  158.94  0.30( 0.30) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.37
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.971
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   31526.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.07
  AVERAGE FLOW DEPTH(FEET) =   7.37   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   79.00
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    8.51
  EFFECTIVE AREA(ACRES) =  33006.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   31522.31
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.37   FLOW VELOCITY(FEET/SEC.) =  18.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
```



```
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O25EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1       92.92   16.77  0.30( 0.29) 0.98       51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    22780.82   34.95    1.454  0.30( 0.30) 0.99   11567.4   40100.00
      2    24557.65   43.23    1.305  0.30( 0.30) 0.99   14342.0   11801.00
      3    27169.61   54.63    1.144  0.30( 0.30) 0.99   18872.5   11530.00
      4    28643.17   63.66    1.057  0.30( 0.30) 0.99   23529.3   11910.00
      5    30853.30   74.14    0.998  0.30( 0.30) 0.99   29832.3   11350.00
      6    31522.31   79.00    0.971  0.30( 0.30) 0.99   33006.5   11130.00
      7    31457.60   85.03    0.937  0.30( 0.30) 0.99   35933.1   12300.00
      8    31404.98   88.89    0.915  0.30( 0.30) 0.99   37994.0   11620.00
      9    31137.25   93.67    0.896  0.30( 0.30) 0.99   40193.7   12400.00
     10    30899.19   96.89    0.884  0.30( 0.30) 0.99   41509.1   11111.00
     11    30476.18  102.96    0.862  0.30( 0.30) 0.99   43595.3   12201.00
     12    30149.10  105.95    0.851  0.30( 0.30) 0.99   44409.0   10410.00
     13    29768.36  110.21    0.836  0.30( 0.30) 0.99   45488.3   12231.00
     14    29478.12  113.18    0.825  0.30( 0.30) 0.99   46180.4   12101.10
     15    29008.24  117.43    0.809  0.30( 0.30) 0.99   47041.0   10400.00
     16    28644.99  120.06    0.800  0.30( 0.30) 0.99   47495.2   10200.00
     17    27742.38  126.43    0.786  0.30( 0.30) 0.99   48487.5   12010.00
     18    26866.01  131.50    0.775  0.30( 0.30) 0.99   48750.0   10210.00
     19    26319.85  135.35    0.767  0.30( 0.30) 0.99   48896.9   12000.00
     20    23338.91  160.44    0.712  0.30( 0.30) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       92.92   16.77    2.315  0.30( 0.29) 0.98       51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    19154.32   16.77    2.315  0.30( 0.30) 0.99    5601.9     600.00
      2    22834.20   34.95    1.454  0.30( 0.30) 0.99   11618.5   40100.00
      3    24604.13   43.23    1.305  0.30( 0.30) 0.99   14393.1   11801.00
      4    27208.68   54.63    1.144  0.30( 0.30) 0.99   18923.6   11530.00
      5    28678.24   63.66    1.057  0.30( 0.30) 0.99   23580.4   11910.00
      6    30885.67   74.14    0.998  0.30( 0.30) 0.99   29883.4   11350.00
      7    31553.43   79.00    0.971  0.30( 0.30) 0.99   33057.6   11130.00
      8    31487.16   85.03    0.937  0.30( 0.30) 0.99   35984.2   12300.00
      9    31433.55   88.89    0.915  0.30( 0.30) 0.99   38045.1   11620.00
```

```
    10    31164.92   93.67    0.896  0.30( 0.30) 0.99   40244.8   12400.00
    11    30926.32   96.89    0.884  0.30( 0.30) 0.99   41560.2   11111.00
    12    30502.30  102.96    0.862  0.30( 0.30) 0.99   43646.4   12201.00
    13    30174.72  105.95    0.851  0.30( 0.30) 0.99   44460.1   10410.00
    14    29793.27  110.21    0.836  0.30( 0.30) 0.99   45539.4   12231.00
    15    29502.53  113.18    0.825  0.30( 0.30) 0.99   46231.5   12101.10
    16    29031.95  117.43    0.809  0.30( 0.30) 0.99   47092.1   10400.00
    17    28668.26  120.06    0.800  0.30( 0.30) 0.99   47546.3   10200.00
    18    27765.01  126.43    0.786  0.30( 0.30) 0.99   48538.6   12010.00
    19    26888.14  131.50    0.775  0.30( 0.30) 0.99   48801.1   10210.00
    20    26341.59  135.35    0.767  0.30( 0.30) 0.99   48948.0   12000.00
    21    23358.15  160.44    0.712  0.30( 0.30) 0.99   49560.9   10100.00
   TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    31553.43  Tc(MIN.) =   78.998
  EFFECTIVE AREA(ACRES) =  33057.62  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.91
  CHANNEL FLOW THRU SUBAREA(CFS) =   31553.43
  FLOW VELOCITY(FEET/SEC.) =  16.66   FLOW DEPTH(FEET) =   7.91
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =   80.69
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   80.69
  RAINFALL INTENSITY(INCH/HR) =   0.96
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33057.62
  TOTAL STREAM AREA(ACRES) =   49560.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   31553.43
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   14.27   RAINFALL INTENSITY(INCH/HR) =  2.58
  EFFECTIVE AREA(ACRES) =    95.50
  TOTAL AREA(ACRES) =   171.00        PEAK FLOW RATE(CFS) =    176.40
  AREA-AVERAGED Fm(INCH/HR) =   0.17  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.58
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.27
  RAINFALL INTENSITY(INCH/HR) =   2.58
  AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =      95.50
  TOTAL STREAM AREA(ACRES) =     171.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     176.40

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19154.32   18.78    2.141  0.30( 0.30) 0.99    5601.9     600.00
      1    22834.20   36.84    1.417  0.30( 0.30) 0.99   11618.5   40100.00
      1    24604.13   45.06    1.277  0.30( 0.30) 0.99   14393.1   11801.00
      1    27208.68   56.41    1.122  0.30( 0.30) 0.99   18923.6   11530.00
      1    28678.24   65.40    1.047  0.30( 0.30) 0.99   23580.4   11910.00
      1    30885.67   75.84    0.988  0.30( 0.30) 0.99   29883.4   11350.00
      1    31553.43   80.69    0.961  0.30( 0.30) 0.99   33057.6   11130.00
      1    31487.16   86.72    0.927  0.30( 0.30) 0.99   35984.2   12300.00
      1    31433.55   90.59    0.907  0.30( 0.30) 0.99   38045.1   11620.00
      1    31164.92   95.37    0.889  0.30( 0.30) 0.99   40244.8   12400.00
      1    30926.32   98.59    0.878  0.30( 0.30) 0.99   41560.2   11111.00
      1    30502.30  104.67    0.856  0.30( 0.30) 0.99   43646.4   12201.00
      1    30174.72  107.67    0.845  0.30( 0.30) 0.99   44460.1   10410.00
      1    29793.27  111.93    0.829  0.30( 0.30) 0.99   45539.4   12231.00
      1    29502.53  114.90    0.819  0.30( 0.30) 0.99   46231.5   12101.10
      1    29031.95  119.17    0.803  0.30( 0.30) 0.99   47092.1   10400.00
      1    28668.26  121.81    0.796  0.30( 0.30) 0.99   47546.3   10200.00
      1    27765.01  128.20    0.782  0.30( 0.30) 0.99   48538.6   12010.00
      1    26888.14  133.29    0.771  0.30( 0.30) 0.99   48801.1   10210.00
      1    26341.59  137.15    0.763  0.30( 0.30) 0.99   48948.0   12000.00
      1    23358.15  162.31    0.708  0.30( 0.30) 0.99   49560.9   10100.00
      2      176.40   14.27    2.581  0.30( 0.17) 0.58      95.5   12603.00
```

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18210.52	14.27	2.581	0.30(0.30)	0.98	4353.2	12603.00
2	19298.47	18.78	2.141	0.30(0.30)	0.99	5697.4	600.00
3	22925.28	36.84	1.417	0.30(0.30)	0.99	11714.0	40100.00
4	24684.92	45.06	1.277	0.30(0.30)	0.99	14488.6	11801.00
5	27278.12	56.41	1.122	0.30(0.30)	0.99	19019.1	11530.00
6	28742.20	65.40	1.047	0.30(0.30)	0.99	23675.9	11910.00
7	30945.34	75.84	0.988	0.30(0.30)	0.99	29978.9	11350.00
8	31611.11	80.69	0.961	0.30(0.30)	0.99	33153.1	11130.00
9	31542.37	86.72	0.927	0.30(0.30)	0.99	36079.7	12300.00
10	31487.26	90.59	0.907	0.30(0.30)	0.99	38140.6	11620.00
11	31217.35	95.37	0.889	0.30(0.30)	0.99	40340.3	12400.00
12	30977.90	98.59	0.878	0.30(0.30)	0.99	41655.7	11111.00
13	30552.25	104.67	0.856	0.30(0.30)	0.99	43741.9	12201.00
14	30223.88	107.67	0.845	0.30(0.30)	0.99	44555.6	10410.00
15	29841.29	111.93	0.829	0.30(0.30)	0.99	45634.9	12231.00
16	29549.76	114.90	0.819	0.30(0.30)	0.99	46327.0	12101.10
17	29078.04	119.17	0.803	0.30(0.30)	0.99	47187.6	10400.00
18	28713.84	121.81	0.796	0.30(0.30)	0.99	47641.8	10200.00
19	27809.58	128.20	0.782	0.30(0.30)	0.99	48634.1	12010.00
20	26931.90	133.29	0.771	0.30(0.30)	0.99	48896.6	10210.00
21	26384.74	137.15	0.763	0.30(0.30)	0.99	49043.5	12000.00
22	23397.30	162.31	0.708	0.30(0.30)	0.99	49656.4	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 31611.11 Tc(MIN.) = 80.69
EFFECTIVE AREA(ACRES) = 33153.12 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49731.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.45 FEET.

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 80.69
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.961
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
PUBLIC PARK	B	1.30	0.30	0.850	56
COMMERCIAL	B	1.40	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	12.40	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.911

SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 11.33
EFFECTIVE AREA(ACRES) = 33171.42 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49750.2 PEAK FLOW RATE(CFS) = 31611.11
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 80.69
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.961
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	26.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 26.90 SUBAREA RUNOFF(CFS) = 16.01
EFFECTIVE AREA(ACRES) = 33198.32 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49777.1 PEAK FLOW RATE(CFS) = 31611.11
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 80.69
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.961
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.40	0.30	1.000	72
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69
PUBLIC PARK	B	0.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.70	0.30	1.000	72

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.968
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 1.99
EFFECTIVE AREA(ACRES) = 33201.62 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49780.4 PEAK FLOW RATE(CFS) = 31611.11
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    6.53
  EFFECTIVE AREA(ACRES) =  33212.42   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   31611.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   80.69
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    8.69
  EFFECTIVE AREA(ACRES) =  33227.02   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   31611.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.00
  CHANNEL FLOW THRU SUBAREA(CFS) =   31611.11
  FLOW VELOCITY(FEET/SEC.) =  14.34   FLOW DEPTH(FEET) =   9.00
  TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =   81.72
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   81.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    4.77
  EFFECTIVE AREA(ACRES) =  33234.82   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   31611.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   81.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.955
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    7.80
  EFFECTIVE AREA(ACRES) =  33247.62   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   31611.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.93
  CHANNEL FLOW THRU SUBAREA(CFS) =   31611.11
  FLOW VELOCITY(FEET/SEC.) =  16.63   FLOW DEPTH(FEET) =   7.93
  TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =   83.88
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   83.88
  RAINFALL INTENSITY(INCH/HR) =   0.94
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33247.62
  TOTAL STREAM AREA(ACRES) =   49826.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   31611.11

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   17.15   RAINFALL INTENSITY(INCH/HR) =  2.28
  EFFECTIVE AREA(ACRES) =   457.40
  TOTAL AREA(ACRES) =   553.80        PEAK FLOW RATE(CFS) =    720.30
  AREA-AVERAGED Fm(INCH/HR) =   0.26  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.85
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   17.15
  RAINFALL INTENSITY(INCH/HR) =   2.28
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
```



```
AREA-AVERAGED Ap =  0.85
EFFECTIVE STREAM AREA(ACRES) =     457.40
TOTAL STREAM AREA(ACRES) =     553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     720.30

** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    18210.52   18.12    2.198  0.30( 0.30) 0.98    4447.7   12603.00
    1    19298.47   22.55    1.901  0.30( 0.30) 0.99    5791.9     600.00
    1    22925.28   40.40    1.348  0.30( 0.30) 0.99   11808.5   40100.00
    1    24684.92   48.53    1.223  0.30( 0.30) 0.99   14583.1   11801.00
    1    27278.12   59.76    1.080  0.30( 0.30) 0.99   19113.6   11530.00
    1    28742.20   68.70    1.028  0.30( 0.30) 0.99   23770.4   11910.00
    1    30945.34   79.06    0.970  0.30( 0.30) 0.99   30073.4   11350.00
    1    31611.11   83.88    0.943  0.30( 0.30) 0.99   33247.6   11130.00
    1    31542.37   89.92    0.909  0.30( 0.30) 0.99   36174.2   12300.00
    1    31487.26   93.78    0.895  0.30( 0.30) 0.99   38235.1   11620.00
    1    31217.35   98.58    0.878  0.30( 0.30) 0.99   40434.8   12400.00
    1    30977.90  101.81    0.866  0.30( 0.30) 0.99   41750.2   11111.00
    1    30552.25  107.90    0.844  0.30( 0.30) 0.99   43836.4   12201.00
    1    30223.88  110.91    0.833  0.30( 0.30) 0.99   44650.1   10410.00
    1    29841.29  115.19    0.817  0.30( 0.30) 0.99   45729.4   12231.00
    1    29549.76  118.17    0.807  0.30( 0.30) 0.99   46421.5   12101.10
    1    29078.04  122.45    0.795  0.30( 0.30) 0.99   47282.1   10400.00
    1    28713.84  125.10    0.789  0.30( 0.30) 0.99   47736.3   10200.00
    1    27809.58  131.53    0.775  0.30( 0.30) 0.99   48728.6   12010.00
    1    26931.90  136.66    0.764  0.30( 0.30) 0.99   48991.1   10210.00
    1    26384.74  140.54    0.755  0.30( 0.30) 0.99   49138.0   12000.00
    1    23397.30  165.84    0.701  0.30( 0.30) 0.99   49750.9   10100.00
    2      720.30   17.15    2.282  0.30( 0.26) 0.85     457.4   12606.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    18717.06   17.15    2.282  0.30( 0.29) 0.97    4667.2   12606.00
    2    18901.00   18.12    2.198  0.30( 0.29) 0.97    4905.1   12603.00
    3    19883.60   22.55    1.901  0.30( 0.29) 0.98    6249.3     600.00
    4    23313.70   40.40    1.348  0.30( 0.30) 0.98   12265.9   40100.00
    5    25029.09   48.53    1.223  0.30( 0.30) 0.99   15040.5   11801.00
    6    27571.29   59.76    1.080  0.30( 0.30) 0.99   19571.0   11530.00
    7    29017.02   68.70    1.028  0.30( 0.30) 0.99   24227.8   11910.00
    8    31199.54   79.06    0.970  0.30( 0.30) 0.99   30530.8   11350.00
    9    31855.71   83.88    0.943  0.30( 0.30) 0.99   33705.0   11130.00
   10    31774.96   89.92    0.909  0.30( 0.30) 0.99   36631.6   12300.00
   11    31714.79   93.78    0.895  0.30( 0.30) 0.99   38692.5   11620.00
   12    31438.70   98.58    0.878  0.30( 0.30) 0.99   40892.2   12400.00
   13    31195.08  101.81    0.866  0.30( 0.30) 0.99   42207.6   11111.00
   14    30761.56  107.90    0.844  0.30( 0.30) 0.99   44293.8   12201.00
   15    30429.30  110.91    0.833  0.30( 0.30) 0.99   45107.5   10410.00
   16    30041.20  115.19    0.817  0.30( 0.30) 0.99   46186.8   12231.00
   17    29745.81  118.17    0.807  0.30( 0.30) 0.99   46878.9   12101.10
   18    29269.84  122.45    0.795  0.30( 0.30) 0.99   47739.5   10400.00
   19    28903.60  125.10    0.789  0.30( 0.30) 0.99   48193.7   10200.00
   20    27994.39  131.53    0.775  0.30( 0.30) 0.99   49186.0   12010.00
```

21	27112.76	136.66	0.764	0.30(0.30)	0.99	49448.5	10210.00
22	26562.61	140.54	0.755	0.30(0.30)	0.99	49595.4	12000.00
23	23555.69	165.84	0.701	0.30(0.30)	0.99	50208.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 31855.71 Tc(MIN.) = 83.88
EFFECTIVE AREA(ACRES) = 33705.02 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 83.88
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.60	0.30	1.000	72
COMMERCIAL	B	1.10	0.30	0.100	56
PUBLIC PARK	B	0.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.666
SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 2.34
EFFECTIVE AREA(ACRES) = 33708.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50383.7 PEAK FLOW RATE(CFS) = 31855.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 83.88
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
AGRICULTURAL POOR COVER					
"ROW CROPS,STRAIGHT ROW"	B	1.50	0.30	1.000	81
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66

NATURAL FAIR COVER							
"WOODLAND,GRASS"	B	1.90	0.30	1.000	65		

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 8.50 SUBAREA RUNOFF(CFS) = 4.92
EFFECTIVE AREA(ACRES) = 33717.02 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50392.2 PEAK FLOW RATE(CFS) = 31855.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 83.88
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
PUBLIC PARK	B	3.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	3.90	0.30	1.000	72
PUBLIC PARK	B	5.90	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	9.10	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	20.60	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969
SUBAREA AREA(ACRES) = 46.50 SUBAREA RUNOFF(CFS) = 27.31
EFFECTIVE AREA(ACRES) = 33763.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50438.7 PEAK FLOW RATE(CFS) = 31855.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 50438.7 TC(MIN.) = 83.88
EFFECTIVE AREA(ACRES) = 33763.52 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
PEAK FLOW RATE(CFS) = 31855.71

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18717.06	17.15	2.282	0.30(0.29)	0.97	4725.7	12606.00
2	18901.00	18.12	2.198	0.30(0.29)	0.97	4963.6	12603.00
3	19883.60	22.55	1.901	0.30(0.29)	0.98	6307.8	600.00
4	23313.70	40.40	1.348	0.30(0.30)	0.98	12324.4	40100.00
5	25029.09	48.53	1.223	0.30(0.30)	0.99	15099.0	11801.00
6	27571.29	59.76	1.080	0.30(0.30)	0.99	19629.5	11530.00
7	29017.02	68.70	1.028	0.30(0.30)	0.99	24286.3	11910.00
8	31199.54	79.06	0.970	0.30(0.30)	0.99	30589.3	11350.00
9	31855.71	83.88	0.943	0.30(0.30)	0.99	33763.5	11130.00
10	31774.96	89.92	0.909	0.30(0.30)	0.99	36690.1	12300.00
11	31714.79	93.78	0.895	0.30(0.30)	0.99	38751.0	11620.00

12	31438.70	98.58	0.878	0.30(0.30)	0.99	40950.7	12400.00
13	31195.08	101.81	0.866	0.30(0.30)	0.99	42266.1	11111.00
14	30761.56	107.90	0.844	0.30(0.30)	0.99	44352.3	12201.00
15	30429.30	110.91	0.833	0.30(0.30)	0.99	45166.0	10410.00
16	30041.20	115.19	0.817	0.30(0.30)	0.99	46245.3	12231.00
17	29745.81	118.17	0.807	0.30(0.30)	0.99	46937.4	12101.10
18	29269.84	122.45	0.795	0.30(0.30)	0.99	47798.0	10400.00
19	28903.60	125.10	0.789	0.30(0.30)	0.99	48252.2	10200.00
20	27994.39	131.53	0.775	0.30(0.30)	0.99	49244.5	12010.00
21	27112.76	136.66	0.764	0.30(0.30)	0.99	49507.0	10210.00
22	26562.61	140.54	0.755	0.30(0.30)	0.99	49653.9	12000.00
23	23555.69	165.84	0.701	0.30(0.30)	0.99	50266.8	10100.00

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU25EV27.DAT
  TIME/DATE OF STUDY: 13:18 07/05/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.947
   2)   10.00;  3.222
   3)   15.00;  2.455
   4)   20.00;  2.027
   5)   25.00;  1.766
   6)   30.00;  1.548
   7)   40.00;  1.349
   8)   50.00;  1.196
   9)   60.00;  1.072
  10)   90.00;  0.904
  11)  120.00;  0.794
  12)  180.00;  0.664
  13)  360.00;  0.492
  14) 1200.00;  0.217
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    18901.00   18.12  0.30( 0.29) 0.97    4963.6   12603.00
      2    19883.60   22.55  0.30( 0.29) 0.98    6307.8     600.00
      3    23313.70   40.40  0.30( 0.30) 0.98   12324.4   40100.00
      4    25029.09   48.53  0.30( 0.30) 0.99   15099.0   11801.00
      5    27571.29   59.76  0.30( 0.30) 0.99   19629.5   11530.00
      6    29017.02   68.70  0.30( 0.30) 0.99   24286.3   11910.00
      7    31199.54   79.06  0.30( 0.30) 0.99   30589.3   11350.00
      8    31855.71   83.88  0.30( 0.30) 0.99   33763.5   11130.00
      9    31774.96   89.92  0.30( 0.30) 0.99   36690.1   12300.00
     10    31714.79   93.78  0.30( 0.30) 0.99   38751.0   11620.00
     11    31438.70   98.58  0.30( 0.30) 0.99   40950.7   12400.00
     12    31195.08  101.81  0.30( 0.30) 0.99   42266.1   11111.00
     13    30761.56  107.90  0.30( 0.30) 0.99   44352.3   12201.00
     14    30429.30  110.91  0.30( 0.30) 0.99   45166.0   10410.00
     15    30041.20  115.19  0.30( 0.30) 0.99   46245.3   12231.00
     16    29269.84  122.45  0.30( 0.30) 0.99   47798.0   10400.00
     17    27994.39  131.53  0.30( 0.30) 0.99   49244.5   12010.00
     18    27112.76  136.66  0.30( 0.30) 0.99   49507.0   10210.00
     19    26562.61  140.54  0.30( 0.30) 0.99   49653.9   12000.00
     20    23555.69  165.84  0.30( 0.30) 0.99   50266.8   10100.00
    TOTAL AREA(ACRES) =    50266.8

************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    18901.00   18.12  0.30( 0.29) 0.97    4963.6   12603.00
      2    19883.60   22.55  0.30( 0.29) 0.98    6307.8     600.00
      3    23313.70   40.40  0.30( 0.30) 0.98   12324.4   40100.00
      4    25029.09   48.53  0.30( 0.30) 0.99   15099.0   11801.00
      5    27571.29   59.76  0.30( 0.30) 0.99   19629.5   11530.00
      6    29017.02   68.70  0.30( 0.30) 0.99   24286.3   11910.00
      7    31199.54   79.06  0.30( 0.30) 0.99   30589.3   11350.00
      8    31855.71   83.88  0.30( 0.30) 0.99   33763.5   11130.00
      9    31774.96   89.92  0.30( 0.30) 0.99   36690.1   12300.00
     10    31714.79   93.78  0.30( 0.30) 0.99   38751.0   11620.00
     11    31438.70   98.58  0.30( 0.30) 0.99   40950.7   12400.00
     12    31195.08  101.81  0.30( 0.30) 0.99   42266.1   11111.00
     13    30761.56  107.90  0.30( 0.30) 0.99   44352.3   12201.00
```

```
     14    30429.30  110.91  0.30( 0.30) 0.99   45166.0   10410.00
     15    30041.20  115.19  0.30( 0.30) 0.99   46245.3   12231.00
     16    29269.84  122.45  0.30( 0.30) 0.99   47798.0   10400.00
     17    27994.39  131.53  0.30( 0.30) 0.99   49244.5   12010.00
     18    27112.76  136.66  0.30( 0.30) 0.99   49507.0   10210.00
     19    26562.61  140.54  0.30( 0.30) 0.99   49653.9   12000.00
     20    23555.69  165.84  0.30( 0.30) 0.99   50266.8   10100.00
    TOTAL AREA(ACRES) =     50266.8

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.21
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.931
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   31866.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.11
  AVERAGE FLOW DEPTH(FEET) =   8.21   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =   85.19
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   21.87
  EFFECTIVE AREA(ACRES) =  33799.62     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50302.9         PEAK FLOW RATE(CFS) =   31855.71
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.21   FLOW VELOCITY(FEET/SEC.) =  16.11
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.59
  CHANNEL FLOW THRU SUBAREA(CFS) =   31855.71
  FLOW VELOCITY(FEET/SEC.) =  15.27   FLOW DEPTH(FEET) =   8.59
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =   85.35
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   85.35
  RAINFALL INTENSITY(INCH/HR) =   0.93
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   33799.62
  TOTAL STREAM AREA(ACRES) =   50302.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   31855.71

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.622
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.71
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     13.71

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.68
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.339
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.94      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   2.44
  Tc(MIN.) =   16.35
  SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   49.45
  EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      61.49
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.86   FLOW VELOCITY(FEET/SEC.) =   6.12
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.132
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.73      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      73.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.04
  AVERAGE FLOW DEPTH(FEET) =   0.89   TRAVEL TIME(MIN.) =   2.43
  Tc(MIN.) =   18.78
  SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   24.28
  EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      79.51
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   7.23
```



```
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.969
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      105.64      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     158.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.21
  AVERAGE FLOW DEPTH(FEET) =   1.49   TRAVEL TIME(MIN.) =   2.33
  Tc(MIN.) =   21.11
  SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  158.70
  EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     231.15
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.84   FLOW VELOCITY(FEET/SEC.) =   9.21
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.842
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      127.13      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     319.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.03
```

```
  AVERAGE FLOW DEPTH(FEET) =   2.39   TRAVEL TIME(MIN.) =   2.43
  Tc(MIN.) =   23.54
  SUBAREA AREA(ACRES) =   127.13       SUBAREA RUNOFF(CFS) =  176.48
  EFFECTIVE AREA(ACRES) =    281.00     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      281.0         PEAK FLOW RATE(CFS) =     390.08
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.67   FLOW VELOCITY(FEET/SEC.) =   9.55
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12720.00 =    5198.88 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   23.54
  RAINFALL INTENSITY(INCH/HR) =   1.84
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     281.00
  TOTAL STREAM AREA(ACRES) =     281.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     390.08

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18901.00   19.87    2.038  0.30( 0.29) 0.97    4999.7   12603.00
      1    19883.60   24.27    1.804  0.30( 0.29) 0.98    6343.9     600.00
      1    23313.70   42.02    1.318  0.30( 0.30) 0.98   12360.5   40100.00
      1    25029.09   50.12    1.194  0.30( 0.30) 0.99   15135.1   11801.00
      1    27571.29   61.30    1.065  0.30( 0.30) 0.99   19665.6   11530.00
      1    29017.02   70.21    1.015  0.30( 0.30) 0.99   24322.4   11910.00
      1    31199.54   80.53    0.957  0.30( 0.30) 0.99   30625.4   11350.00
      1    31855.71   85.35    0.930  0.30( 0.30) 0.99   33799.6   11130.00
      1    31774.96   91.38    0.899  0.30( 0.30) 0.99   36726.2   12300.00
      1    31714.79   95.25    0.885  0.30( 0.30) 0.99   38787.1   11620.00
      1    31438.70  100.05    0.867  0.30( 0.30) 0.99   40986.8   12400.00
      1    31195.08  103.28    0.855  0.30( 0.30) 0.99   42302.2   11111.00
      1    30761.56  109.38    0.833  0.30( 0.30) 0.99   44388.4   12201.00
      1    30429.30  112.40    0.822  0.30( 0.30) 0.99   45202.1   10410.00
      1    30041.20  116.68    0.806  0.30( 0.30) 0.99   46281.4   12231.00
      1    29269.84  123.96    0.785  0.30( 0.30) 0.99   47834.1   10400.00
      1    27994.39  133.06    0.766  0.30( 0.30) 0.99   49280.6   12010.00
      1    27112.76  138.20    0.755  0.30( 0.30) 0.99   49543.1   10210.00
      1    26562.61  142.10    0.746  0.30( 0.30) 0.99   49690.0   12000.00
      1    23555.69  167.46    0.691  0.30( 0.30) 0.99   50302.9   10100.00
      2      390.08   23.54    1.842  0.30( 0.30) 1.00     281.0   12710.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19272.11   19.87    2.038  0.30( 0.29) 0.97    5236.9   12603.00
      2    20110.41   23.54    1.842  0.30( 0.29) 0.98    6401.6   12710.00
      3    20264.03   24.27    1.804  0.30( 0.29) 0.98    6624.9     600.00
      4    23571.16   42.02    1.318  0.30( 0.30) 0.98   12641.5   40100.00
      5    25255.31   50.12    1.194  0.30( 0.30) 0.99   15416.1   11801.00
      6    27764.69   61.30    1.065  0.30( 0.30) 0.99   19946.6   11530.00
      7    29197.79   70.21    1.015  0.30( 0.30) 0.99   24603.4   11910.00
      8    31365.71   80.53    0.957  0.30( 0.30) 0.99   30906.4   11350.00
      9    32015.05   85.35    0.930  0.30( 0.30) 0.99   34080.6   11130.00
     10    31926.43   91.38    0.899  0.30( 0.30) 0.99   37007.2   12300.00
     11    31862.68   95.25    0.885  0.30( 0.30) 0.99   39068.1   11620.00
     12    31582.14  100.05    0.867  0.30( 0.30) 0.99   41267.8   12400.00
     13    31335.51  103.28    0.855  0.30( 0.30) 0.99   42583.2   11111.00
     14    30896.34  109.38    0.833  0.30( 0.30) 0.99   44669.4   12201.00
     15    30561.29  112.40    0.822  0.30( 0.30) 0.99   45483.1   10410.00
     16    30169.21  116.68    0.806  0.30( 0.30) 0.99   46562.4   12231.00
     17    29392.60  123.96    0.785  0.30( 0.30) 0.99   48115.1   10400.00
     18    28112.16  133.06    0.766  0.30( 0.30) 0.99   49561.6   12010.00
     19    27227.72  138.20    0.755  0.30( 0.30) 0.99   49824.1   10210.00
     20    26675.44  142.10    0.746  0.30( 0.30) 0.99   49971.0   12000.00
     21    23654.62  167.46    0.691  0.30( 0.30) 0.99   50583.9   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   32015.05    Tc(MIN.) =    85.35
  EFFECTIVE AREA(ACRES) =   34080.62   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50583.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.00 TO NODE  12720.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    275.00  DOWNSTREAM(FEET) =    258.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2669.21   CHANNEL SLOPE =  0.0064
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.913
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  COMMERCIAL                 B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
```

```
  "MEADOWS"                 B        0.50      0.30     1.000    70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   32015.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.99
  AVERAGE FLOW DEPTH(FEET) =   8.76   TRAVEL TIME(MIN.) =   2.97
  Tc(MIN.) =   88.31
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    1.01
  EFFECTIVE AREA(ACRES) =  34082.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50585.6         PEAK FLOW RATE(CFS) =   32015.05
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.76

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.76   FLOW VELOCITY(FEET/SEC.) =  14.99
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.31
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.913
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  COMMERCIAL                 B        1.40      0.30     0.100    56
  COMMERCIAL                 B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =    9.59
  EFFECTIVE AREA(ACRES) =  34098.02   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50601.3       PEAK FLOW RATE(CFS) =   32015.05
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.31
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.913
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"           B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   34.29
  EFFECTIVE AREA(ACRES) =  34160.12   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50663.4       PEAK FLOW RATE(CFS) =   32015.05
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   88.31
  RAINFALL INTENSITY(INCH/HR) =   0.91
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   34160.12
  TOTAL STREAM AREA(ACRES) =   50663.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   32015.05

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   22.51   RAINFALL INTENSITY(INCH/HR) =  1.90
  EFFECTIVE AREA(ACRES) =   699.10
  TOTAL AREA(ACRES) =  1292.30        PEAK FLOW RATE(CFS) =    997.00
  AREA-AVERAGED Fm(INCH/HR) =   0.13  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.43
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   22.51
  RAINFALL INTENSITY(INCH/HR) =   1.90
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.43
```

EFFECTIVE STREAM AREA(ACRES) = 699.10
TOTAL STREAM AREA(ACRES) = 1292.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 997.00

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19272.11	23.39	1.850	0.30(0.29)	0.97	5316.4	12603.00
1	20110.41	27.01	1.679	0.30(0.29)	0.98	6481.1	12710.00
1	20264.03	27.73	1.647	0.30(0.29)	0.98	6704.4	600.00
1	23571.16	45.31	1.268	0.30(0.30)	0.98	12721.0	40100.00
1	25255.31	53.33	1.155	0.30(0.30)	0.99	15495.6	11801.00
1	27764.69	64.41	1.047	0.30(0.30)	0.99	20026.1	11530.00
1	29197.79	73.27	0.998	0.30(0.30)	0.99	24682.9	11910.00
1	31365.71	83.52	0.940	0.30(0.30)	0.99	30985.9	11350.00
1	32015.05	88.31	0.913	0.30(0.30)	0.99	34160.1	11130.00
1	31926.43	94.35	0.888	0.30(0.30)	0.99	37086.7	12300.00
1	31862.68	98.22	0.874	0.30(0.30)	0.99	39147.6	11620.00
1	31582.14	103.03	0.856	0.30(0.30)	0.99	41347.3	12400.00
1	31335.51	106.27	0.844	0.30(0.30)	0.99	42662.7	11111.00
1	30896.34	112.39	0.822	0.30(0.30)	0.99	44748.9	12201.00
1	30561.29	115.41	0.811	0.30(0.30)	0.99	45562.6	10410.00
1	30169.21	119.71	0.795	0.30(0.30)	0.99	46641.9	12231.00
1	29392.60	127.01	0.779	0.30(0.30)	0.99	48194.6	10400.00
1	28112.16	136.16	0.759	0.30(0.30)	0.99	49641.1	12010.00
1	27227.72	141.34	0.748	0.30(0.30)	0.99	49903.6	10210.00
1	26675.44	145.25	0.739	0.30(0.30)	0.99	50050.5	12000.00
1	23654.62	170.75	0.684	0.30(0.30)	0.99	50663.4	10100.00
2	997.00	22.51	1.896	0.30(0.13)	0.43	699.1	12720.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20091.29	22.51	1.896	0.30(0.27)	0.91	5816.3	12720.50
2	20243.30	23.39	1.850	0.30(0.27)	0.91	6015.5	12603.00
3	20984.72	27.01	1.679	0.30(0.28)	0.92	7180.2	12710.00
4	21120.65	27.73	1.647	0.30(0.28)	0.92	7403.5	600.00
5	24213.69	45.31	1.268	0.30(0.29)	0.96	13420.1	40100.00
6	25834.02	53.33	1.155	0.30(0.29)	0.96	16194.7	11801.00
7	28282.83	64.41	1.047	0.30(0.29)	0.97	20725.2	11530.00
8	29687.94	73.27	0.998	0.30(0.29)	0.97	25382.0	11910.00
9	31823.46	83.52	0.940	0.30(0.29)	0.98	31685.0	11350.00
10	32457.66	88.31	0.913	0.30(0.29)	0.98	34859.2	11130.00
11	32354.70	94.35	0.888	0.30(0.29)	0.98	37785.8	12300.00
12	32282.95	98.22	0.874	0.30(0.29)	0.98	39846.7	11620.00
13	31992.47	103.03	0.856	0.30(0.29)	0.98	42046.4	12400.00
14	31739.14	106.27	0.844	0.30(0.29)	0.98	43361.8	11111.00
15	31287.31	112.39	0.822	0.30(0.29)	0.98	45448.0	12201.00
16	30946.00	115.41	0.811	0.30(0.29)	0.98	46261.7	10410.00
17	30545.03	119.71	0.795	0.30(0.29)	0.98	47341.0	12231.00
18	29759.25	127.01	0.779	0.30(0.29)	0.98	48893.7	10400.00
19	28467.63	136.16	0.759	0.30(0.29)	0.98	50340.2	12010.00
20	27576.85	141.34	0.748	0.30(0.29)	0.98	50602.7	10210.00
21	27019.79	145.25	0.739	0.30(0.29)	0.98	50749.6	12000.00
22	23967.80	170.75	0.684	0.30(0.29)	0.98	51362.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 32457.66 Tc(MIN.) = 88.31
EFFECTIVE AREA(ACRES) = 34859.22 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51955.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12722.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.67
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.903
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
COMMERCIAL	B	0.40	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32458.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.77
AVERAGE FLOW DEPTH(FEET) = 11.67 TRAVEL TIME(MIN.) = 1.96
Tc(MIN.) = 90.28
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 0.86
EFFECTIVE AREA(ACRES) = 34860.62 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51957.1 PEAK FLOW RATE(CFS) = 32457.66
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.67 FLOW VELOCITY(FEET/SEC.) = 10.77
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.96 FEET.

****
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 90.28

```
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.903
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        0.50      0.30     0.100    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.60      0.30     1.000    86
 COMMERCIAL                 B        0.60      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.90      0.30     1.000    66
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
 SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    2.55
 EFFECTIVE AREA(ACRES) =  34864.82   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =    51961.3       PEAK FLOW RATE(CFS) =   32457.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   90.28
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.903
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
 NATURAL FAIR COVER
 "MEADOWS"                  B        3.20      0.30     1.000    70
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       12.00      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   10.96
 EFFECTIVE AREA(ACRES) =  34885.02   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
 TOTAL AREA(ACRES) =    51981.5       PEAK FLOW RATE(CFS) =   32457.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
```



```
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.65
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.900
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
 PUBLIC PARK                B        0.50      0.30     0.850    56
 NATURAL FAIR COVER
 "GRASS"                    B        0.50      0.30     1.000    69
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
 COMMERCIAL                 B        1.50      0.30     0.100    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   32459.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.54
 AVERAGE FLOW DEPTH(FEET) =   9.65   TRAVEL TIME(MIN.) =   0.77
 Tc(MIN.) =   91.05
 SUBAREA AREA(ACRES) =     4.60       SUBAREA RUNOFF(CFS) =    2.87
 EFFECTIVE AREA(ACRES) =  34889.62     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
 TOTAL AREA(ACRES) =    51986.1         PEAK FLOW RATE(CFS) =   32457.66
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =   9.65

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  9.65   FLOW VELOCITY(FEET/SEC.) =  13.54
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   91.05
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.900
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        2.50      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                    B        2.60      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        2.80      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        5.40      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
 SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   14.65
```

```
  EFFECTIVE AREA(ACRES) =  34915.62   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52012.1       PEAK FLOW RATE(CFS) =   32457.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   91.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.900
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   21.07
  EFFECTIVE AREA(ACRES) =  34954.62   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52051.1       PEAK FLOW RATE(CFS) =   32457.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   91.05
  RAINFALL INTENSITY(INCH/HR) =   0.90
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =   34954.62
  TOTAL STREAM AREA(ACRES) =   52051.09
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   32457.66

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.636
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.31
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =     13.31

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.261
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      44.03
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.70
  AVERAGE FLOW DEPTH(FEET) =   0.81   TRAVEL TIME(MIN.) =   3.44
  Tc(MIN.) =   17.27
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   61.10
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      72.27
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   5.55
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.50
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.52      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     118.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.30
  AVERAGE FLOW DEPTH(FEET) =   1.45   TRAVEL TIME(MIN.) =   3.06
  Tc(MIN.) =   20.32
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =   91.61
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     154.63
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.69   FLOW VELOCITY(FEET/SEC.) =   6.84
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.789
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       64.05      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     197.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.52
  AVERAGE FLOW DEPTH(FEET) =   2.13   TRAVEL TIME(MIN.) =   4.23
  Tc(MIN.) =   24.55
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   85.86
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     220.54
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.26   FLOW VELOCITY(FEET/SEC.) =   6.74
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.07
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.617
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.02      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     235.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.09
  AVERAGE FLOW DEPTH(FEET) =   2.06   TRAVEL TIME(MIN.) =   3.88
  Tc(MIN.) =   28.43
  SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   30.83
  EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     225.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.02

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.02   FLOW VELOCITY(FEET/SEC.) =   7.98
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   28.43
  RAINFALL INTENSITY(INCH/HR) =   1.62
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     190.54
  TOTAL STREAM AREA(ACRES) =     190.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     225.78

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20091.29   25.70    1.735  0.30( 0.27) 0.91    5911.7   12720.50
      1    20243.30   26.57    1.697  0.30( 0.27) 0.91    6110.9   12603.00
      1    20984.72   30.16    1.545  0.30( 0.28) 0.92    7275.6   12710.00
      1    21120.65   30.87    1.531  0.30( 0.28) 0.92    7498.9     600.00
      1    24213.69   48.31    1.222  0.30( 0.29) 0.96   13515.5   40100.00
```

```
     1    25834.02   56.28    1.118  0.30( 0.29) 0.96   16290.1   11801.00
     1    28282.83   67.27    1.031  0.30( 0.29) 0.97   20820.6   11530.00
     1    29687.94   76.08    0.982  0.30( 0.29) 0.97   25477.4   11910.00
     1    31823.46   86.27    0.925  0.30( 0.29) 0.98   31780.4   11350.00
     1    32457.66   91.05    0.900  0.30( 0.29) 0.98   34954.6   11130.00
     1    32354.70   97.09    0.878  0.30( 0.29) 0.98   37881.2   12300.00
     1    32282.95  100.96    0.864  0.30( 0.29) 0.98   39942.1   11620.00
     1    31992.47  105.77    0.846  0.30( 0.29) 0.98   42141.8   12400.00
     1    31739.14  109.02    0.834  0.30( 0.29) 0.98   43457.2   11111.00
     1    31287.31  115.15    0.812  0.30( 0.29) 0.98   45543.4   12201.00
     1    30946.00  118.18    0.801  0.30( 0.29) 0.98   46357.1   10410.00
     1    30545.03  122.49    0.789  0.30( 0.29) 0.98   47436.4   12231.00
     1    29759.25  129.82    0.773  0.30( 0.29) 0.98   48989.1   10400.00
     1    28467.63  139.01    0.753  0.30( 0.29) 0.98   50435.6   12010.00
     1    27576.85  144.22    0.742  0.30( 0.29) 0.98   50698.1   10210.00
     1    27019.79  148.15    0.733  0.30( 0.29) 0.98   50845.0   12000.00
     1    23967.80  173.76    0.678  0.30( 0.29) 0.98   51457.9   10100.00
     2      225.78   28.43    1.617  0.30( 0.30) 1.00     190.5   12730.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20313.85   25.70    1.735  0.30( 0.27) 0.91    6084.0   12720.50
      2    20467.31   26.57    1.697  0.30( 0.27) 0.91    6289.0   12603.00
      3    20852.80   28.43    1.617  0.30( 0.28) 0.92    6904.2   12730.00
      4    21198.20   30.16    1.545  0.30( 0.28) 0.92    7466.1   12710.00
      5    21331.70   30.87    1.531  0.30( 0.28) 0.93    7689.5     600.00
      6    24371.77   48.31    1.222  0.30( 0.29) 0.96   13706.1   40100.00
      7    25974.32   56.28    1.118  0.30( 0.29) 0.96   16480.6   11801.00
      8    28408.24   67.27    1.031  0.30( 0.29) 0.97   21011.2   11530.00
      9    29804.89   76.08    0.982  0.30( 0.29) 0.97   25668.0   11910.00
     10    31930.62   86.27    0.925  0.30( 0.29) 0.98   31970.9   11350.00
     11    32560.58   91.05    0.900  0.30( 0.29) 0.98   35145.2   11130.00
     12    32453.82   97.09    0.878  0.30( 0.29) 0.98   38071.7   12300.00
     13    32379.64  100.96    0.864  0.30( 0.29) 0.98   40132.6   11620.00
     14    32086.13  105.77    0.846  0.30( 0.29) 0.98   42332.3   12400.00
     15    31830.75  109.02    0.834  0.30( 0.29) 0.98   43647.8   11111.00
     16    31375.08  115.15    0.812  0.30( 0.29) 0.98   45733.9   12201.00
     17    31031.86  118.18    0.801  0.30( 0.29) 0.98   46547.6   10410.00
     18    30628.82  122.49    0.789  0.30( 0.29) 0.98   47626.9   12231.00
     19    29840.31  129.82    0.773  0.30( 0.29) 0.98   49179.7   10400.00
     20    28545.28  139.01    0.753  0.30( 0.29) 0.98   50626.1   12010.00
     21    27652.57  144.22    0.742  0.30( 0.29) 0.98   50888.7   10210.00
     22    27094.04  148.15    0.733  0.30( 0.29) 0.98   51035.5   12000.00
     23    24032.54  173.76    0.678  0.30( 0.29) 0.98   51648.4   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   32560.58    Tc(MIN.) =    91.05
  EFFECTIVE AREA(ACRES) =   35145.16   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52241.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    252.10  DOWNSTREAM(FEET) =    240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1220.00   CHANNEL SLOPE =  0.0099
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.80
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.896
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.30      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  COMMERCIAL                 B        0.40      0.30     0.100    56
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  PUBLIC PARK                B        3.20      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.784
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   32562.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  17.48
  AVERAGE FLOW DEPTH(FEET) =   7.79   TRAVEL TIME(MIN.) =   1.16
  Tc(MIN.) =   92.21
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =    3.80
  EFFECTIVE AREA(ACRES) =  35151.56     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =    52248.0         PEAK FLOW RATE(CFS) =   32560.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.79

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.79   FLOW VELOCITY(FEET/SEC.) =  17.48
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.21
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.896
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        3.90      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        8.70      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B       10.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 12.28
EFFECTIVE AREA(ACRES) = 35174.46 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52270.9 PEAK FLOW RATE(CFS) = 32560.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 52270.9 TC(MIN.) = 92.21
EFFECTIVE AREA(ACRES) = 35174.46 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.980
PEAK FLOW RATE(CFS) = 32560.58

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20313.85	27.07	1.676	0.30(0.27)	0.91	6113.3	12720.50
2	20467.31	27.93	1.638	0.30(0.27)	0.91	6318.3	12603.00
3	20852.80	29.78	1.558	0.30(0.28)	0.92	6933.5	12730.00
4	21198.20	31.50	1.518	0.30(0.28)	0.92	7495.4	12710.00
5	21331.70	32.21	1.504	0.30(0.28)	0.93	7718.8	600.00
6	24371.77	49.60	1.202	0.30(0.29)	0.96	13735.4	40100.00
7	25974.32	57.53	1.103	0.30(0.29)	0.96	16509.9	11801.00
8	28408.24	68.48	1.024	0.30(0.29)	0.97	21040.5	11530.00
9	29804.89	77.28	0.975	0.30(0.29)	0.97	25697.3	11910.00
10	31930.62	87.44	0.918	0.30(0.29)	0.98	32000.2	11350.00
11	32560.58	92.21	0.896	0.30(0.29)	0.98	35174.5	11130.00
12	32453.82	98.25	0.874	0.30(0.29)	0.98	38101.0	12300.00
13	32379.64	102.13	0.860	0.30(0.29)	0.98	40161.9	11620.00
14	32086.13	106.94	0.842	0.30(0.29)	0.98	42361.6	12400.00
15	31830.75	110.19	0.830	0.30(0.29)	0.98	43677.1	11111.00
16	31375.08	116.33	0.807	0.30(0.29)	0.98	45763.2	12201.00
17	31031.86	119.37	0.796	0.30(0.29)	0.98	46576.9	10410.00
18	30628.82	123.68	0.786	0.30(0.29)	0.98	47656.2	12231.00
19	29840.31	131.02	0.770	0.30(0.29)	0.98	49209.0	10400.00
20	28545.28	140.22	0.750	0.30(0.29)	0.98	50655.4	12010.00
21	27652.57	145.45	0.739	0.30(0.29)	0.98	50918.0	10210.00
22	27094.04	149.38	0.730	0.30(0.29)	0.98	51064.8	12000.00
23	24032.54	175.05	0.675	0.30(0.29)	0.98	51677.7	10100.00

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                         Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 25-YR EV JULY 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RU25EV28.DAT
  TIME/DATE OF STUDY: 13:18 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.947
   2)   10.00;  3.222
   3)   15.00;  2.455
   4)   20.00;  2.027
   5)   25.00;  1.766
   6)   30.00;  1.548
   7)   40.00;  1.349
   8)   50.00;  1.196
   9)   60.00;  1.072
  10)   90.00;  0.904
  11)  120.00;  0.794
  12)  180.00;  0.664
  13)  360.00;  0.492
  14) 1200.00;  0.217
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV27.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    20852.80   29.78  0.30( 0.28) 0.92    6933.5   12730.00
      2    21331.70   32.21  0.30( 0.28) 0.93    7718.8     600.00
      3    24371.77   49.60  0.30( 0.29) 0.96   13735.4   40100.00
      4    25974.32   57.53  0.30( 0.29) 0.96   16509.9   11801.00
      5    28408.24   68.48  0.30( 0.29) 0.97   21040.5   11530.00
      6    29804.89   77.28  0.30( 0.29) 0.97   25697.3   11910.00
      7    31930.62   87.44  0.30( 0.29) 0.98   32000.2   11350.00
      8    32560.58   92.21  0.30( 0.29) 0.98   35174.5   11130.00
      9    32453.82   98.25  0.30( 0.29) 0.98   38101.0   12300.00
     10    32379.64  102.13  0.30( 0.29) 0.98   40161.9   11620.00
     11    32086.13  106.94  0.30( 0.29) 0.98   42361.6   12400.00
     12    31830.75  110.19  0.30( 0.29) 0.98   43677.1   11111.00
     13    31375.08  116.33  0.30( 0.29) 0.98   45763.2   12201.00
     14    31031.86  119.37  0.30( 0.29) 0.98   46576.9   10410.00
     15    30628.82  123.68  0.30( 0.29) 0.98   47656.2   12231.00
     16    29840.31  131.02  0.30( 0.29) 0.98   49209.0   10400.00
     17    28545.28  140.22  0.30( 0.29) 0.98   50655.4   12010.00
     18    27652.57  145.45  0.30( 0.29) 0.98   50918.0   10210.00
     19    27094.04  149.38  0.30( 0.29) 0.98   51064.8   12000.00
     20    24032.54  175.05  0.30( 0.29) 0.98   51677.7   10100.00
    TOTAL AREA(ACRES) =    51677.7

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P501XX25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      332.36   13.44  0.30( 0.25) 0.84     173.8   50110.00
      2      350.43   18.02  0.30( 0.26) 0.85     223.2   50100.00
    TOTAL AREA(ACRES) =      223.2

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
```

```
     1      332.36   13.44  0.30( 0.25) 0.84     173.8   50110.00
     2      350.43   18.02  0.30( 0.26) 0.85     223.2   50100.00
   TOTAL AREA(ACRES) =       223.2

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      332.36   13.44    2.694  0.30( 0.25) 0.84     173.8   50110.00
      2      350.43   18.02    2.196  0.30( 0.26) 0.85     223.2   50100.00
  LONGEST FLOWPATH FROM NODE  50100.00 TO NODE  12800.00 =    4170.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20852.80   29.78    1.558  0.30( 0.28) 0.92    6933.5   12730.00
      2    21331.70   32.21    1.504  0.30( 0.28) 0.93    7718.8     600.00
      3    24371.77   49.60    1.202  0.30( 0.29) 0.96   13735.4   40100.00
      4    25974.32   57.53    1.103  0.30( 0.29) 0.96   16509.9   11801.00
      5    28408.24   68.48    1.024  0.30( 0.29) 0.97   21040.5   11530.00
      6    29804.89   77.28    0.975  0.30( 0.29) 0.97   25697.3   11910.00
      7    31930.62   87.44    0.918  0.30( 0.29) 0.98   32000.2   11350.00
      8    32560.58   92.21    0.896  0.30( 0.29) 0.98   35174.5   11130.00
      9    32453.82   98.25    0.874  0.30( 0.29) 0.98   38101.0   12300.00
     10    32379.64  102.13    0.860  0.30( 0.29) 0.98   40161.9   11620.00
     11    32086.13  106.94    0.842  0.30( 0.29) 0.98   42361.6   12400.00
     12    31830.75  110.19    0.830  0.30( 0.29) 0.98   43677.1   11111.00
     13    31375.08  116.33    0.807  0.30( 0.29) 0.98   45763.2   12201.00
     14    31031.86  119.37    0.796  0.30( 0.29) 0.98   46576.9   10410.00
     15    30628.82  123.68    0.786  0.30( 0.29) 0.98   47656.2   12231.00
     16    29840.31  131.02    0.770  0.30( 0.29) 0.98   49209.0   10400.00
     17    28545.28  140.22    0.750  0.30( 0.29) 0.98   50655.4   12010.00
     18    27652.57  145.45    0.739  0.30( 0.29) 0.98   50918.0   10210.00
     19    27094.04  149.38    0.730  0.30( 0.29) 0.98   51064.8   12000.00
     20    24032.54  175.05    0.675  0.30( 0.29) 0.98   51677.7   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18087.15   13.44    2.694  0.30( 0.27) 0.91    3302.9   50110.00
      2    19256.67   18.02    2.196  0.30( 0.27) 0.91    4419.1   50100.00
      3    21087.93   29.78    1.558  0.30( 0.27) 0.92    7156.7   12730.00
      4    21557.15   32.21    1.504  0.30( 0.28) 0.92    7942.0     600.00
      5    24542.72   49.60    1.202  0.30( 0.29) 0.95   13958.6   40100.00
      6    26127.31   57.53    1.103  0.30( 0.29) 0.96   16733.1   11801.00
      7    28547.13   68.48    1.024  0.30( 0.29) 0.97   21263.7   11530.00
      8    29934.88   77.28    0.975  0.30( 0.29) 0.97   25920.5   11910.00
      9    32050.34   87.44    0.918  0.30( 0.29) 0.98   32223.4   11350.00
     10    32676.26   92.21    0.896  0.30( 0.29) 0.98   35397.7   11130.00
     11    32565.50   98.25    0.874  0.30( 0.29) 0.98   38324.2   12300.00
     12    32488.75  102.13    0.860  0.30( 0.29) 0.98   40385.1   11620.00
     13    32192.05  106.94    0.842  0.30( 0.29) 0.98   42584.8   12400.00
```



```
     14    31934.52  110.19    0.830  0.30( 0.29) 0.98   43900.3   11111.00
     15    31474.79  116.33    0.807  0.30( 0.29) 0.98   45986.4   12201.00
     16    31129.56  119.37    0.796  0.30( 0.29) 0.98   46800.1   10410.00
     17    30724.66  123.68    0.786  0.30( 0.29) 0.98   47879.4   12231.00
     18    29933.29  131.02    0.770  0.30( 0.29) 0.98   49432.2   10400.00
     19    28634.65  140.22    0.750  0.30( 0.29) 0.98   50878.6   12010.00
     20    27739.90  145.45    0.739  0.30( 0.29) 0.98   51141.2   10210.00
     21    27179.83  149.38    0.730  0.30( 0.29) 0.98   51288.0   12000.00
     22    24108.28  175.05    0.675  0.30( 0.29) 0.98   51900.9   10100.00
   TOTAL AREA(ACRES) =     51900.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    32676.26  Tc(MIN.) =   92.210
  EFFECTIVE AREA(ACRES) =  35397.66  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51900.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    51900.9  TC(MIN.) =     92.21
  EFFECTIVE AREA(ACRES) =  35397.66  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.979
  PEAK FLOW RATE(CFS)   =   32676.26

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18087.15   13.44    2.694  0.30( 0.27) 0.91    3302.9   50110.00
      2    19256.67   18.02    2.196  0.30( 0.27) 0.91    4419.1   50100.00
      3    21087.93   29.78    1.558  0.30( 0.27) 0.92    7156.7   12730.00
      4    21557.15   32.21    1.504  0.30( 0.28) 0.92    7942.0     600.00
      5    24542.72   49.60    1.202  0.30( 0.29) 0.95   13958.6   40100.00
      6    26127.31   57.53    1.103  0.30( 0.29) 0.96   16733.1   11801.00
      7    28547.13   68.48    1.024  0.30( 0.29) 0.97   21263.7   11530.00
      8    29934.88   77.28    0.975  0.30( 0.29) 0.97   25920.5   11910.00
      9    32050.34   87.44    0.918  0.30( 0.29) 0.98   32223.4   11350.00
     10    32676.26   92.21    0.896  0.30( 0.29) 0.98   35397.7   11130.00
     11    32565.50   98.25    0.874  0.30( 0.29) 0.98   38324.2   12300.00
     12    32488.75  102.13    0.860  0.30( 0.29) 0.98   40385.1   11620.00
     13    32192.05  106.94    0.842  0.30( 0.29) 0.98   42584.8   12400.00
     14    31934.52  110.19    0.830  0.30( 0.29) 0.98   43900.3   11111.00
     15    31474.79  116.33    0.807  0.30( 0.29) 0.98   45986.4   12201.00
     16    31129.56  119.37    0.796  0.30( 0.29) 0.98   46800.1   10410.00
     17    30724.66  123.68    0.786  0.30( 0.29) 0.98   47879.4   12231.00
     18    29933.29  131.02    0.770  0.30( 0.29) 0.98   49432.2   10400.00
     19    28634.65  140.22    0.750  0.30( 0.29) 0.98   50878.6   12010.00
     20    27739.90  145.45    0.739  0.30( 0.29) 0.98   51141.2   10210.00
     21    27179.83  149.38    0.730  0.30( 0.29) 0.98   51288.0   12000.00
     22    24108.28  175.05    0.675  0.30( 0.29) 0.98   51900.9   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU25EV29.DAT
  TIME/DATE OF STUDY: 13:18 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.919
   2)   10.00;  3.206
   3)   15.00;  2.446
   4)   20.00;  2.020
   5)   25.00;  1.761
   6)   30.00;  1.545
   7)   40.00;  1.345
   8)   50.00;  1.192
   9)   60.00;  1.068
  10)   90.00;  0.899
  11)  120.00;  0.789
  12)  180.00;  0.660
  13)  360.00;  0.488
  14) 1200.00;  0.215
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    18087.15   13.44  0.30( 0.27) 0.91    3302.9   50110.00
      2    19256.67   18.02  0.30( 0.27) 0.91    4419.1   50100.00
      3    21557.15   32.21  0.30( 0.28) 0.92    7942.0     600.00
      4    24542.72   49.60  0.30( 0.29) 0.95   13958.6   40100.00
      5    26127.31   57.53  0.30( 0.29) 0.96   16733.1   11801.00
      6    28547.13   68.48  0.30( 0.29) 0.97   21263.7   11530.00
      7    29934.88   77.28  0.30( 0.29) 0.97   25920.5   11910.00
      8    32050.34   87.44  0.30( 0.29) 0.98   32223.4   11350.00
      9    32676.26   92.21  0.30( 0.29) 0.98   35397.7   11130.00
     10    32565.50   98.25  0.30( 0.29) 0.98   38324.2   12300.00
     11    32488.75  102.13  0.30( 0.29) 0.98   40385.1   11620.00
     12    32192.05  106.94  0.30( 0.29) 0.98   42584.8   12400.00
     13    31474.79  116.33  0.30( 0.29) 0.98   45986.4   12201.00
     14    31129.56  119.37  0.30( 0.29) 0.98   46800.1   10410.00
     15    30724.66  123.68  0.30( 0.29) 0.98   47879.4   12231.00
     16    29933.29  131.02  0.30( 0.29) 0.98   49432.2   10400.00
     17    28634.65  140.22  0.30( 0.29) 0.98   50878.6   12010.00
     18    27739.90  145.45  0.30( 0.29) 0.98   51141.2   10210.00
     19    27179.83  149.38  0.30( 0.29) 0.98   51288.0   12000.00
     20    24108.28  175.05  0.30( 0.29) 0.98   51900.9   10100.00
    TOTAL AREA(ACRES) =    51900.9

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    18087.15   13.44  0.30( 0.27) 0.91    3302.9   50110.00
      2    19256.67   18.02  0.30( 0.27) 0.91    4419.1   50100.00
      3    21557.15   32.21  0.30( 0.28) 0.92    7942.0     600.00
      4    24542.72   49.60  0.30( 0.29) 0.95   13958.6   40100.00
      5    26127.31   57.53  0.30( 0.29) 0.96   16733.1   11801.00
      6    28547.13   68.48  0.30( 0.29) 0.97   21263.7   11530.00
      7    29934.88   77.28  0.30( 0.29) 0.97   25920.5   11910.00
      8    32050.34   87.44  0.30( 0.29) 0.98   32223.4   11350.00
      9    32676.26   92.21  0.30( 0.29) 0.98   35397.7   11130.00
     10    32565.50   98.25  0.30( 0.29) 0.98   38324.2   12300.00
     11    32488.75  102.13  0.30( 0.29) 0.98   40385.1   11620.00
     12    32192.05  106.94  0.30( 0.29) 0.98   42584.8   12400.00
     13    31474.79  116.33  0.30( 0.29) 0.98   45986.4   12201.00
```

```
     14    31129.56  119.37  0.30( 0.29) 0.98   46800.1   10410.00
     15    30724.66  123.68  0.30( 0.29) 0.98   47879.4   12231.00
     16    29933.29  131.02  0.30( 0.29) 0.98   49432.2   10400.00
     17    28634.65  140.22  0.30( 0.29) 0.98   50878.6   12010.00
     18    27739.90  145.45  0.30( 0.29) 0.98   51141.2   10210.00
     19    27179.83  149.38  0.30( 0.29) 0.98   51288.0   12000.00
     20    24108.28  175.05  0.30( 0.29) 0.98   51900.9   10100.00
    TOTAL AREA(ACRES) =     51900.9

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.40
  CHANNEL FLOW THRU SUBAREA(CFS) =   32676.26
  FLOW VELOCITY(FEET/SEC.) =  16.07   FLOW DEPTH(FEET) =   8.40
  TRAVEL TIME(MIN.) =   3.24   Tc(MIN.) =   95.45
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   16.21
  EFFECTIVE AREA(ACRES) =  35421.36   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51924.6       PEAK FLOW RATE(CFS) =   32676.26
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    1.92
  EFFECTIVE AREA(ACRES) =  35424.46   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51927.7       PEAK FLOW RATE(CFS) =   32676.26
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    5.24
  EFFECTIVE AREA(ACRES) =  35433.66   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51936.9       PEAK FLOW RATE(CFS) =   32676.26
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   19.70
  EFFECTIVE AREA(ACRES) =  35469.16   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51972.4       PEAK FLOW RATE(CFS) =   32676.26
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.45
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.879
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   28.40
  EFFECTIVE AREA(ACRES) =  35520.66   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52023.9       PEAK FLOW RATE(CFS) =   32676.26
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.25
  CHANNEL FLOW THRU SUBAREA(CFS) =   32676.26
  FLOW VELOCITY(FEET/SEC.) =  16.42   FLOW DEPTH(FEET) =   8.25
  TRAVEL TIME(MIN.) =   0.12   Tc(MIN.) =   95.57
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P503XX25.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1     1550.55   18.97  0.30( 0.22) 0.74    1028.1   50320.00
      2     1548.96   19.87  0.30( 0.22) 0.74    1064.5   50240.00
      3     1557.87   20.83  0.30( 0.22) 0.74    1101.6   50330.00
      4     1557.26   23.76  0.30( 0.22) 0.74    1199.8   50280.00
      5     1537.88   24.97  0.30( 0.22) 0.74    1230.2   50300.00
      6     1519.40   26.29  0.30( 0.22) 0.74    1253.8   50220.00
      7     1413.89   30.55  0.30( 0.22) 0.74    1292.3   50260.00
      8     1346.29   33.44  0.30( 0.22) 0.74    1298.6   50200.00
    TOTAL AREA(ACRES) =     1298.6

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    18087.15   17.54    2.229  0.30( 0.27) 0.91    3425.9   50110.00
      2    19256.67   22.04    1.914  0.30( 0.27) 0.91    4542.1   50100.00
      3    21557.15   36.08    1.423  0.30( 0.28) 0.92    8065.0    600.00
      4    24542.72   53.29    1.151  0.30( 0.29) 0.95   14081.6   40100.00
      5    26127.31   61.15    1.062  0.30( 0.29) 0.96   16856.1   11801.00
      6    28547.13   72.00    1.000  0.30( 0.29) 0.97   21386.7   11530.00
      7    29934.88   80.74    0.951  0.30( 0.29) 0.97   26043.5   11910.00
      8    32050.34   90.82    0.896  0.30( 0.29) 0.98   32346.4   11350.00
      9    32676.26   95.57    0.879  0.30( 0.29) 0.98   35520.7   11130.00
     10    32565.50  101.62    0.856  0.30( 0.29) 0.98   38447.2   12300.00
     11    32488.75  105.49    0.842  0.30( 0.29) 0.98   40508.1   11620.00
     12    32192.05  110.32    0.825  0.30( 0.29) 0.98   42707.8   12400.00
     13    31474.79  119.73    0.790  0.30( 0.29) 0.98   46109.4   12201.00
     14    31129.56  122.78    0.783  0.30( 0.29) 0.98   46923.1   10410.00
     15    30724.66  127.11    0.774  0.30( 0.29) 0.98   48002.4   12231.00
     16    29933.29  134.48    0.758  0.30( 0.29) 0.98   49555.2   10400.00
     17    28634.65  143.74    0.738  0.30( 0.29) 0.98   51001.6   12010.00
     18    27739.90  148.99    0.727  0.30( 0.29) 0.98   51264.2   10210.00
     19    27179.83  152.96    0.718  0.30( 0.29) 0.98   51411.0   12000.00
     20    24108.28  178.77    0.663  0.30( 0.29) 0.98   52023.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     1550.55   18.97    2.108  0.30( 0.22) 0.74    1028.1   50320.00
      2     1548.96   19.87    2.031  0.30( 0.22) 0.74    1064.5   50240.00
      3     1557.87   20.83    1.977  0.30( 0.22) 0.74    1101.6   50330.00
      4     1557.26   23.76    1.825  0.30( 0.22) 0.74    1199.8   50280.00
      5     1537.88   24.97    1.762  0.30( 0.22) 0.74    1230.2   50300.00
```

```
     6     1519.40   26.29    1.705  0.30( 0.22) 0.74    1253.8   50220.00
     7     1413.89   30.55    1.534  0.30( 0.22) 0.74    1292.3   50260.00
     8     1346.29   33.44    1.476  0.30( 0.22) 0.74    1298.6   50200.00
  LONGEST FLOWPATH FROM NODE  50220.00 TO NODE  12902.00 =   17597.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    19613.49   17.54    2.229  0.30( 0.26) 0.87    4376.5   50110.00
     2    20009.59   18.97    2.108  0.30( 0.26) 0.87    4808.9   50320.00
     3    20240.63   19.87    2.031  0.30( 0.26) 0.87    5067.4   50240.00
     4    20500.42   20.83    1.977  0.30( 0.26) 0.88    5343.9   50330.00
     5    20814.28   22.04    1.914  0.30( 0.26) 0.88    5684.1   50100.00
     6    21097.00   23.76    1.825  0.30( 0.26) 0.88    6175.4   50280.00
     7    21275.76   24.97    1.762  0.30( 0.26) 0.88    6509.2   50300.00
     8    21472.64   26.29    1.705  0.30( 0.26) 0.88    6862.6   50220.00
     9    22064.98   30.55    1.534  0.30( 0.27) 0.89    7969.8   50260.00
    10    22470.92   33.44    1.476  0.30( 0.27) 0.89    8701.2   50200.00
    11    22846.76   36.08    1.423  0.30( 0.27) 0.90    9363.6     600.00
    12    25539.91   53.29    1.151  0.30( 0.28) 0.93   15380.2   40100.00
    13    27028.25   61.15    1.062  0.30( 0.28) 0.94   18154.7   11801.00
    14    29382.44   72.00    1.000  0.30( 0.29) 0.95   22685.3   11530.00
    15    30717.32   80.74    0.951  0.30( 0.29) 0.96   27342.1   11910.00
    16    32773.52   90.82    0.896  0.30( 0.29) 0.97   33645.0   11350.00
    17    33380.75   95.57    0.879  0.30( 0.29) 0.97   36819.3   11130.00
    18    33246.19  101.62    0.856  0.30( 0.29) 0.97   39745.8   12300.00
    19    33154.18  105.49    0.842  0.30( 0.29) 0.97   41806.7   11620.00
    20    32838.48  110.32    0.825  0.30( 0.29) 0.97   44006.4   12400.00
    21    32084.16  119.73    0.790  0.30( 0.29) 0.97   47408.0   12201.00
    22    31731.45  122.78    0.783  0.30( 0.29) 0.97   48221.7   10410.00
    23    31316.55  127.11    0.774  0.30( 0.29) 0.97   49301.0   12231.00
    24    30508.17  134.48    0.758  0.30( 0.29) 0.97   50853.8   10400.00
    25    29188.16  143.74    0.738  0.30( 0.29) 0.98   52300.2   12010.00
    26    28281.27  148.99    0.727  0.30( 0.29) 0.98   52562.8   10210.00
    27    27712.06  152.96    0.718  0.30( 0.29) 0.98   52709.6   12000.00
    28    24580.91  178.77    0.663  0.30( 0.29) 0.98   53322.5   10100.00
   TOTAL AREA(ACRES) =     53322.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    33380.75  Tc(MIN.) =   95.571
  EFFECTIVE AREA(ACRES) =  36819.26  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =    53322.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.58
  CHANNEL FLOW THRU SUBAREA(CFS) =   33380.75
  FLOW VELOCITY(FEET/SEC.) =   8.39   FLOW DEPTH(FEET) =  14.58
  TRAVEL TIME(MIN.) =   1.78   Tc(MIN.) =   97.35
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P504XX25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      128.78   13.45  0.30( 0.28) 0.94      70.7   50400.00
    TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    19613.49   19.64    2.050  0.30( 0.26) 0.87    4376.5   50110.00
     2    20009.59   21.06    1.965  0.30( 0.26) 0.87    4808.9   50320.00
     3    20240.63   21.95    1.919  0.30( 0.26) 0.87    5067.4   50240.00
     4    20500.42   22.90    1.870  0.30( 0.26) 0.88    5343.9   50330.00
     5    20814.28   24.10    1.808  0.30( 0.26) 0.88    5684.1   50100.00
     6    21097.00   25.82    1.726  0.30( 0.26) 0.88    6175.4   50280.00
     7    21275.76   27.02    1.674  0.30( 0.26) 0.88    6509.2   50300.00
     8    21472.64   28.33    1.617  0.30( 0.26) 0.88    6862.6   50220.00
     9    22064.98   32.57    1.494  0.30( 0.27) 0.89    7969.8   50260.00
    10    22470.92   35.45    1.436  0.30( 0.27) 0.89    8701.2   50200.00
    11    22846.76   38.08    1.383  0.30( 0.27) 0.90    9363.6     600.00
    12    25539.91   55.23    1.127  0.30( 0.28) 0.93   15380.2   40100.00
    13    27028.25   63.05    1.051  0.30( 0.28) 0.94   18154.7   11801.00
    14    29382.44   73.85    0.990  0.30( 0.29) 0.95   22685.3   11530.00
    15    30717.32   82.56    0.941  0.30( 0.29) 0.96   27342.1   11910.00
    16    32773.52   92.61    0.889  0.30( 0.29) 0.97   33645.0   11350.00
    17    33380.75   97.35    0.872  0.30( 0.29) 0.97   36819.3   11130.00
    18    33246.19  103.40    0.850  0.30( 0.29) 0.97   39745.8   12300.00
    19    33154.18  107.27    0.836  0.30( 0.29) 0.97   41806.7   11620.00
    20    32838.48  112.11    0.818  0.30( 0.29) 0.97   44006.4   12400.00
    21    32084.16  121.53    0.786  0.30( 0.29) 0.97   47408.0   12201.00
    22    31731.45  124.59    0.779  0.30( 0.29) 0.97   48221.7   10410.00
    23    31316.55  128.93    0.770  0.30( 0.29) 0.97   49301.0   12231.00
    24    30508.17  136.31    0.754  0.30( 0.29) 0.97   50853.8   10400.00
    25    29188.16  145.59    0.734  0.30( 0.29) 0.98   52300.2   12010.00
    26    28281.27  150.87    0.723  0.30( 0.29) 0.98   52562.8   10210.00
    27    27712.06  154.84    0.714  0.30( 0.29) 0.98   52709.6   12000.00
    28    24580.91  180.73    0.659  0.30( 0.29) 0.98   53322.5   10100.00
```

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	128.78	13.45	2.682	0.30(0.28)	0.94	70.7	50400.00

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18297.15	13.45	2.682	0.30(0.26)	0.87	3066.8	50400.00
2	19708.39	19.64	2.050	0.30(0.26)	0.87	4447.2	50110.00
3	20099.92	21.06	1.965	0.30(0.26)	0.87	4879.6	50320.00
4	20328.50	21.95	1.919	0.30(0.26)	0.88	5138.1	50240.00
5	20585.63	22.90	1.870	0.30(0.26)	0.88	5414.6	50330.00
6	20896.17	24.10	1.808	0.30(0.26)	0.88	5754.8	50100.00
7	21174.49	25.82	1.726	0.30(0.26)	0.88	6246.1	50280.00
8	21350.46	27.02	1.674	0.30(0.26)	0.88	6579.9	50300.00
9	21544.31	28.33	1.617	0.30(0.26)	0.88	6933.3	50220.00
10	22130.01	32.57	1.494	0.30(0.27)	0.89	8040.5	50260.00
11	22532.87	35.45	1.436	0.30(0.27)	0.89	8771.9	50200.00
12	22905.88	38.08	1.383	0.30(0.27)	0.90	9434.3	600.00
13	25585.29	55.23	1.127	0.30(0.28)	0.93	15450.9	40100.00
14	27069.53	63.05	1.051	0.30(0.28)	0.94	18225.4	11801.00
15	29420.46	73.85	0.990	0.30(0.29)	0.95	22756.0	11530.00
16	30752.71	82.56	0.941	0.30(0.29)	0.96	27412.8	11910.00
17	32806.14	92.61	0.889	0.30(0.29)	0.97	33715.7	11350.00
18	33412.44	97.35	0.872	0.30(0.29)	0.97	36890.0	11130.00
19	33276.69	103.40	0.850	0.30(0.29)	0.97	39816.5	12300.00
20	33183.93	107.27	0.836	0.30(0.29)	0.97	41877.4	11620.00
21	32867.27	112.11	0.818	0.30(0.29)	0.97	44077.1	12400.00
22	32111.22	121.53	0.786	0.30(0.29)	0.97	47478.7	12201.00
23	31758.16	124.59	0.779	0.30(0.29)	0.97	48292.4	10410.00
24	31342.76	128.93	0.770	0.30(0.29)	0.97	49371.7	12231.00
25	30533.53	136.31	0.754	0.30(0.29)	0.97	50924.5	10400.00
26	29212.45	145.59	0.734	0.30(0.29)	0.98	52370.9	12010.00
27	28304.95	150.87	0.723	0.30(0.29)	0.98	52633.5	10210.00
28	27735.28	154.84	0.714	0.30(0.29)	0.98	52780.3	12000.00
29	24601.19	180.73	0.659	0.30(0.29)	0.98	53393.2	10100.00

TOTAL AREA(ACRES) = 53393.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33412.44 Tc(MIN.) = 97.349
EFFECTIVE AREA(ACRES) = 36889.96 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53393.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.98
CHANNEL FLOW THRU SUBAREA(CFS) = 33412.44
FLOW VELOCITY(FEET/SEC.) = 8.85 FLOW DEPTH(FEET) = 13.98
TRAVEL TIME(MIN.) = 1.44 Tc(MIN.) = 98.79
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 98.79
RAINFALL INTENSITY(INCH/HR) = 0.87
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 36889.96
TOTAL STREAM AREA(ACRES) = 53393.23
PEAK FLOW RATE(CFS) AT CONFLUENCE = 33412.44

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 19.82 RAINFALL INTENSITY(INCH/HR) = 2.04
EFFECTIVE AREA(ACRES) = 30.60
TOTAL AREA(ACRES) = 213.70 PEAK FLOW RATE(CFS) = 47.30
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 19.82
RAINFALL INTENSITY(INCH/HR) = 2.04
AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
EFFECTIVE STREAM AREA(ACRES) = 30.60
TOTAL STREAM AREA(ACRES) = 213.70

PEAK FLOW RATE(CFS) AT CONFLUENCE = 47.30

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18297.15	15.20	2.429	0.30(0.26)	0.87	3066.8	50400.00
1	19708.39	21.35	1.950	0.30(0.26)	0.87	4447.2	50110.00
1	20099.92	22.76	1.877	0.30(0.26)	0.87	4879.6	50320.00
1	20328.50	23.64	1.832	0.30(0.26)	0.88	5138.1	50240.00
1	20585.63	24.59	1.782	0.30(0.26)	0.88	5414.6	50330.00
1	20896.17	25.77	1.728	0.30(0.26)	0.88	5754.8	50100.00
1	21174.49	27.49	1.654	0.30(0.26)	0.88	6246.1	50280.00
1	21350.46	28.69	1.602	0.30(0.26)	0.88	6579.9	50300.00
1	21544.31	29.99	1.546	0.30(0.26)	0.88	6933.3	50220.00
1	22130.01	34.22	1.461	0.30(0.27)	0.89	8040.5	50260.00
1	22532.87	37.08	1.403	0.30(0.27)	0.89	8771.9	50200.00
1	22905.88	39.70	1.351	0.30(0.27)	0.90	9434.3	600.00
1	25585.29	56.80	1.108	0.30(0.28)	0.93	15450.9	40100.00
1	27069.53	64.59	1.042	0.30(0.28)	0.94	18225.4	11801.00
1	29420.46	75.35	0.982	0.30(0.29)	0.95	22756.0	11530.00
1	30752.71	84.05	0.933	0.30(0.29)	0.96	27412.8	11910.00
1	32806.14	94.07	0.884	0.30(0.29)	0.97	33715.7	11350.00
1	33412.44	98.79	0.867	0.30(0.29)	0.97	36890.0	11130.00
1	33276.69	104.84	0.845	0.30(0.29)	0.97	39816.5	12300.00
1	33183.93	108.72	0.830	0.30(0.29)	0.97	41877.4	11620.00
1	32867.27	113.56	0.813	0.30(0.29)	0.97	44077.1	12400.00
1	32111.22	122.99	0.783	0.30(0.29)	0.97	47478.7	12201.00
1	31758.16	126.06	0.776	0.30(0.29)	0.97	48292.4	10410.00
1	31342.76	130.40	0.767	0.30(0.29)	0.97	49371.7	12231.00
1	30533.53	137.79	0.751	0.30(0.29)	0.97	50924.5	10400.00
1	29212.45	147.10	0.731	0.30(0.29)	0.98	52370.9	12010.00
1	28304.95	152.39	0.719	0.30(0.29)	0.98	52633.5	10210.00
1	27735.28	156.37	0.711	0.30(0.29)	0.98	52780.3	12000.00
1	24601.19	182.32	0.658	0.30(0.29)	0.98	53393.2	10100.00
2	47.30	19.82	2.035	0.30(0.13)	0.43	30.6	12904.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18340.91	15.20	2.429	0.30(0.26)	0.87	3090.2	50400.00
2	19404.69	19.82	2.035	0.30(0.26)	0.87	4134.5	12904.00
3	19753.58	21.35	1.950	0.30(0.26)	0.87	4477.8	50110.00
4	20143.29	22.76	1.877	0.30(0.26)	0.87	4910.2	50320.00
5	20370.75	23.64	1.832	0.30(0.26)	0.87	5168.7	50240.00
6	20626.65	24.59	1.782	0.30(0.26)	0.87	5445.2	50330.00
7	20935.83	25.77	1.728	0.30(0.26)	0.88	5785.4	50100.00
8	21212.31	27.49	1.654	0.30(0.26)	0.88	6276.7	50280.00
9	21387.00	28.69	1.602	0.30(0.26)	0.88	6610.5	50300.00
10	21579.45	29.99	1.546	0.30(0.26)	0.88	6963.9	50220.00
11	22163.05	34.22	1.461	0.30(0.27)	0.89	8071.1	50260.00
12	22564.48	37.08	1.403	0.30(0.27)	0.89	8802.5	50200.00
13	22936.20	39.70	1.351	0.30(0.27)	0.90	9464.9	600.00
14	25609.57	56.80	1.108	0.30(0.28)	0.93	15481.5	40100.00
15	27092.19	64.59	1.042	0.30(0.28)	0.94	18256.0	11801.00
16	29441.61	75.35	0.982	0.30(0.29)	0.95	22786.6	11530.00

17	30772.65	84.05	0.933	0.30(0.29)	0.96	27443.4	11910.00
18	32824.88	94.07	0.884	0.30(0.29)	0.97	33746.3	11350.00
19	33430.75	98.79	0.867	0.30(0.29)	0.97	36920.6	11130.00
20	33294.45	104.84	0.845	0.30(0.29)	0.97	39847.1	12300.00
21	33201.33	108.72	0.830	0.30(0.29)	0.97	41908.0	11620.00
22	32884.23	113.56	0.813	0.30(0.29)	0.97	44107.7	12400.00
23	32127.44	122.99	0.783	0.30(0.29)	0.97	47509.3	12201.00
24	31774.21	126.06	0.776	0.30(0.29)	0.97	48323.0	10410.00
25	31358.58	130.40	0.767	0.30(0.29)	0.97	49402.3	12231.00
26	30548.95	137.79	0.751	0.30(0.29)	0.97	50955.1	10400.00
27	29227.38	147.10	0.731	0.30(0.29)	0.97	52401.5	12010.00
28	28319.60	152.39	0.719	0.30(0.29)	0.97	52664.1	10210.00
29	27749.71	156.37	0.711	0.30(0.29)	0.97	52810.9	12000.00
30	24614.31	182.32	0.658	0.30(0.29)	0.98	53423.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33430.75 Tc(MIN.) = 98.79
EFFECTIVE AREA(ACRES) = 36920.56 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53606.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 98.79
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.867
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.80	0.30	1.000	65
COMMERCIAL	B	1.20	0.30	0.100	56
COMMERCIAL	B	1.50	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	3.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.641
SUBAREA AREA(ACRES) = 6.80 SUBAREA RUNOFF(CFS) = 4.13
EFFECTIVE AREA(ACRES) = 36927.36 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53613.7 PEAK FLOW RATE(CFS) = 33430.75
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 98.79
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.867
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	3.60	0.30	1.000	69
PUBLIC PARK	B	15.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	20.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.941
SUBAREA AREA(ACRES) = 38.70 SUBAREA RUNOFF(CFS) = 20.35
EFFECTIVE AREA(ACRES) = 36966.06 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53652.4 PEAK FLOW RATE(CFS) = 33430.75
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 53652.4 TC(MIN.) = 98.79
EFFECTIVE AREA(ACRES) = 36966.06 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.969
PEAK FLOW RATE(CFS) = 33430.75

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18340.91	15.20	2.429	0.30(0.26)	0.87	3135.7	50400.00
2	19404.69	19.82	2.035	0.30(0.26)	0.87	4180.0	12904.00
3	19753.58	21.35	1.950	0.30(0.26)	0.87	4523.3	50110.00
4	20143.29	22.76	1.877	0.30(0.26)	0.87	4955.7	50320.00
5	20370.75	23.64	1.832	0.30(0.26)	0.87	5214.2	50240.00
6	20626.65	24.59	1.782	0.30(0.26)	0.87	5490.7	50330.00
7	20935.83	25.77	1.728	0.30(0.26)	0.88	5830.9	50100.00
8	21212.31	27.49	1.654	0.30(0.26)	0.88	6322.2	50280.00
9	21387.00	28.69	1.602	0.30(0.26)	0.88	6656.0	50300.00
10	21579.45	29.99	1.546	0.30(0.26)	0.88	7009.4	50220.00
11	22163.05	34.22	1.461	0.30(0.27)	0.89	8116.6	50260.00
12	22564.48	37.08	1.403	0.30(0.27)	0.89	8848.0	50200.00
13	22936.20	39.70	1.351	0.30(0.27)	0.90	9510.4	600.00
14	25609.57	56.80	1.108	0.30(0.28)	0.93	15527.0	40100.00
15	27092.19	64.59	1.042	0.30(0.28)	0.94	18301.5	11801.00
16	29441.61	75.35	0.982	0.30(0.29)	0.95	22832.1	11530.00
17	30772.65	84.05	0.933	0.30(0.29)	0.96	27488.9	11910.00
18	32824.88	94.07	0.884	0.30(0.29)	0.97	33791.8	11350.00
19	33430.75	98.79	0.867	0.30(0.29)	0.97	36966.1	11130.00
20	33294.45	104.84	0.845	0.30(0.29)	0.97	39892.6	12300.00
21	33201.33	108.72	0.830	0.30(0.29)	0.97	41953.5	11620.00
22	32884.23	113.56	0.813	0.30(0.29)	0.97	44153.2	12400.00
23	32127.44	122.99	0.783	0.30(0.29)	0.97	47554.8	12201.00
24	31774.21	126.06	0.776	0.30(0.29)	0.97	48368.5	10410.00
25	31358.58	130.40	0.767	0.30(0.29)	0.97	49447.8	12231.00
26	30548.95	137.79	0.751	0.30(0.29)	0.97	51000.6	10400.00
27	29227.38	147.10	0.731	0.30(0.29)	0.97	52447.0	12010.00
28	28319.60	152.39	0.719	0.30(0.29)	0.97	52709.6	10210.00
29	27749.71	156.37	0.711	0.30(0.29)	0.97	52856.4	12000.00
30	24614.31	182.32	0.658	0.30(0.29)	0.98	53469.3	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU25EV33.DAT
  TIME/DATE OF STUDY: 13:19 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.828
   2)   10.00;  3.154
   3)   15.00;  2.415
   4)   20.00;  2.000
   5)   25.00;  1.745
   6)   30.00;  1.533
   7)   40.00;  1.333
   8)   50.00;  1.180
   9)   60.00;  1.055
  10)   90.00;  0.886
  11)  120.00;  0.775
  12)  180.00;  0.646
  13)  360.00;  0.475
  14) 1200.00;  0.208
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   64.17   RAINFALL INTENSITY(INCH/HR) =  1.03
  EFFECTIVE AREA(ACRES) =  3069.00
  TOTAL AREA(ACRES) =  4924.40        PEAK FLOW RATE(CFS) =   2036.70
  AREA-AVERAGED Fm(INCH/HR) =   0.25  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.82
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.40
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.60      0.30     1.000    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  COMMERCIAL                 B       22.60      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2054.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.04
  AVERAGE FLOW DEPTH(FEET) =   3.40   TRAVEL TIME(MIN.) =   4.21
  Tc(MIN.) =   68.38
  SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   34.64
  EFFECTIVE AREA(ACRES) =   3114.20     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    2138.83
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.48
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.48   FLOW VELOCITY(FEET/SEC.) =  10.18
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   68.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  COMMERCIAL                 B        7.40      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
  SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   12.31
  EFFECTIVE AREA(ACRES) =   3130.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    2151.14

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   68.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    5.08
  EFFECTIVE AREA(ACRES) =   3138.60   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    2156.22
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   68.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   14.01
  EFFECTIVE AREA(ACRES) =   3160.60   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    2170.23

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   68.38
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =    9.56
  EFFECTIVE AREA(ACRES) =   3175.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    2179.79

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
```

```
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.609
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.28
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.28

********************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.496
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.15
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.69
  AVERAGE FLOW DEPTH(FEET) =   0.51   TRAVEL TIME(MIN.) =   0.34
  Tc(MIN.) =    8.98
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    3.74
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       6.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   7.29
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.
```



```
********************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.353
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.07
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.91
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   0.43
  Tc(MIN.) =    9.40
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    6.32
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =      12.92

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   8.44
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.114
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.17
```

```
  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   0.87
  Tc(MIN.) =   10.27
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =    9.12
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      21.02

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.04   FLOW VELOCITY(FEET/SEC.) =   6.47
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.008
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.73
  AVERAGE FLOW DEPTH(FEET) =   1.19   TRAVEL TIME(MIN.) =   0.71
  Tc(MIN.) =   10.99
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   15.60
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      35.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.30   FLOW VELOCITY(FEET/SEC.) =   7.07
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.900
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.80
  AVERAGE FLOW DEPTH(FEET) =   1.44   TRAVEL TIME(MIN.) =   0.73
  Tc(MIN.) =   11.72
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   25.27
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      59.66

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.56   FLOW VELOCITY(FEET/SEC.) =   8.18
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.695
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      75.95
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.47
  AVERAGE FLOW DEPTH(FEET) =   1.84   TRAVEL TIME(MIN.) =   1.38
  Tc(MIN.) =   13.10
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   32.55
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      87.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.94   FLOW VELOCITY(FEET/SEC.) =   7.75
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.573
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.56
  AVERAGE FLOW DEPTH(FEET) =   2.16   TRAVEL TIME(MIN.) =   0.83
  Tc(MIN.) =   13.93
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   37.43
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     120.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.27   FLOW VELOCITY(FEET/SEC.) =   7.79
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     134.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.59
  AVERAGE FLOW DEPTH(FEET) =   2.28   TRAVEL TIME(MIN.) =   1.01
  Tc(MIN.) =   14.94
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   27.90
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     140.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   8.68
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.94
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   62.69
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     203.16

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     210.26
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
  AVERAGE FLOW DEPTH(FEET) =   2.78   TRAVEL TIME(MIN.) =   2.61
  Tc(MIN.) =   17.56
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   14.22
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     203.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.75   FLOW VELOCITY(FEET/SEC.) =   8.96
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.203
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   37.35
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     233.61

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.930
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     246.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.07
  AVERAGE FLOW DEPTH(FEET) =   3.19   TRAVEL TIME(MIN.) =   3.82
  Tc(MIN.) =   21.37
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   26.57
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     233.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.13   FLOW VELOCITY(FEET/SEC.) =   7.94
```

```
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      233.61   21.37    1.930  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2179.79   68.38    1.008  0.30( 0.25) 0.82    3175.6   13222.00
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1738.73   21.37    1.930  0.30( 0.25) 0.84    1147.0   31100.00
      2     2281.24   68.38    1.008  0.30( 0.25) 0.83    3330.1   13222.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2281.24  Tc(MIN.) =   68.377
  EFFECTIVE AREA(ACRES) =   3330.10  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.89
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B        1.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
```



```
  "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
  NATURAL POOR COVER
  "BARREN"                   B        0.90      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2284.18
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.22
  AVERAGE FLOW DEPTH(FEET) =   4.89   TRAVEL TIME(MIN.) =   2.64
  Tc(MIN.) =   71.01
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    5.86
  EFFECTIVE AREA(ACRES) =   3339.50     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    2281.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.89   FLOW VELOCITY(FEET/SEC.) =   7.22
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13302.00 =    7532.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   71.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       13.80      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B        2.60      0.30     1.000    86
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.90      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   17.89
  EFFECTIVE AREA(ACRES) =   3367.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    2281.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   71.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
  COMMERCIAL                 B        0.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.02
  EFFECTIVE AREA(ACRES) =   3370.70   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    2281.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   71.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.10      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.80      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   12.60
  EFFECTIVE AREA(ACRES) =   3390.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    2281.24
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   71.01
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       34.60      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       11.60      0.30     1.000    79
  APARTMENTS                 B        0.40      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.80      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   47.73
  EFFECTIVE AREA(ACRES) =   3467.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    2319.85

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   71.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.993
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       46.40      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.10      0.30     0.200    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       60.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =   71.49
  EFFECTIVE AREA(ACRES) =   3581.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    2391.35

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.49
CHANNEL FLOW THRU SUBAREA(CFS) = 2391.35
FLOW VELOCITY(FEET/SEC.) = 8.39 FLOW DEPTH(FEET) = 4.49
TRAVEL TIME(MIN.) = 4.36 Tc(MIN.) = 75.37
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 4.91
EFFECTIVE AREA(ACRES) = 3589.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.20	0.30	1.000	63
COMMERCIAL	B	3.60	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 9.78
EFFECTIVE AREA(ACRES) = 3604.30 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	14.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	6.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 14.80
EFFECTIVE AREA(ACRES) = 3628.90 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.80	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.60	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	31.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 21.33
EFFECTIVE AREA(ACRES) = 3664.20 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6 PEAK FLOW RATE(CFS) = 2391.35

```
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   75.37
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.968
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 B        1.70      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
 SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    6.80
 EFFECTIVE AREA(ACRES) =   3674.70   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    2391.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   75.37
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.968
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
 NATURAL POOR COVER
 "BARREN"                   B        0.30      0.30     1.000    86
 COMMERCIAL                 B        0.20      0.30     0.100    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
 SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    7.24
 EFFECTIVE AREA(ACRES) =   3686.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    2391.35
```



```
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.20
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL POOR COVER
 "BARREN"                   B        0.20      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL POOR COVER
 "BARREN"                   B        0.30      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        1.10      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        3.50      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2393.32
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.02
 AVERAGE FLOW DEPTH(FEET) =   5.20   TRAVEL TIME(MIN.) =   2.20
 Tc(MIN.) =   77.57
 SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    3.96
 EFFECTIVE AREA(ACRES) =   3693.00     AREA-AVERAGED Fm(INCH/HR) =   0.25
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
 TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    2391.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.20

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.20   FLOW VELOCITY(FEET/SEC.) =   7.01
 LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13304.00 =   10651.45 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   77.57
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    4.19
  EFFECTIVE AREA(ACRES) =   3700.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   77.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        7.80      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        9.40      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   13.46
  EFFECTIVE AREA(ACRES) =   3722.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   77.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    2.01
  EFFECTIVE AREA(ACRES) =   3726.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.18
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.70      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2393.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.16
  AVERAGE FLOW DEPTH(FEET) =   4.18   TRAVEL TIME(MIN.) =   5.40
  Tc(MIN.) =   82.97
  SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =    5.18
  EFFECTIVE AREA(ACRES) =   3735.50     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.18   FLOW VELOCITY(FEET/SEC.) =   9.16
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.
```

```
**************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   82.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   10.25
  EFFECTIVE AREA(ACRES) =   3753.70   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   82.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       18.40      0.30     1.000    86
  NATURAL FAIR COVER
  "MEADOWS"                  B        1.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       26.60      0.30     1.000    86
  COMMERCIAL                 B        3.90      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   30.90
  EFFECTIVE AREA(ACRES) =   3806.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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



```
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   82.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       14.00      0.30     1.000    86
  COMMERCIAL                 B        4.30      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        5.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        2.70      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   16.59
  EFFECTIVE AREA(ACRES) =   3834.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   82.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =   14.67
  EFFECTIVE AREA(ACRES) =   3860.20   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   82.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    6.58
  EFFECTIVE AREA(ACRES) =   3870.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   82.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.926
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    5.12
  EFFECTIVE AREA(ACRES) =   3879.60   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    2391.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A25EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
```



```
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      985.44   13.67  0.30( 0.13) 0.43     435.7     120.00
      2      984.77   13.72  0.30( 0.13) 0.43     436.5     110.00
      3      831.39   20.84  0.30( 0.13) 0.43     504.3     100.00
      4      778.32   23.57  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1917.45   37.07    1.392  0.30( 0.26) 0.88    1696.5   31100.00
      2     2391.35   82.97    0.926  0.30( 0.25) 0.84    3879.6   13222.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      985.44   13.67    2.612  0.30( 0.13) 0.43     435.7     120.00
      2      984.77   13.72    2.604  0.30( 0.13) 0.43     436.5     110.00
      3      831.39   20.84    1.957  0.30( 0.13) 0.43     504.3     100.00
      4      778.32   23.57    1.818  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2457.64   13.67    2.612  0.30( 0.21) 0.70    1061.2     120.00
      2     2457.72   13.72    2.604  0.30( 0.21) 0.70    1064.4     110.00
      3     2450.07   20.84    1.957  0.30( 0.22) 0.72    1458.0     100.00
      4     2458.43   23.57    1.818  0.30( 0.22) 0.74    1588.7     150.00
      5     2499.10   37.07    1.392  0.30( 0.23) 0.78    2206.7   31100.00
      6     2758.16   82.97    0.926  0.30( 0.24) 0.80    4389.8   13222.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2758.16  Tc(MIN.) =   82.965
  EFFECTIVE AREA(ACRES) =   4389.80  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.18
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.10      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2763.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.58
  AVERAGE FLOW DEPTH(FEET) =   4.18   TRAVEL TIME(MIN.) =   6.94
  Tc(MIN.) =   89.91
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =    9.71
  EFFECTIVE AREA(ACRES) =   4408.20     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.17

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.17   FLOW VELOCITY(FEET/SEC.) =  10.58
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13306.00 =   18026.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
```



```
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   26.18
  EFFECTIVE AREA(ACRES) =   4457.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.42
  EFFECTIVE AREA(ACRES) =   4458.60   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.71
  EFFECTIVE AREA(ACRES) =   4459.90   AREA-AVERAGED Fm(INCH/HR) =  0.24
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    4.38
  EFFECTIVE AREA(ACRES) =   4467.50   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
  COMMERCIAL                 B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   29.51
  EFFECTIVE AREA(ACRES) =   4515.10   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
```



```
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   30.71
  EFFECTIVE AREA(ACRES) =   4573.28   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.12
  CHANNEL FLOW THRU SUBAREA(CFS) =    2758.16
  FLOW VELOCITY(FEET/SEC.) =  10.74   FLOW DEPTH(FEET) =   4.12
  TRAVEL TIME(MIN.) =   2.39   Tc(MIN.) =   92.30
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13307.00 =   19569.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.877
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        3.70      0.30     1.000    86
```

```
  COMMERCIAL                  B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    4.12
  EFFECTIVE AREA(ACRES) =   4580.98   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   92.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.877
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        3.60      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    3.17
  EFFECTIVE AREA(ACRES) =   4587.08   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.94
  CHANNEL FLOW THRU SUBAREA(CFS) =    2758.16
  FLOW VELOCITY(FEET/SEC.) =   8.62   FLOW DEPTH(FEET) =   4.94
  TRAVEL TIME(MIN.) =   1.79   Tc(MIN.) =   94.09
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13308.00 =   20494.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   94.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        5.00      0.30     1.000    65
  COMMERCIAL                  B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    5.66
  EFFECTIVE AREA(ACRES) =   4596.58   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   94.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                  B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                    B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        1.00      0.30     1.000    63
  COMMERCIAL                  B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   49.09
  EFFECTIVE AREA(ACRES) =   4672.18   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   94.09
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK               B        0.10      0.30     0.850    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"     B        0.90      0.30     1.000    79
 SCHOOL                    B        0.30      0.30     0.600    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B       13.20      0.30     1.000    65
 APARTMENTS                B        0.50      0.30     0.200    56
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"     B        0.60      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
 SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =    8.16
 EFFECTIVE AREA(ACRES) =   4687.78   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    2758.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   94.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                B       33.90      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                   B       17.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B       16.80      0.30     1.000    66
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"      B        0.60      0.30     0.200    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"     B        1.50      0.30     0.400    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"     B       10.00      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
 SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   49.92
 EFFECTIVE AREA(ACRES) =   4768.18   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    2758.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   94.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
 SCHOOL                    B        0.30      0.30     0.600    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.70      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
 SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.55
 EFFECTIVE AREA(ACRES) =   4769.18   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    2758.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   94.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                   B        0.30      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        0.50      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        0.30      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.08
 EFFECTIVE AREA(ACRES) =   4771.28   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    2758.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   94.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.871
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                   B        1.20      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        0.50      0.30     1.000    66
 PUBLIC PARK               B        1.70      0.30     0.850    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        7.20      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        1.00      0.30     1.000    69
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.978
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    6.03
  EFFECTIVE AREA(ACRES) =   4782.88   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =     6638.3       PEAK FLOW RATE(CFS) =    2758.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV29.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    18340.91   15.20  0.30( 0.26) 0.87    3135.7   50400.00
      2    19753.58   21.35  0.30( 0.26) 0.87    4523.3   50110.00
      3    20935.83   25.77  0.30( 0.26) 0.88    5830.9   50100.00
      4    21579.45   29.99  0.30( 0.26) 0.88    7009.4   50220.00
      5    22936.20   39.70  0.30( 0.27) 0.90    9510.4     600.00
      6    25609.57   56.80  0.30( 0.28) 0.93   15527.0   40100.00
      7    27092.19   64.59  0.30( 0.28) 0.94   18301.5   11801.00
      8    29441.61   75.35  0.30( 0.29) 0.95   22832.1   11530.00
      9    30772.65   84.05  0.30( 0.29) 0.96   27488.9   11910.00
     10    32824.88   94.07  0.30( 0.29) 0.97   33791.8   11350.00
     11    33430.75   98.79  0.30( 0.29) 0.97   36966.1   11130.00
     12    33294.45  104.84  0.30( 0.29) 0.97   39892.6   12300.00
     13    32884.23  113.56  0.30( 0.29) 0.97   44153.2   12400.00
     14    32127.44  122.99  0.30( 0.29) 0.97   47554.8   12201.00
     15    31358.58  130.40  0.30( 0.29) 0.97   49447.8   12231.00
     16    30548.95  137.79  0.30( 0.29) 0.97   51000.6   10400.00
     17    29227.38  147.10  0.30( 0.29) 0.97   52447.0   12010.00
     18    28319.60  152.39  0.30( 0.29) 0.97   52709.6   10210.00
     19    27749.71  156.37  0.30( 0.29) 0.97   52856.4   12000.00
     20    24614.31  182.32  0.30( 0.29) 0.98   53469.3   10100.00
    TOTAL AREA(ACRES) =    53469.3

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  12904.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    18340.91   15.20  0.30( 0.26) 0.87    3135.7   50400.00
      2    19753.58   21.35  0.30( 0.26) 0.87    4523.3   50110.00
      3    20935.83   25.77  0.30( 0.26) 0.88    5830.9   50100.00
      4    21579.45   29.99  0.30( 0.26) 0.88    7009.4   50220.00
```



```
      5    22936.20   39.70  0.30( 0.27) 0.90    9510.4     600.00
      6    25609.57   56.80  0.30( 0.28) 0.93   15527.0   40100.00
      7    27092.19   64.59  0.30( 0.28) 0.94   18301.5   11801.00
      8    29441.61   75.35  0.30( 0.29) 0.95   22832.1   11530.00
      9    30772.65   84.05  0.30( 0.29) 0.96   27488.9   11910.00
     10    32824.88   94.07  0.30( 0.29) 0.97   33791.8   11350.00
     11    33430.75   98.79  0.30( 0.29) 0.97   36966.1   11130.00
     12    33294.45  104.84  0.30( 0.29) 0.97   39892.6   12300.00
     13    32884.23  113.56  0.30( 0.29) 0.97   44153.2   12400.00
     14    32127.44  122.99  0.30( 0.29) 0.97   47554.8   12201.00
     15    31358.58  130.40  0.30( 0.29) 0.97   49447.8   12231.00
     16    30548.95  137.79  0.30( 0.29) 0.97   51000.6   10400.00
     17    29227.38  147.10  0.30( 0.29) 0.97   52447.0   12010.00
     18    28319.60  152.39  0.30( 0.29) 0.97   52709.6   10210.00
     19    27749.71  156.37  0.30( 0.29) 0.97   52856.4   12000.00
     20    24614.31  182.32  0.30( 0.29) 0.98   53469.3   10100.00
    TOTAL AREA(ACRES) =    53469.3

****************************************************************************
  FLOW PROCESS FROM NODE  12904.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    213.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.52   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.44
  CHANNEL FLOW THRU SUBAREA(CFS) =   33430.75
  FLOW VELOCITY(FEET/SEC.) =   7.20   FLOW DEPTH(FEET) =  16.44
  TRAVEL TIME(MIN.) =   3.21   Tc(MIN.) =  102.01
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13308.00 =  118087.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18340.91   19.07    2.077  0.30( 0.26) 0.87    3135.7   50400.00
      2    19753.58   25.13    1.739  0.30( 0.26) 0.87    4523.3   50110.00
      3    20935.83   29.49    1.555  0.30( 0.26) 0.88    5830.9   50100.00
      4    21579.45   33.66    1.460  0.30( 0.26) 0.88    7009.4   50220.00
      5    22936.20   43.31    1.282  0.30( 0.27) 0.90    9510.4     600.00
      6    25609.57   60.28    1.053  0.30( 0.28) 0.93   15527.0   40100.00
      7    27092.19   68.02    1.010  0.30( 0.28) 0.94   18301.5   11801.00
      8    29441.61   78.69    0.950  0.30( 0.29) 0.95   22832.1   11530.00
      9    30772.65   87.34    0.901  0.30( 0.29) 0.96   27488.9   11910.00
     10    32824.88   97.30    0.859  0.30( 0.29) 0.97   33791.8   11350.00
     11    33430.75  102.01    0.842  0.30( 0.29) 0.97   36966.1   11130.00
     12    33294.45  108.06    0.819  0.30( 0.29) 0.97   39892.6   12300.00
     13    32884.23  116.79    0.787  0.30( 0.29) 0.97   44153.2   12400.00
     14    32127.44  126.25    0.762  0.30( 0.29) 0.97   47554.8   12201.00
     15    31358.58  133.68    0.746  0.30( 0.29) 0.97   49447.8   12231.00
```

16	30548.95	141.10	0.730	0.30(0.29)	0.97	51000.6	10400.00
17	29227.38	150.45	0.710	0.30(0.29)	0.97	52447.0	12010.00
18	28319.60	155.77	0.698	0.30(0.29)	0.97	52709.6	10210.00
19	27749.71	159.77	0.689	0.30(0.29)	0.97	52856.4	12000.00
20	24614.31	185.85	0.640	0.30(0.29)	0.98	53469.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2457.64	25.20	1.736	0.30(0.21)	0.72	1454.3	120.00
2	2457.72	25.25	1.734	0.30(0.21)	0.72	1457.5	110.00
3	2450.07	32.39	1.485	0.30(0.22)	0.73	1851.0	100.00
4	2458.43	35.11	1.431	0.30(0.22)	0.74	1981.8	150.00
5	2499.10	48.56	1.202	0.30(0.23)	0.78	2599.8	31100.00
6	2758.16	94.09	0.871	0.30(0.24)	0.79	4782.9	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20616.84	19.07	2.077	0.30(0.25)	0.83	4235.9	50400.00
2	22209.07	25.13	1.739	0.30(0.25)	0.83	5973.4	50110.00
3	22231.25	25.20	1.736	0.30(0.25)	0.83	5999.8	120.00
4	22244.92	25.25	1.734	0.30(0.25)	0.83	6018.0	110.00
5	23389.01	29.49	1.555	0.30(0.25)	0.84	7521.7	50100.00
6	23833.72	32.39	1.485	0.30(0.25)	0.85	8501.9	100.00
7	24033.44	33.66	1.460	0.30(0.26)	0.85	8921.7	50220.00
8	24240.53	35.11	1.431	0.30(0.26)	0.85	9364.7	150.00
9	25419.43	43.31	1.282	0.30(0.26)	0.87	11869.0	600.00
10	26262.19	48.56	1.202	0.30(0.26)	0.88	13971.1	31100.00
11	28175.37	60.28	1.053	0.30(0.27)	0.91	18688.8	40100.00
12	29701.99	68.02	1.010	0.30(0.28)	0.92	21834.2	11801.00
13	32112.15	78.69	0.950	0.30(0.28)	0.93	26876.6	11530.00
14	33492.41	87.34	0.901	0.30(0.28)	0.94	31948.1	11910.00
15	34922.05	94.09	0.871	0.30(0.28)	0.94	36544.6	13222.00
16	35531.30	97.30	0.859	0.30(0.28)	0.95	38574.7	11350.00
17	36061.18	102.01	0.842	0.30(0.28)	0.95	41748.9	11130.00
18	35827.20	108.06	0.819	0.30(0.29)	0.95	44675.5	12300.00
19	35276.19	116.79	0.787	0.30(0.29)	0.96	48936.1	12400.00
20	34409.02	126.25	0.762	0.30(0.29)	0.96	52337.7	12201.00
21	33570.50	133.68	0.746	0.30(0.29)	0.96	54230.7	12231.00
22	32691.30	141.10	0.730	0.30(0.29)	0.96	55783.5	10400.00
23	31282.07	150.45	0.710	0.30(0.29)	0.96	57229.9	12010.00
24	30324.40	155.77	0.698	0.30(0.29)	0.96	57492.5	10210.00
25	29716.94	159.77	0.689	0.30(0.29)	0.96	57639.3	12000.00
26	26367.69	185.85	0.640	0.30(0.29)	0.96	58252.2	10100.00

TOTAL AREA(ACRES) = 60107.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36061.18 Tc(MIN.) = 102.009
EFFECTIVE AREA(ACRES) = 41748.94 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 60107.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60107.6 TC(MIN.) = 102.01

EFFECTIVE AREA(ACRES) = 41748.94 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.949
PEAK FLOW RATE(CFS) = 36061.18

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20616.84	19.07	2.077	0.30(0.25)	0.83	4235.9	50400.00
2	22209.07	25.13	1.739	0.30(0.25)	0.83	5973.4	50110.00
3	22231.25	25.20	1.736	0.30(0.25)	0.83	5999.8	120.00
4	22244.92	25.25	1.734	0.30(0.25)	0.83	6018.0	110.00
5	23389.01	29.49	1.555	0.30(0.25)	0.84	7521.7	50100.00
6	23833.72	32.39	1.485	0.30(0.25)	0.85	8501.9	100.00
7	24033.44	33.66	1.460	0.30(0.26)	0.85	8921.7	50220.00
8	24240.53	35.11	1.431	0.30(0.26)	0.85	9364.7	150.00
9	25419.43	43.31	1.282	0.30(0.26)	0.87	11869.0	600.00
10	26262.19	48.56	1.202	0.30(0.26)	0.88	13971.1	31100.00
11	28175.37	60.28	1.053	0.30(0.27)	0.91	18688.8	40100.00
12	29701.99	68.02	1.010	0.30(0.28)	0.92	21834.2	11801.00
13	32112.15	78.69	0.950	0.30(0.28)	0.93	26876.6	11530.00
14	33492.41	87.34	0.901	0.30(0.28)	0.94	31948.1	11910.00
15	34922.05	94.09	0.871	0.30(0.28)	0.94	36544.6	13222.00
16	35531.30	97.30	0.859	0.30(0.28)	0.95	38574.7	11350.00
17	36061.18	102.01	0.842	0.30(0.28)	0.95	41748.9	11130.00
18	35827.20	108.06	0.819	0.30(0.29)	0.95	44675.5	12300.00
19	35276.19	116.79	0.787	0.30(0.29)	0.96	48936.1	12400.00
20	34409.02	126.25	0.762	0.30(0.29)	0.96	52337.7	12201.00
21	33570.50	133.68	0.746	0.30(0.29)	0.96	54230.7	12231.00
22	32691.30	141.10	0.730	0.30(0.29)	0.96	55783.5	10400.00
23	31282.07	150.45	0.710	0.30(0.29)	0.96	57229.9	12010.00
24	30324.40	155.77	0.698	0.30(0.29)	0.96	57492.5	10210.00
25	29716.94	159.77	0.689	0.30(0.29)	0.96	57639.3	12000.00
26	26367.69	185.85	0.640	0.30(0.29)	0.96	58252.2	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 134 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RU25EV34.DAT
  TIME/DATE OF STUDY: 00:10 08/11/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.808
   2)   10.00;  3.142
   3)   15.00;  2.408
   4)   20.00;  1.996
   5)   25.00;  1.741
   6)   30.00;  1.531
   7)   40.00;  1.330
   8)   50.00;  1.178
   9)   60.00;  1.052
  10)   90.00;  0.883
  11)  120.00;  0.772
  12)  180.00;  0.642
  13)  360.00;  0.472
  14) 1200.00;  0.207
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20616.84   19.07  0.30( 0.25) 0.83    4235.9   50400.00
      2    23389.01   29.49  0.30( 0.25) 0.84    7521.7   50100.00
      3    24240.53   35.11  0.30( 0.26) 0.85    9364.7     150.00
      4    25419.43   43.31  0.30( 0.26) 0.87   11869.0     600.00
      5    26262.19   48.56  0.30( 0.26) 0.88   13971.1   31100.00
      6    28175.37   60.28  0.30( 0.27) 0.91   18688.8   40100.00
      7    29701.99   68.02  0.30( 0.28) 0.92   21834.2   11801.00
      8    32112.15   78.69  0.30( 0.28) 0.93   26876.6   11530.00
      9    33492.41   87.34  0.30( 0.28) 0.94   31948.1   11910.00
     10    35531.30   97.30  0.30( 0.28) 0.95   38574.7   11350.00
     11    36061.18  102.01  0.30( 0.28) 0.95   41748.9   11130.00
     12    35827.20  108.06  0.30( 0.29) 0.95   44675.5   12300.00
     13    35276.19  116.79  0.30( 0.29) 0.96   48936.1   12400.00
     14    34409.02  126.25  0.30( 0.29) 0.96   52337.7   12201.00
     15    33570.50  133.68  0.30( 0.29) 0.96   54230.7   12231.00
     16    32691.30  141.10  0.30( 0.29) 0.96   55783.5   10400.00
     17    31282.07  150.45  0.30( 0.29) 0.96   57229.9   12010.00
     18    30324.40  155.77  0.30( 0.29) 0.96   57492.5   10210.00
     19    29716.94  159.77  0.30( 0.29) 0.96   57639.3   12000.00
     20    26367.69  185.85  0.30( 0.29) 0.96   58252.2   10100.00
   TOTAL AREA(ACRES) =    58252.2

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20616.84   19.07  0.30( 0.25) 0.83    4235.9   50400.00
      2    23389.01   29.49  0.30( 0.25) 0.84    7521.7   50100.00
      3    24240.53   35.11  0.30( 0.26) 0.85    9364.7     150.00
      4    25419.43   43.31  0.30( 0.26) 0.87   11869.0     600.00
      5    26262.19   48.56  0.30( 0.26) 0.88   13971.1   31100.00
      6    28175.37   60.28  0.30( 0.27) 0.91   18688.8   40100.00
      7    29701.99   68.02  0.30( 0.28) 0.92   21834.2   11801.00
      8    32112.15   78.69  0.30( 0.28) 0.93   26876.6   11530.00
      9    33492.41   87.34  0.30( 0.28) 0.94   31948.1   11910.00
     10    35531.30   97.30  0.30( 0.28) 0.95   38574.7   11350.00
     11    36061.18  102.01  0.30( 0.28) 0.95   41748.9   11130.00
     12    35827.20  108.06  0.30( 0.29) 0.95   44675.5   12300.00
     13    35276.19  116.79  0.30( 0.29) 0.96   48936.1   12400.00
```

```
    14    34409.02  126.25  0.30( 0.29) 0.96   52337.7   12201.00
    15    33570.50  133.68  0.30( 0.29) 0.96   54230.7   12231.00
    16    32691.30  141.10  0.30( 0.29) 0.96   55783.5   10400.00
    17    31282.07  150.45  0.30( 0.29) 0.96   57229.9   12010.00
    18    30324.40  155.77  0.30( 0.29) 0.96   57492.5   10210.00
    19    29716.94  159.77  0.30( 0.29) 0.96   57639.3   12000.00
    20    26367.69  185.85  0.30( 0.29) 0.96   58252.2   10100.00
   TOTAL AREA(ACRES) =     58252.2

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.14
  CHANNEL FLOW THRU SUBAREA(CFS) =   36061.18
  FLOW VELOCITY(FEET/SEC.) =  14.18   FLOW DEPTH(FEET) =  10.14
  TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =  102.74
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P505XX25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     224.31   17.58  0.30( 0.29) 0.96     146.4   50500.00
    TOTAL AREA(ACRES) =      146.4

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20616.84   19.95    2.000  0.30( 0.25) 0.83    4235.9   50400.00
      2    23389.01   30.33    1.524  0.30( 0.25) 0.84    7521.7   50100.00
      3    24240.53   35.94    1.412  0.30( 0.26) 0.85    9364.7     150.00
      4    25419.43   44.13    1.267  0.30( 0.26) 0.87   11869.0     600.00
      5    26262.19   49.37    1.188  0.30( 0.26) 0.88   13971.1   31100.00
      6    28175.37   61.08    1.046  0.30( 0.27) 0.91   18688.8   40100.00
      7    29701.99   68.80    1.002  0.30( 0.28) 0.92   21834.2   11801.00
      8    32112.15   79.45    0.942  0.30( 0.28) 0.93   26876.6   11530.00
      9    33492.41   88.09    0.894  0.30( 0.28) 0.94   31948.1   11910.00
     10    35531.30   98.04    0.853  0.30( 0.28) 0.95   38574.7   11350.00
     11    36061.18  102.74    0.836  0.30( 0.28) 0.95   41748.9   11130.00
     12    35827.20  108.80    0.813  0.30( 0.29) 0.95   44675.5   12300.00
```



```
    13    35276.19  117.53    0.781  0.30( 0.29) 0.96   48936.1   12400.00
    14    34409.02  126.99    0.757  0.30( 0.29) 0.96   52337.7   12201.00
    15    33570.50  134.43    0.741  0.30( 0.29) 0.96   54230.7   12231.00
    16    32691.30  141.85    0.725  0.30( 0.29) 0.96   55783.5   10400.00
    17    31282.07  151.21    0.704  0.30( 0.29) 0.96   57229.9   12010.00
    18    30324.40  156.54    0.693  0.30( 0.29) 0.96   57492.5   10210.00
    19    29716.94  160.55    0.684  0.30( 0.29) 0.96   57639.3   12000.00
    20    26367.69  186.66    0.636  0.30( 0.29) 0.96   58252.2   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     224.31   17.58    2.196  0.30( 0.29) 0.96     146.4   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    5416.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20417.55   17.58    2.196  0.30( 0.25) 0.84    3879.0   50500.00
      2    20818.19   19.95    2.000  0.30( 0.25) 0.83    4382.3   50400.00
      3    23534.40   30.33    1.524  0.30( 0.25) 0.84    7668.1   50100.00
      4    24372.67   35.94    1.412  0.30( 0.26) 0.86    9511.1     150.00
      5    25534.60   44.13    1.267  0.30( 0.26) 0.87   12015.4     600.00
      6    26367.99   49.37    1.188  0.30( 0.27) 0.88   14117.5   31100.00
      7    28264.52   61.08    1.046  0.30( 0.27) 0.91   18835.2   40100.00
      8    29786.03   68.80    1.002  0.30( 0.28) 0.92   21980.6   11801.00
      9    32189.14   79.45    0.942  0.30( 0.28) 0.93   27023.0   11530.00
     10    33563.67   88.09    0.894  0.30( 0.28) 0.94   32094.5   11910.00
     11    35597.80   98.04    0.853  0.30( 0.28) 0.95   38721.1   11350.00
     12    36125.64  102.74    0.836  0.30( 0.28) 0.95   41895.3   11130.00
     13    35889.02  108.80    0.813  0.30( 0.29) 0.95   44821.9   12300.00
     14    35334.22  117.53    0.781  0.30( 0.29) 0.96   49082.5   12400.00
     15    34464.20  126.99    0.757  0.30( 0.29) 0.96   52484.1   12201.00
     16    33623.78  134.43    0.741  0.30( 0.29) 0.96   54377.1   12231.00
     17    32742.69  141.85    0.725  0.30( 0.29) 0.96   55929.9   10400.00
     18    31331.07  151.21    0.704  0.30( 0.29) 0.96   57376.3   12010.00
     19    30372.04  156.54    0.693  0.30( 0.29) 0.96   57638.9   10210.00
     20    29763.56  160.55    0.684  0.30( 0.29) 0.96   57785.7   12000.00
     21    26408.62  186.66    0.636  0.30( 0.29) 0.96   58398.6   10100.00
    TOTAL AREA(ACRES) =     58398.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    36125.64  Tc(MIN.) =  102.741
  EFFECTIVE AREA(ACRES) =  41895.34  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58398.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.01
  CHANNEL FLOW THRU SUBAREA(CFS) =   36125.64
  FLOW VELOCITY(FEET/SEC.) =  14.43   FLOW DEPTH(FEET) =  10.01
  TRAVEL TIME(MIN.) =   0.46   Tc(MIN.) =  103.20
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P506XX25.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       73.67   18.28  0.30( 0.29) 0.97      49.5   50600.00
    TOTAL AREA(ACRES) =       49.5

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13404.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20417.55   18.13    2.150  0.30( 0.25) 0.84    3879.0   50500.00
      2    20818.19   20.50    1.971  0.30( 0.25) 0.83    4382.3   50400.00
      3    23534.40   30.86    1.514  0.30( 0.25) 0.84    7668.1   50100.00
      4    24372.67   36.46    1.401  0.30( 0.26) 0.86    9511.1     150.00
      5    25534.60   44.64    1.259  0.30( 0.26) 0.87   12015.4     600.00
      6    26367.99   49.88    1.180  0.30( 0.27) 0.88   14117.5   31100.00
      7    28264.52   61.57    1.043  0.30( 0.27) 0.91   18835.2   40100.00
      8    29786.03   69.29    1.000  0.30( 0.28) 0.92   21980.6   11801.00
      9    32189.14   79.93    0.940  0.30( 0.28) 0.93   27023.0   11530.00
     10    33563.67   88.56    0.891  0.30( 0.28) 0.94   32094.5   11910.00
     11    35597.80   98.49    0.852  0.30( 0.28) 0.95   38721.1   11350.00
     12    36125.64  103.20    0.834  0.30( 0.28) 0.95   41895.3   11130.00
     13    35889.02  109.25    0.812  0.30( 0.29) 0.95   44821.9   12300.00
     14    35334.22  117.99    0.779  0.30( 0.29) 0.96   49082.5   12400.00
     15    34464.20  127.45    0.756  0.30( 0.29) 0.96   52484.1   12201.00
     16    33623.78  134.89    0.740  0.30( 0.29) 0.96   54377.1   12231.00
     17    32742.69  142.32    0.724  0.30( 0.29) 0.96   55929.9   10400.00
     18    31331.07  151.69    0.703  0.30( 0.29) 0.96   57376.3   12010.00
     19    30372.04  157.03    0.692  0.30( 0.29) 0.96   57638.9   10210.00
     20    29763.56  161.04    0.683  0.30( 0.29) 0.96   57785.7   12000.00
     21    26408.62  187.16    0.635  0.30( 0.29) 0.96   58398.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1       73.67   18.28    2.137  0.30( 0.29) 0.97      49.5   50600.00
  LONGEST FLOWPATH FROM NODE  50600.00 TO NODE  13404.00 =    4378.00 FEET.

  ** PEAK FLOW RATE TABLE **
```



```
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20491.10   18.13    2.150  0.30( 0.25) 0.84    3928.1   50500.00
      2    20517.61   18.28    2.137  0.30( 0.25) 0.84    3961.7   50600.00
      3    20885.22   20.50    1.971  0.30( 0.25) 0.84    4431.8   50400.00
      4    23583.21   30.86    1.514  0.30( 0.25) 0.84    7717.6   50100.00
      5    24416.99   36.46    1.401  0.30( 0.26) 0.86    9560.6     150.00
      6    25573.26   44.64    1.259  0.30( 0.26) 0.87   12064.9     600.00
      7    26403.48   49.88    1.180  0.30( 0.27) 0.88   14167.0   31100.00
      8    28294.57   61.57    1.043  0.30( 0.27) 0.91   18884.7   40100.00
      9    29814.35   69.29    1.000  0.30( 0.28) 0.92   22030.1   11801.00
     10    32215.06   79.93    0.940  0.30( 0.28) 0.93   27072.5   11530.00
     11    33587.65   88.56    0.891  0.30( 0.28) 0.94   32144.0   11910.00
     12    35620.21   98.49    0.852  0.30( 0.28) 0.95   38770.6   11350.00
     13    36147.35  103.20    0.834  0.30( 0.28) 0.95   41944.8   11130.00
     14    35909.84  109.25    0.812  0.30( 0.29) 0.95   44871.4   12300.00
     15    35353.75  117.99    0.779  0.30( 0.29) 0.96   49132.0   12400.00
     16    34482.79  127.45    0.756  0.30( 0.29) 0.96   52533.6   12201.00
     17    33641.73  134.89    0.740  0.30( 0.29) 0.96   54426.6   12231.00
     18    32759.99  142.32    0.724  0.30( 0.29) 0.96   55979.4   10400.00
     19    31347.57  151.69    0.703  0.30( 0.29) 0.96   57425.8   12010.00
     20    30388.08  157.03    0.692  0.30( 0.29) 0.96   57688.4   10210.00
     21    29779.25  161.04    0.683  0.30( 0.29) 0.96   57835.2   12000.00
     22    26422.40  187.16    0.635  0.30( 0.29) 0.96   58448.1   10100.00
   TOTAL AREA(ACRES) =     58448.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    36147.35  Tc(MIN.) =  103.198
  EFFECTIVE AREA(ACRES) =  41944.84  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58448.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13404.00 =  119106.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13404.00 TO NODE  13406.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    207.00  DOWNSTREAM(FEET) =    195.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1601.97   CHANNEL SLOPE =  0.0075
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.96
  CHANNEL FLOW THRU SUBAREA(CFS) =   36147.35
  FLOW VELOCITY(FEET/SEC.) =  16.48   FLOW DEPTH(FEET) =   8.96
  TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =  104.82
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13406.00 =  120708.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  104.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.828
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.60      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.10      SUBAREA RUNOFF(CFS) =    9.55
  EFFECTIVE AREA(ACRES) =  41964.94   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58468.2       PEAK FLOW RATE(CFS) =   36147.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  104.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.828
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        2.00      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       12.50      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.40      SUBAREA RUNOFF(CFS) =    9.70
  EFFECTIVE AREA(ACRES) =  41985.34   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58488.6       PEAK FLOW RATE(CFS) =   36147.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.89
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.818
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        7.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.30      0.30     1.000    65
  COMMERCIAL                B        0.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.40      0.30     1.000    66
  COMMERCIAL                B        0.30      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   36150.32
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.65
  AVERAGE FLOW DEPTH(FEET) =   9.89   TRAVEL TIME(MIN.) =   2.80
  Tc(MIN.) =  107.62
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    5.95
  EFFECTIVE AREA(ACRES) =  41997.73     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =    58501.0         PEAK FLOW RATE(CFS) =   36147.35
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.89   FLOW VELOCITY(FEET/SEC.) =  14.65
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P25EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      676.18    9.97  0.30( 0.11) 0.38     243.5     429.00
      2      719.57   11.48  0.30( 0.11) 0.38     280.3     425.00
      3      729.64   11.90  0.30( 0.11) 0.38     290.5     400.00
      4      756.99   13.36  0.30( 0.11) 0.38     326.6     300.00
      5      801.01   18.55  0.30( 0.11) 0.38     439.8     210.00
      6      788.68   20.66  0.30( 0.11) 0.38     466.8     410.00
      7      782.25   21.72  0.30( 0.11) 0.38     480.1     200.00
      8      780.36   22.29  0.30( 0.11) 0.38     486.6     230.00
      9      762.79   23.40  0.30( 0.11) 0.37     491.2     220.50
    TOTAL AREA(ACRES) =      491.2

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

```
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    20491.10   23.47    1.819  0.30( 0.25) 0.84    3981.0   50500.00
     2    20517.61   23.62    1.811  0.30( 0.25) 0.84    4014.6   50600.00
     3    20885.22   25.80    1.707  0.30( 0.25) 0.84    4484.7   50400.00
     4    23583.21   35.95    1.411  0.30( 0.25) 0.85    7770.5   50100.00
     5    24416.99   41.49    1.307  0.30( 0.26) 0.86    9613.5     150.00
     6    25573.26   49.60    1.184  0.30( 0.26) 0.87   12117.8     600.00
     7    26403.48   54.78    1.118  0.30( 0.27) 0.88   14219.9   31100.00
     8    28294.57   66.36    1.016  0.30( 0.27) 0.91   18937.6   40100.00
     9    29814.35   73.99    0.973  0.30( 0.28) 0.92   22083.0   11801.00
    10    32215.06   84.51    0.914  0.30( 0.28) 0.93   27125.4   11530.00
    11    33587.65   93.09    0.872  0.30( 0.28) 0.94   32196.9   11910.00
    12    35620.21  102.93    0.835  0.30( 0.28) 0.95   38823.5   11350.00
    13    36147.35  107.62    0.818  0.30( 0.28) 0.95   41997.7   11130.00
    14    35909.84  113.68    0.795  0.30( 0.29) 0.95   44924.3   12300.00
    15    35353.75  122.44    0.767  0.30( 0.29) 0.96   49184.9   12400.00
    16    34482.79  131.94    0.746  0.30( 0.29) 0.96   52586.5   12201.00
    17    33641.73  139.42    0.730  0.30( 0.29) 0.96   54479.5   12231.00
    18    32759.99  146.89    0.714  0.30( 0.29) 0.96   56032.2   10400.00
    19    31347.57  156.32    0.693  0.30( 0.29) 0.96   57478.7   12010.00
    20    30388.08  161.70    0.682  0.30( 0.29) 0.96   57741.2   10210.00
    21    29779.25  165.75    0.673  0.30( 0.29) 0.96   57888.1   12000.00
    22    26422.40  192.06    0.631  0.30( 0.29) 0.96   58501.0   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      676.18    9.97    3.154  0.30( 0.11) 0.38     243.5     429.00
     2      719.57   11.48    2.925  0.30( 0.11) 0.38     280.3     425.00
     3      729.64   11.90    2.863  0.30( 0.11) 0.38     290.5     400.00
     4      756.99   13.36    2.648  0.30( 0.11) 0.38     326.6     300.00
     5      801.01   18.55    2.115  0.30( 0.11) 0.38     439.8     210.00
     6      788.68   20.66    1.962  0.30( 0.11) 0.38     466.8     410.00
     7      782.25   21.72    1.908  0.30( 0.11) 0.38     480.1     200.00
     8      780.36   22.29    1.879  0.30( 0.11) 0.38     486.6     230.00
     9      762.79   23.40    1.823  0.30( 0.11) 0.37     491.2     220.50
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13408.00 =   11903.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    16785.41    9.97    3.154  0.30( 0.23) 0.78    1934.1     429.00
     2    17812.80   11.48    2.925  0.30( 0.23) 0.78    2227.5     425.00
     3    18039.62   11.90    2.863  0.30( 0.23) 0.78    2309.0     400.00
     4    18598.01   13.36    2.648  0.30( 0.23) 0.78    2593.9     300.00
     5    20060.79   18.55    2.115  0.30( 0.23) 0.78    3587.0     210.00
     6    20477.79   20.66    1.962  0.30( 0.24) 0.78    3972.3     410.00
     7    20826.54   21.72    1.908  0.30( 0.24) 0.79    4165.1     200.00
     8    20988.53   22.29    1.879  0.30( 0.24) 0.79    4267.6     230.00
     9    21240.13   23.40    1.823  0.30( 0.24) 0.79    4461.0     220.50
```



```
    10    21252.39   23.47    1.819  0.30( 0.24) 0.79    4472.2   50500.00
    11    21275.42   23.62    1.811  0.30( 0.24) 0.79    4505.8   50600.00
    12    21596.65   25.80    1.707  0.30( 0.24) 0.79    4975.9   50400.00
    13    24162.64   35.95    1.411  0.30( 0.25) 0.82    8261.7   50100.00
    14    24949.96   41.49    1.307  0.30( 0.25) 0.83   10104.7     150.00
    15    26051.27   49.60    1.184  0.30( 0.26) 0.85   12609.0     600.00
    16    26851.89   54.78    1.118  0.30( 0.26) 0.87   14711.1   31100.00
    17    28697.66   66.36    1.016  0.30( 0.27) 0.90   19428.8   40100.00
    18    30198.27   73.99    0.973  0.30( 0.27) 0.91   22574.2   11801.00
    19    32572.54   84.51    0.914  0.30( 0.28) 0.92   27616.6   11530.00
    20    33926.26   93.09    0.872  0.30( 0.28) 0.93   32688.1   11910.00
    21    35942.56  102.93    0.835  0.30( 0.28) 0.94   39314.7   11350.00
    22    36461.98  107.62    0.818  0.30( 0.28) 0.94   42488.9   11130.00
    23    36214.46  113.68    0.795  0.30( 0.28) 0.95   45415.5   12300.00
    24    35645.59  122.44    0.767  0.30( 0.28) 0.95   49676.1   12400.00
    25    34765.44  131.94    0.746  0.30( 0.29) 0.95   53077.7   12201.00
    26    33917.16  139.42    0.730  0.30( 0.29) 0.95   54970.7   12231.00
    27    33028.20  146.89    0.714  0.30( 0.29) 0.95   56523.4   10400.00
    28    31606.66  156.32    0.693  0.30( 0.29) 0.95   57969.9   12010.00
    29    30641.97  161.70    0.682  0.30( 0.29) 0.95   58232.4   10210.00
    30    30029.23  165.75    0.673  0.30( 0.29) 0.96   58379.3   12000.00
    31    26653.53  192.06    0.631  0.30( 0.29) 0.96   58992.2   10100.00
   TOTAL AREA(ACRES) =     58992.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    36461.98  Tc(MIN.) =  107.615
  EFFECTIVE AREA(ACRES) =  42488.93  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =    58992.2
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P507XX25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      293.66   22.81  0.30( 0.30) 0.99     231.4   50700.00
    TOTAL AREA(ACRES) =      231.4

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	16785.41	9.97	3.154	0.30(0.23)	0.78	1934.1	429.00
2	17812.80	11.48	2.925	0.30(0.23)	0.78	2227.5	425.00
3	18039.62	11.90	2.863	0.30(0.23)	0.78	2309.0	400.00
4	18598.01	13.36	2.648	0.30(0.23)	0.78	2593.9	300.00
5	20060.79	18.55	2.115	0.30(0.23)	0.78	3587.0	210.00
6	20477.79	20.66	1.962	0.30(0.24)	0.78	3972.3	410.00
7	20826.54	21.72	1.908	0.30(0.24)	0.79	4165.1	200.00
8	20988.53	22.29	1.879	0.30(0.24)	0.79	4267.6	230.00
9	21240.13	23.40	1.823	0.30(0.24)	0.79	4461.0	220.50
10	21252.39	23.47	1.819	0.30(0.24)	0.79	4472.2	50500.00
11	21275.42	23.62	1.811	0.30(0.24)	0.79	4505.8	50600.00
12	21596.65	25.80	1.707	0.30(0.24)	0.79	4975.9	50400.00
13	24162.64	35.95	1.411	0.30(0.25)	0.82	8261.7	50100.00
14	24949.96	41.49	1.307	0.30(0.25)	0.83	10104.7	150.00
15	26051.27	49.60	1.184	0.30(0.26)	0.85	12609.0	600.00
16	26851.89	54.78	1.118	0.30(0.26)	0.87	14711.1	31100.00
17	28697.66	66.36	1.016	0.30(0.27)	0.90	19428.8	40100.00
18	30198.27	73.99	0.973	0.30(0.27)	0.91	22574.2	11801.00
19	32572.54	84.51	0.914	0.30(0.28)	0.92	27616.6	11530.00
20	33926.26	93.09	0.872	0.30(0.28)	0.93	32688.1	11910.00
21	35942.56	102.93	0.835	0.30(0.28)	0.94	39314.7	11350.00
22	36461.98	107.62	0.818	0.30(0.28)	0.94	42488.9	11130.00
23	36214.46	113.68	0.795	0.30(0.28)	0.95	45415.5	12300.00
24	35645.59	122.44	0.767	0.30(0.28)	0.95	49676.1	12400.00
25	34765.44	131.94	0.746	0.30(0.29)	0.95	53077.7	12201.00
26	33917.16	139.42	0.730	0.30(0.29)	0.95	54970.7	12231.00
27	33028.20	146.89	0.714	0.30(0.29)	0.95	56523.4	10400.00
28	31606.66	156.32	0.693	0.30(0.29)	0.95	57969.9	12010.00
29	30641.97	161.70	0.682	0.30(0.29)	0.95	58232.4	10210.00
30	30029.23	165.75	0.673	0.30(0.29)	0.96	58379.3	12000.00
31	26653.53	192.06	0.631	0.30(0.29)	0.96	58992.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	293.66	22.81	1.853	0.30(0.30)	0.99	231.4	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7683.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17020.96	9.97	3.154	0.30(0.24)	0.79	2035.2	429.00
2	18062.40	11.48	2.925	0.30(0.24)	0.79	2343.9	425.00
3	18292.28	11.90	2.863	0.30(0.24)	0.79	2429.7	400.00
4	18858.02	13.36	2.648	0.30(0.24)	0.79	2729.5	300.00
5	20339.96	18.55	2.115	0.30(0.24)	0.79	3775.2	210.00
6	20762.54	20.66	1.962	0.30(0.24)	0.80	4182.0	410.00
7	21116.18	21.72	1.908	0.30(0.24)	0.80	4385.5	200.00
8	21280.39	22.29	1.879	0.30(0.24)	0.80	4493.8	230.00
9	21399.56	22.81	1.853	0.30(0.24)	0.80	4589.2	50700.00
10	21528.08	23.40	1.823	0.30(0.24)	0.80	4692.4	220.50
11	21539.71	23.47	1.819	0.30(0.24)	0.80	4703.6	50500.00
12	21561.27	23.62	1.811	0.30(0.24)	0.80	4737.2	50600.00
13	21862.88	25.80	1.707	0.30(0.24)	0.80	5207.3	50400.00
14	24373.03	35.95	1.411	0.30(0.25)	0.82	8493.1	50100.00
15	25140.70	41.49	1.307	0.30(0.25)	0.84	10336.1	150.00
16	26218.76	49.60	1.184	0.30(0.26)	0.85	12840.4	600.00

17	27006.86	54.78	1.118	0.30(0.26)	0.87	14942.5	31100.00
18	28833.46	66.36	1.016	0.30(0.27)	0.90	19660.2	40100.00
19	30325.96	73.99	0.973	0.30(0.27)	0.91	22805.6	11801.00
20	32689.05	84.51	0.914	0.30(0.28)	0.92	27848.0	11530.00
21	34034.78	93.09	0.872	0.30(0.28)	0.93	32919.5	11910.00
22	36044.21	102.93	0.835	0.30(0.28)	0.94	39546.1	11350.00
23	36560.36	107.62	0.818	0.30(0.28)	0.94	42720.3	11130.00
24	36308.60	113.68	0.795	0.30(0.28)	0.95	45646.9	12300.00
25	35734.32	122.44	0.767	0.30(0.28)	0.95	49907.5	12400.00
26	34850.29	131.94	0.746	0.30(0.29)	0.95	53309.1	12201.00
27	33998.95	139.42	0.730	0.30(0.29)	0.95	55202.1	12231.00
28	33106.94	146.89	0.714	0.30(0.29)	0.95	56754.8	10400.00
29	31681.54	156.32	0.693	0.30(0.29)	0.95	58201.3	12010.00
30	30714.65	161.70	0.682	0.30(0.29)	0.96	58463.8	10210.00
31	30100.25	165.75	0.673	0.30(0.29)	0.96	58610.7	12000.00
32	26716.58	192.06	0.631	0.30(0.29)	0.96	59223.6	10100.00

TOTAL AREA(ACRES) = 59223.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36560.36 Tc(MIN.) = 107.615
EFFECTIVE AREA(ACRES) = 42720.33 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59223.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.23
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.813
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	2.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36561.12
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.71
AVERAGE FLOW DEPTH(FEET) = 11.23 TRAVEL TIME(MIN.) = 1.25
Tc(MIN.) = 108.86
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 1.52
EFFECTIVE AREA(ACRES) = 42723.63 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59226.9 PEAK FLOW RATE(CFS) = 36560.36
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.23 FLOW VELOCITY(FEET/SEC.) = 12.71
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124119.34 FEET.

****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==

****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==
PEAK FLOWRATE TABLE FILE NAME: RU25EV36.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	28.56	0.30(0.27)	0.90	1467.2	110.00
2	2209.70	30.95	0.30(0.27)	0.90	1632.7	100.00
3	2208.11	32.23	0.30(0.27)	0.90	1711.6	100.00
4	2242.46	35.30	0.30(0.27)	0.91	1886.6	130.00
5	2335.95	48.91	0.30(0.28)	0.93	2627.1	20100.00
6	2291.36	54.60	0.30(0.28)	0.93	2814.2	13600.00
7	2090.26	91.42	0.30(0.28)	0.93	3793.8	13510.00
8	1979.94	100.93	0.30(0.28)	0.93	3859.7	13500.00

TOTAL AREA(ACRES) = 3859.7

****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17020.96	11.57	2.911	0.30(0.24)	0.79	2038.5	429.00
2	18062.40	13.05	2.694	0.30(0.24)	0.79	2347.2	425.00
3	18292.28	13.46	2.633	0.30(0.24)	0.79	2433.0	400.00
4	18858.02	14.92	2.420	0.30(0.24)	0.79	2732.8	300.00
5	20339.96	20.06	1.993	0.30(0.24)	0.79	3778.5	210.00
6	20762.54	22.17	1.886	0.30(0.24)	0.80	4185.3	410.00
7	21116.18	23.22	1.832	0.30(0.24)	0.80	4388.8	200.00
8	21280.39	23.78	1.803	0.30(0.24)	0.80	4497.1	230.00
9	21399.56	24.29	1.777	0.30(0.24)	0.80	4592.5	50700.00
10	21528.08	24.88	1.747	0.30(0.24)	0.80	4695.7	220.50
11	21539.71	24.95	1.744	0.30(0.24)	0.80	4706.9	50500.00
12	21561.27	25.10	1.737	0.30(0.24)	0.80	4740.5	50600.00
13	21862.88	27.28	1.645	0.30(0.24)	0.80	5210.6	50400.00
14	24373.03	37.37	1.383	0.30(0.25)	0.82	8496.4	50100.00
15	25140.70	42.90	1.286	0.30(0.25)	0.84	10339.4	150.00
16	26218.76	50.99	1.166	0.30(0.26)	0.85	12843.7	600.00
17	27006.86	56.16	1.100	0.30(0.26)	0.87	14945.8	31100.00
18	28833.46	67.71	1.009	0.30(0.27)	0.90	19663.5	40100.00
19	30325.96	75.32	0.966	0.30(0.27)	0.91	22808.9	11801.00

20	32689.05	85.81	0.907	0.30(0.28)	0.92	27851.3	11530.00
21	34034.78	94.36	0.867	0.30(0.28)	0.93	32922.8	11910.00
22	36044.21	104.19	0.831	0.30(0.28)	0.94	39549.4	11350.00
23	36560.36	108.86	0.813	0.30(0.28)	0.94	42723.6	11130.00
24	36308.60	114.93	0.791	0.30(0.28)	0.95	45650.2	12300.00
25	35734.32	123.70	0.764	0.30(0.28)	0.95	49910.8	12400.00
26	34850.29	133.21	0.743	0.30(0.29)	0.95	53312.4	12201.00
27	33998.95	140.70	0.727	0.30(0.29)	0.95	55205.4	12231.00
28	33106.94	148.18	0.711	0.30(0.29)	0.95	56758.1	10400.00
29	31681.54	157.63	0.690	0.30(0.29)	0.95	58204.6	12010.00
30	30714.65	163.02	0.679	0.30(0.29)	0.96	58467.1	10210.00
31	30100.25	167.08	0.670	0.30(0.29)	0.96	58614.0	12000.00
32	26716.58	193.44	0.629	0.30(0.29)	0.96	59226.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124119.34 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	28.56	1.591	0.30(0.27)	0.90	1467.2	110.00
2	2209.70	30.95	1.512	0.30(0.27)	0.90	1632.7	100.00
3	2208.11	32.23	1.486	0.30(0.27)	0.90	1711.6	100.00
4	2242.46	35.30	1.425	0.30(0.27)	0.91	1886.6	130.00
5	2335.95	48.91	1.195	0.30(0.28)	0.93	2627.1	20100.00
6	2291.36	54.60	1.120	0.30(0.28)	0.93	2814.2	13600.00
7	2090.26	91.42	0.878	0.30(0.28)	0.93	3793.8	13510.00
8	1979.94	100.93	0.843	0.30(0.28)	0.93	3859.7	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18759.92	11.57	2.911	0.30(0.24)	0.82	2632.8	429.00
2	19862.45	13.05	2.694	0.30(0.24)	0.82	3017.6	425.00
3	20102.83	13.46	2.633	0.30(0.24)	0.82	3124.6	400.00
4	20682.87	14.92	2.420	0.30(0.24)	0.82	3499.0	300.00
5	22306.35	20.06	1.993	0.30(0.24)	0.82	4809.1	210.00
6	22799.74	22.17	1.886	0.30(0.25)	0.82	5323.8	410.00
7	23179.12	23.22	1.832	0.30(0.25)	0.82	5581.2	200.00
8	23354.49	23.78	1.803	0.30(0.25)	0.82	5718.4	230.00
9	23482.29	24.29	1.777	0.30(0.25)	0.82	5840.4	50700.00
10	23618.79	24.88	1.747	0.30(0.25)	0.82	5973.9	220.50
11	23631.18	24.95	1.744	0.30(0.25)	0.82	5988.5	50500.00
12	23655.72	25.10	1.737	0.30(0.25)	0.82	6029.9	50600.00
13	23996.99	27.28	1.645	0.30(0.25)	0.82	6611.6	50400.00
14	24329.95	28.56	1.591	0.30(0.25)	0.82	7096.8	110.00
15	24987.24	30.95	1.512	0.30(0.25)	0.83	8040.6	100.00
16	25303.14	32.23	1.486	0.30(0.25)	0.83	8535.1	100.00
17	26099.65	35.30	1.425	0.30(0.25)	0.84	9707.8	130.00
18	26629.73	37.37	1.383	0.30(0.25)	0.84	10495.8	50100.00
19	27435.38	42.90	1.286	0.30(0.26)	0.85	12639.6	150.00
20	28277.93	48.91	1.195	0.30(0.26)	0.86	14827.9	20100.00
21	28538.43	50.99	1.166	0.30(0.26)	0.87	15539.2	600.00
22	29060.53	54.60	1.120	0.30(0.26)	0.88	17126.0	13600.00
23	29289.70	56.16	1.100	0.30(0.26)	0.88	17801.5	31100.00
24	31053.22	67.71	1.009	0.30(0.27)	0.90	22826.5	40100.00
25	32504.17	75.32	0.966	0.30(0.27)	0.91	26174.3	11801.00
26	34809.95	85.81	0.907	0.30(0.28)	0.92	31495.8	11530.00
27	35662.01	91.42	0.878	0.30(0.28)	0.93	34971.6	13510.00

```
     28    36090.88   94.36    0.867  0.30( 0.28) 0.93   36737.0   11910.00
     29    37356.83  100.93    0.843  0.30( 0.28) 0.94   41208.5   13500.00
     30    37981.66  104.19    0.831  0.30( 0.28) 0.94   43409.1   11350.00
     31    38436.91  108.86    0.813  0.30( 0.28) 0.94   46583.3   11130.00
     32    38106.11  114.93    0.791  0.30( 0.28) 0.95   49509.9   12300.00
     33    37437.68  123.70    0.764  0.30( 0.28) 0.95   53770.5   12400.00
     34    36481.11  133.21    0.743  0.30( 0.29) 0.95   57172.1   12201.00
     35    35572.68  140.70    0.727  0.30( 0.29) 0.95   59065.1   12231.00
     36    34623.61  148.18    0.711  0.30( 0.29) 0.95   60617.8   10400.00
     37    33126.14  157.63    0.690  0.30( 0.29) 0.95   62064.3   12010.00
     38    32118.11  163.02    0.679  0.30( 0.29) 0.95   62326.8   10210.00
     39    31472.78  167.08    0.670  0.30( 0.29) 0.95   62473.7   12000.00
     40    27945.88  193.44    0.629  0.30( 0.29) 0.95   63086.6   10100.00
    TOTAL AREA(ACRES) =     63086.6

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    38436.91  Tc(MIN.) =  108.864
  EFFECTIVE AREA(ACRES) =  46583.32  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =    63086.6
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.43
  CHANNEL FLOW THRU SUBAREA(CFS) =   38436.91
  FLOW VELOCITY(FEET/SEC.) =  18.84   FLOW DEPTH(FEET) =   8.43
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =  109.01
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101D.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      518.50   38.19  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
```



```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    18759.92   11.76    2.883  0.30( 0.24) 0.82    2632.8     429.00
      2    19862.45   13.24    2.666  0.30( 0.24) 0.82    3017.6     425.00
      3    20102.83   13.65    2.606  0.30( 0.24) 0.82    3124.6     400.00
      4    20682.87   15.10    2.400  0.30( 0.24) 0.82    3499.0     300.00
      5    22306.35   20.24    1.984  0.30( 0.24) 0.82    4809.1     210.00
      6    22799.74   22.35    1.876  0.30( 0.25) 0.82    5323.8     410.00
      7    23179.12   23.39    1.823  0.30( 0.25) 0.82    5581.2     200.00
      8    23354.49   23.95    1.794  0.30( 0.25) 0.82    5718.4     230.00
      9    23482.29   24.47    1.768  0.30( 0.25) 0.82    5840.4   50700.00
     10    23618.79   25.06    1.738  0.30( 0.25) 0.82    5973.9     220.50
     11    23631.18   25.13    1.736  0.30( 0.25) 0.82    5988.5   50500.00
     12    23655.72   25.28    1.729  0.30( 0.25) 0.82    6029.9   50600.00
     13    23996.99   27.45    1.638  0.30( 0.25) 0.82    6611.6   50400.00
     14    24329.95   28.74    1.584  0.30( 0.25) 0.82    7096.8     110.00
     15    24987.24   31.13    1.508  0.30( 0.25) 0.83    8040.6     100.00
     16    25303.14   32.40    1.483  0.30( 0.25) 0.83    8535.1     100.00
     17    26099.65   35.47    1.421  0.30( 0.25) 0.84    9707.8     130.00
     18    26629.73   37.54    1.379  0.30( 0.25) 0.84   10495.8   50100.00
     19    27435.38   43.07    1.283  0.30( 0.26) 0.85   12639.6     150.00
     20    28277.93   49.08    1.192  0.30( 0.26) 0.86   14827.9   20100.00
     21    28538.43   51.15    1.163  0.30( 0.26) 0.87   15539.2     600.00
     22    29060.53   54.76    1.118  0.30( 0.26) 0.88   17126.0   13600.00
     23    29289.70   56.32    1.098  0.30( 0.26) 0.88   17801.5   31100.00
     24    31053.22   67.87    1.008  0.30( 0.27) 0.90   22826.5   40100.00
     25    32504.17   75.48    0.965  0.30( 0.27) 0.91   26174.3   11801.00
     26    34809.95   85.96    0.906  0.30( 0.28) 0.92   31495.8   11530.00
     27    35662.01   91.57    0.877  0.30( 0.28) 0.93   34971.6   13510.00
     28    36090.88   94.52    0.866  0.30( 0.28) 0.93   36737.0   11910.00
     29    37356.83  101.08    0.842  0.30( 0.28) 0.94   41208.5   13500.00
     30    37981.66  104.34    0.830  0.30( 0.28) 0.94   43409.1   11350.00
     31    38436.91  109.01    0.813  0.30( 0.28) 0.94   46583.3   11130.00
     32    38106.11  115.08    0.790  0.30( 0.28) 0.95   49509.9   12300.00
     33    37437.68  123.85    0.764  0.30( 0.28) 0.95   53770.5   12400.00
     34    36481.11  133.36    0.743  0.30( 0.29) 0.95   57172.1   12201.00
     35    35572.68  140.85    0.727  0.30( 0.29) 0.95   59065.1   12231.00
     36    34623.61  148.33    0.711  0.30( 0.29) 0.95   60617.8   10400.00
     37    33126.14  157.79    0.690  0.30( 0.29) 0.95   62064.3   12010.00
     38    32118.11  163.18    0.678  0.30( 0.29) 0.95   62326.8   10210.00
     39    31472.78  167.24    0.670  0.30( 0.29) 0.95   62473.7   12000.00
     40    27945.88  193.61    0.629  0.30( 0.29) 0.95   63086.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      518.50   38.19    1.366  0.30( 0.30) 0.98     591.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	19145.72	11.76	2.883	0.30(0.25)	0.83	2814.9	429.00
2	20260.32	13.24	2.666	0.30(0.25)	0.83	3222.5	425.00
3	20502.63	13.65	2.606	0.30(0.25)	0.83	3335.9	400.00
4	21085.64	15.10	2.400	0.30(0.25)	0.83	3732.7	300.00
5	22739.53	20.24	1.984	0.30(0.25)	0.83	5122.4	210.00
6	23247.54	22.35	1.876	0.30(0.25)	0.83	5669.6	410.00
7	23632.08	23.39	1.823	0.30(0.25)	0.83	5943.3	200.00
8	23809.63	23.95	1.794	0.30(0.25)	0.83	6089.1	230.00
9	23939.06	24.47	1.768	0.30(0.25)	0.83	6219.1	50700.00
10	24077.21	25.06	1.738	0.30(0.25)	0.83	6361.7	220.50
11	24089.91	25.13	1.736	0.30(0.25)	0.83	6377.3	50500.00
12	24115.19	25.28	1.729	0.30(0.25)	0.83	6421.1	50600.00
13	24464.20	27.45	1.638	0.30(0.25)	0.83	7036.4	50400.00
14	24799.38	28.74	1.584	0.30(0.25)	0.83	7541.5	110.00
15	25465.85	31.13	1.508	0.30(0.25)	0.84	8522.3	100.00
16	25790.84	32.40	1.483	0.30(0.25)	0.84	9036.5	100.00
17	26605.78	35.47	1.421	0.30(0.25)	0.84	10256.6	130.00
18	27145.62	37.54	1.379	0.30(0.25)	0.85	11076.8	50100.00
19	27242.92	38.19	1.366	0.30(0.25)	0.85	11338.8	10100.00
20	27913.70	43.07	1.283	0.30(0.26)	0.86	13230.6	150.00
21	28712.04	49.08	1.192	0.30(0.26)	0.87	15418.9	20100.00
22	28958.72	51.15	1.163	0.30(0.26)	0.87	16130.2	600.00
23	29458.80	54.76	1.118	0.30(0.26)	0.88	17717.0	13600.00
24	29678.48	56.32	1.098	0.30(0.26)	0.88	18392.5	31100.00
25	31398.11	67.87	1.008	0.30(0.27)	0.90	23417.5	40100.00
26	32828.32	75.48	0.965	0.30(0.27)	0.91	26765.3	11801.00
27	35105.52	85.96	0.906	0.30(0.28)	0.92	32086.8	11530.00
28	35943.75	91.57	0.877	0.30(0.28)	0.93	35562.6	13510.00
29	36367.35	94.52	0.866	0.30(0.28)	0.93	37328.0	11910.00
30	37621.55	101.08	0.842	0.30(0.28)	0.94	41799.5	13500.00
31	38240.54	104.34	0.830	0.30(0.28)	0.94	44000.1	11350.00
32	38687.43	109.01	0.813	0.30(0.28)	0.94	47174.3	11130.00
33	38345.75	115.08	0.790	0.30(0.28)	0.95	50100.9	12300.00
34	37664.49	123.85	0.764	0.30(0.28)	0.95	54361.5	12400.00
35	36697.94	133.36	0.743	0.30(0.29)	0.95	57763.1	12201.00
36	35781.65	140.85	0.727	0.30(0.29)	0.95	59656.1	12231.00
37	34824.74	148.33	0.711	0.30(0.29)	0.95	61208.8	10400.00
38	33317.36	157.79	0.690	0.30(0.29)	0.95	62655.3	12010.00
39	32303.66	163.18	0.678	0.30(0.29)	0.95	62917.8	10210.00
40	31654.09	167.24	0.670	0.30(0.29)	0.95	63064.7	12000.00
41	28107.58	193.61	0.629	0.30(0.29)	0.95	63677.6	10100.00

TOTAL AREA(ACRES) = 63677.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 38687.43 Tc(MIN.) = 109.015
EFFECTIVE AREA(ACRES) = 47174.32 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63677.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 170.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0266

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.48
CHANNEL FLOW THRU SUBAREA(CFS) = 38687.43
FLOW VELOCITY(FEET/SEC.) = 25.68 FLOW DEPTH(FEET) = 6.48
TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 109.18
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==========

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: P508XX25.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	168.28	22.49	0.30(0.30)	0.99	131.3	50800.00

TOTAL AREA(ACRES) = 131.3

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19145.72	11.98	2.852	0.30(0.25)	0.83	2814.9	429.00
2	20260.32	13.45	2.635	0.30(0.25)	0.83	3222.5	425.00
3	20502.63	13.86	2.575	0.30(0.25)	0.83	3335.9	400.00
4	21085.64	15.31	2.382	0.30(0.25)	0.83	3732.7	300.00
5	22739.53	20.45	1.973	0.30(0.25)	0.83	5122.4	210.00
6	23247.54	22.55	1.866	0.30(0.25)	0.83	5669.6	410.00
7	23632.08	23.59	1.813	0.30(0.25)	0.83	5943.3	200.00
8	23809.63	24.15	1.784	0.30(0.25)	0.83	6089.1	230.00
9	23939.06	24.67	1.758	0.30(0.25)	0.83	6219.1	50700.00
10	24077.21	25.26	1.730	0.30(0.25)	0.83	6361.7	220.50
11	24089.91	25.33	1.727	0.30(0.25)	0.83	6377.3	50500.00
12	24115.19	25.48	1.721	0.30(0.25)	0.83	6421.1	50600.00
13	24464.20	27.65	1.630	0.30(0.25)	0.83	7036.4	50400.00
14	24799.38	28.94	1.576	0.30(0.25)	0.83	7541.5	110.00
15	25465.85	31.32	1.504	0.30(0.25)	0.84	8522.3	100.00
16	25790.84	32.60	1.479	0.30(0.25)	0.84	9036.5	100.00
17	26605.78	35.66	1.417	0.30(0.25)	0.84	10256.6	130.00
18	27145.62	37.73	1.376	0.30(0.25)	0.85	11076.8	50100.00
19	27242.92	38.38	1.363	0.30(0.25)	0.85	11338.8	10100.00
20	27913.70	43.26	1.280	0.30(0.26)	0.86	13230.6	150.00
21	28712.04	49.27	1.189	0.30(0.26)	0.87	15418.9	20100.00
22	28958.72	51.34	1.161	0.30(0.26)	0.87	16130.2	600.00
23	29458.80	54.95	1.116	0.30(0.26)	0.88	17717.0	13600.00

24	29678.48	56.51	1.096	0.30(0.26)	0.88	18392.5	31100.00
25	31398.11	68.05	1.007	0.30(0.27)	0.90	23417.5	40100.00
26	32828.32	75.65	0.964	0.30(0.27)	0.91	26765.3	11801.00
27	35105.52	86.14	0.905	0.30(0.28)	0.92	32086.8	11530.00
28	35943.75	91.75	0.877	0.30(0.28)	0.93	35562.6	13510.00
29	36367.35	94.69	0.866	0.30(0.28)	0.93	37328.0	11910.00
30	37621.55	101.25	0.841	0.30(0.28)	0.94	41799.5	13500.00
31	38240.54	104.51	0.829	0.30(0.28)	0.94	44000.1	11350.00
32	38687.43	109.18	0.812	0.30(0.28)	0.94	47174.3	11130.00
33	38345.75	115.25	0.790	0.30(0.28)	0.95	50100.9	12300.00
34	37664.49	124.02	0.763	0.30(0.28)	0.95	54361.5	12400.00
35	36697.94	133.53	0.743	0.30(0.29)	0.95	57763.1	12201.00
36	35781.65	141.02	0.726	0.30(0.29)	0.95	59656.1	12231.00
37	34824.74	148.51	0.710	0.30(0.29)	0.95	61208.8	10400.00
38	33317.36	157.96	0.690	0.30(0.29)	0.95	62655.3	12010.00
39	32303.66	163.36	0.678	0.30(0.29)	0.95	62917.8	10210.00
40	31654.09	167.42	0.669	0.30(0.29)	0.95	63064.7	12000.00
41	28107.58	193.80	0.629	0.30(0.29)	0.95	63677.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	168.28	22.49	1.869	0.30(0.30)	0.99	131.3	50800.00

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19291.36	11.98	2.852	0.30(0.25)	0.83	2884.8	429.00
2	20410.02	13.45	2.635	0.30(0.25)	0.83	3301.1	425.00
3	20652.93	13.86	2.575	0.30(0.25)	0.83	3416.8	400.00
4	21237.61	15.31	2.382	0.30(0.25)	0.83	3822.1	300.00
5	22902.67	20.45	1.973	0.30(0.25)	0.83	5241.8	210.00
6	23401.66	22.49	1.869	0.30(0.25)	0.83	5785.7	50800.00
7	23415.51	22.55	1.866	0.30(0.25)	0.83	5800.9	410.00
8	23794.33	23.59	1.813	0.30(0.25)	0.83	6074.6	200.00
9	23968.82	24.15	1.784	0.30(0.25)	0.83	6220.4	230.00
10	24095.44	24.67	1.758	0.30(0.25)	0.83	6350.4	50700.00
11	24230.61	25.26	1.730	0.30(0.25)	0.83	6493.0	220.50
12	24243.03	25.33	1.727	0.30(0.25)	0.83	6508.6	50500.00
13	24267.62	25.48	1.721	0.30(0.25)	0.83	6552.4	50600.00
14	24606.87	27.65	1.630	0.30(0.25)	0.84	7167.7	50400.00
15	24936.27	28.94	1.576	0.30(0.25)	0.84	7672.8	110.00
16	25595.11	31.32	1.504	0.30(0.25)	0.84	8653.6	100.00
17	25917.35	32.60	1.479	0.30(0.25)	0.84	9167.8	100.00
18	26725.71	35.66	1.417	0.30(0.25)	0.85	10387.9	130.00
19	27261.10	37.73	1.376	0.30(0.25)	0.85	11208.1	50100.00
20	27357.00	38.38	1.363	0.30(0.25)	0.85	11470.1	10100.00
21	28019.00	43.26	1.280	0.30(0.26)	0.86	13361.9	150.00
22	28807.57	49.27	1.189	0.30(0.26)	0.87	15550.2	20100.00
23	29051.24	51.34	1.161	0.30(0.26)	0.87	16261.5	600.00
24	29546.46	54.95	1.116	0.30(0.26)	0.88	17848.3	13600.00
25	29764.04	56.51	1.096	0.30(0.26)	0.88	18523.8	31100.00
26	31474.11	68.05	1.007	0.30(0.27)	0.90	23548.8	40100.00
27	32899.73	75.65	0.964	0.30(0.27)	0.91	26896.6	11801.00
28	35170.61	86.14	0.905	0.30(0.28)	0.92	32218.1	11530.00
29	36005.82	91.75	0.877	0.30(0.28)	0.93	35693.9	13510.00

30	36428.26	94.69	0.866	0.30(0.28)	0.93	37459.3	11910.00
31	37679.87	101.25	0.841	0.30(0.28)	0.94	41930.8	13500.00
32	38297.56	104.51	0.829	0.30(0.28)	0.94	44131.4	11350.00
33	38742.60	109.18	0.812	0.30(0.28)	0.94	47305.6	11130.00
34	38398.52	115.25	0.790	0.30(0.28)	0.95	50232.2	12300.00
35	37714.45	124.02	0.763	0.30(0.28)	0.95	54492.8	12400.00
36	36745.69	133.53	0.743	0.30(0.29)	0.95	57894.4	12201.00
37	35827.67	141.02	0.726	0.30(0.29)	0.95	59787.4	12231.00
38	34869.02	148.51	0.710	0.30(0.29)	0.95	61340.1	10400.00
39	33359.44	157.96	0.690	0.30(0.29)	0.95	62786.6	12010.00
40	32344.50	163.36	0.678	0.30(0.29)	0.95	63049.1	10210.00
41	31693.98	167.42	0.669	0.30(0.29)	0.95	63196.0	12000.00
42	28143.16	193.80	0.629	0.30(0.29)	0.95	63808.9	10100.00

TOTAL AREA(ACRES) = 63808.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 38742.60 Tc(MIN.) = 109.183
EFFECTIVE AREA(ACRES) = 47305.62 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63808.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 63808.9 TC(MIN.) = 109.18
EFFECTIVE AREA(ACRES) = 47305.62 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.943
PEAK FLOW RATE(CFS) = 38742.60

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19291.36	11.98	2.852	0.30(0.25)	0.83	2884.8	429.00
2	20410.02	13.45	2.635	0.30(0.25)	0.83	3301.1	425.00
3	20652.93	13.86	2.575	0.30(0.25)	0.83	3416.8	400.00
4	21237.61	15.31	2.382	0.30(0.25)	0.83	3822.1	300.00
5	22902.67	20.45	1.973	0.30(0.25)	0.83	5241.8	210.00
6	23401.66	22.49	1.869	0.30(0.25)	0.83	5785.7	50800.00
7	23415.51	22.55	1.866	0.30(0.25)	0.83	5800.9	410.00
8	23794.33	23.59	1.813	0.30(0.25)	0.83	6074.6	200.00
9	23968.82	24.15	1.784	0.30(0.25)	0.83	6220.4	230.00
10	24095.44	24.67	1.758	0.30(0.25)	0.83	6350.4	50700.00
11	24230.61	25.26	1.730	0.30(0.25)	0.83	6493.0	220.50
12	24243.03	25.33	1.727	0.30(0.25)	0.83	6508.6	50500.00
13	24267.62	25.48	1.721	0.30(0.25)	0.83	6552.4	50600.00
14	24606.87	27.65	1.630	0.30(0.25)	0.84	7167.7	50400.00
15	24936.27	28.94	1.576	0.30(0.25)	0.84	7672.8	110.00
16	25595.11	31.32	1.504	0.30(0.25)	0.84	8653.6	100.00
17	25917.35	32.60	1.479	0.30(0.25)	0.84	9167.8	100.00
18	26725.71	35.66	1.417	0.30(0.25)	0.85	10387.9	130.00
19	27261.10	37.73	1.376	0.30(0.25)	0.85	11208.1	50100.00
20	27357.00	38.38	1.363	0.30(0.25)	0.85	11470.1	10100.00
21	28019.00	43.26	1.280	0.30(0.26)	0.86	13361.9	150.00
22	28807.57	49.27	1.189	0.30(0.26)	0.87	15550.2	20100.00
23	29051.24	51.34	1.161	0.30(0.26)	0.87	16261.5	600.00
24	29546.46	54.95	1.116	0.30(0.26)	0.88	17848.3	13600.00
25	29764.04	56.51	1.096	0.30(0.26)	0.88	18523.8	31100.00
26	31474.11	68.05	1.007	0.30(0.27)	0.90	23548.8	40100.00
27	32899.73	75.65	0.964	0.30(0.27)	0.91	26896.6	11801.00

28	35170.61	86.14	0.905	0.30(0.28)	0.92	32218.1	11530.00
29	36005.82	91.75	0.877	0.30(0.28)	0.93	35693.9	13510.00
30	36428.26	94.69	0.866	0.30(0.28)	0.93	37459.3	11910.00
31	37679.87	101.25	0.841	0.30(0.28)	0.94	41930.8	13500.00
32	38297.56	104.51	0.829	0.30(0.28)	0.94	44131.4	11350.00
33	38742.60	109.18	0.812	0.30(0.28)	0.94	47305.6	11130.00
34	38398.52	115.25	0.790	0.30(0.28)	0.95	50232.2	12300.00
35	37714.45	124.02	0.763	0.30(0.28)	0.95	54492.8	12400.00
36	36745.69	133.53	0.743	0.30(0.29)	0.95	57894.4	12201.00
37	35827.67	141.02	0.726	0.30(0.29)	0.95	59787.4	12231.00
38	34869.02	148.51	0.710	0.30(0.29)	0.95	61340.1	10400.00
39	33359.44	157.96	0.690	0.30(0.29)	0.95	62786.6	12010.00
40	32344.50	163.36	0.678	0.30(0.29)	0.95	63049.1	10210.00
41	31693.98	167.42	0.669	0.30(0.29)	0.95	63196.0	12000.00
42	28143.16	193.80	0.629	0.30(0.29)	0.95	63808.9	10100.00

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                         Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 25-YR EV NOV 2022 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU25EV36.DAT
  TIME/DATE OF STUDY: 09:07 11/01/2022
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.765
   2)   10.00;  3.118
   3)   15.00;  2.394
   4)   20.00;  1.986
   5)   25.00;  1.734
   6)   30.00;  1.526
   7)   40.00;  1.325
   8)   50.00;  1.173
   9)   60.00;  1.046
  10)   90.00;  0.877
  11)  120.00;  0.765
  12)  180.00;  0.636
  13)  360.00;  0.466
  14) 1200.00;  0.203
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.974
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000     0   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.16
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      8.16

****************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.41
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.706
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.77
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   1.85
  Tc(MIN.) =   12.85
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   16.13
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      23.47
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.49

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =   4.33
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.364
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.14
  AVERAGE FLOW DEPTH(FEET) =   0.87   TRAVEL TIME(MIN.) =   2.52
  Tc(MIN.) =   15.37
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   57.51
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      77.65
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.09   FLOW VELOCITY(FEET/SEC.) =   5.82
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.102
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      96.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.15
  AVERAGE FLOW DEPTH(FEET) =   1.26   TRAVEL TIME(MIN.) =   3.22
  Tc(MIN.) =   18.58
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   37.88
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =     105.65
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.32   FLOW VELOCITY(FEET/SEC.) =   6.32
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.56
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.937
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.99
  AVERAGE FLOW DEPTH(FEET) =   1.55   TRAVEL TIME(MIN.) =   2.39
  Tc(MIN.) =   20.98
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   31.29
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =     127.28
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.59   FLOW VELOCITY(FEET/SEC.) =   6.07
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X25.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1006.57   54.62  0.30( 0.28) 0.95    1513.9   13510.00
      2      918.88   63.50  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1006.57   54.62  0.30( 0.28) 0.95    1513.9   13510.00
      2      918.88   63.50  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1015.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.82
```



```
  AVERAGE FLOW DEPTH(FEET) =   2.32   TRAVEL TIME(MIN.) =   2.91
  Tc(MIN.) =   57.52
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   18.55
  EFFECTIVE AREA(ACRES) =   1540.42     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =    1099.65
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.43   FLOW VELOCITY(FEET/SEC.) =  12.13
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   57.52
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.077
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.01
  EFFECTIVE AREA(ACRES) =   1541.87   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =    1100.66

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1100.66   57.52    1.077  0.30( 0.28) 0.95    1541.9   13510.00
      2     1050.24   66.50    1.009  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      127.28   20.98    1.937  0.30( 0.30) 1.00      86.4   13600.00
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      963.51   20.98    1.937  0.30( 0.29) 0.95     648.7   13600.00
```

```
     2     1161.12   57.52    1.077  0.30( 0.29) 0.95    1628.3   13510.00
     3     1105.40   66.50    1.009  0.30( 0.28) 0.95    1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1161.12  Tc(MIN.) =   57.525
  EFFECTIVE AREA(ACRES) =   1628.27  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1694.2
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.57
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.053
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.39      0.30     1.000     -
  USER-DEFINED               -       16.30      0.30     1.000     -
  USER-DEFINED               -        4.08      0.30     1.000     -
  USER-DEFINED               -       12.36      0.30     1.000     -
  USER-DEFINED               -       11.23      0.30     1.000     -
  USER-DEFINED               -        5.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1179.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.19
  AVERAGE FLOW DEPTH(FEET) =   2.57   TRAVEL TIME(MIN.) =   1.89
  Tc(MIN.) =   59.42
  SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   36.97
  EFFECTIVE AREA(ACRES) =   1682.79     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =    1162.87
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.54

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.54   FLOW VELOCITY(FEET/SEC.) =  12.15
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   59.42
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.053
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.93      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        3.98      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   39.58
  EFFECTIVE AREA(ACRES) =   1741.15   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =    1202.45

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P201XX25.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      210.74   17.33  0.30( 0.26) 0.85     133.8   20100.00
    TOTAL AREA(ACRES) =      133.8

****************************************************************************
  FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1060.92   22.97    1.836  0.30( 0.29) 0.96     761.6   13600.00
      2     1202.45   59.42    1.053  0.30( 0.29) 0.95    1741.1   13510.00
      3     1159.89   68.42    0.999  0.30( 0.29) 0.95    1807.1   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      210.74   17.33    2.204  0.30( 0.26) 0.85     133.8   20100.00
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1201.19   17.33    2.204  0.30( 0.28) 0.94     708.3   20100.00
      2     1231.87   22.97    1.836  0.30( 0.28) 0.95     895.4   13600.00
      3     1288.70   59.42    1.053  0.30( 0.28) 0.95    1874.9   13510.00
      4     1240.21   68.42    0.999  0.30( 0.28) 0.94    1940.9   13500.00
    TOTAL AREA(ACRES) =      1940.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1288.70  Tc(MIN.) =   59.417
  EFFECTIVE AREA(ACRES) =   1874.95  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1940.9
```

```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.44
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1310.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.46
 AVERAGE FLOW DEPTH(FEET) =   3.44   TRAVEL TIME(MIN.) =   5.28
 Tc(MIN.) =   64.70
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   43.77
 EFFECTIVE AREA(ACRES) =   1942.53     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =    1288.70
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.41

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.41   FLOW VELOCITY(FEET/SEC.) =   9.40
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.70
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
```



```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   67.81
 EFFECTIVE AREA(ACRES) =   2047.23   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =    1352.90

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   64.70
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    5.20
 EFFECTIVE AREA(ACRES) =   2055.26   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =    1358.10

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.76
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.67      0.30     1.000     -
 USER-DEFINED               -       24.24      0.30     1.000     -
 USER-DEFINED               -        1.34      0.30     1.000     -
 USER-DEFINED               -       74.98      0.30     1.000     -
 USER-DEFINED               -      101.12      0.30     1.000     -
 USER-DEFINED               -       16.90      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1426.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.20
 AVERAGE FLOW DEPTH(FEET) =   3.76   TRAVEL TIME(MIN.) =   5.10
 Tc(MIN.) =   69.79
 SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =  136.33
 EFFECTIVE AREA(ACRES) =   2274.51     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
 TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1441.31
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
```

```
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.78   FLOW VELOCITY(FEET/SEC.) =   9.23
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   69.79
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        9.95      0.30     1.000     -
  USER-DEFINED                -       10.02      0.30     1.000     -
  USER-DEFINED                -        4.45      0.30     1.000     -
  USER-DEFINED                -      179.37      0.30     1.000     -
  USER-DEFINED                -       11.47      0.30     1.000     -
  USER-DEFINED                -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =  133.96
  EFFECTIVE AREA(ACRES) =   2489.94   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    1575.27

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     1578.90   27.83    1.616  0.30( 0.29) 0.97    1323.3   20100.00
      2     1585.73   33.44    1.457  0.30( 0.29) 0.97    1510.4   13600.00
      3     1575.27   69.79    0.991  0.30( 0.29) 0.96    2489.9   13510.00
      4     1499.78   78.93    0.939  0.30( 0.29) 0.96    2555.9   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1585.73  Tc(MIN.) =   33.44
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1510.36

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.44
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.457
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.03      0.30     0.850     -
  USER-DEFINED                -        5.14      0.30     1.000     -
  USER-DEFINED                -       11.22      0.30     1.000     -
  USER-DEFINED                -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   17.41
  EFFECTIVE AREA(ACRES) =   1527.08   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    1603.13

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.90
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.22      0.30     1.000     -
  USER-DEFINED                -        2.17      0.30     1.000     -
  USER-DEFINED                -        9.19      0.30     1.000     -
  USER-DEFINED                -       67.57      0.30     1.000     -
  USER-DEFINED                -       35.19      0.30     1.000     -
  USER-DEFINED                -       30.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1672.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.30
  AVERAGE FLOW DEPTH(FEET) =   3.90   TRAVEL TIME(MIN.) =   4.72
  Tc(MIN.) =   38.16
  SUBAREA AREA(ACRES) =   145.01      SUBAREA RUNOFF(CFS) =  138.61
  EFFECTIVE AREA(ACRES) =   1672.09     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =    1611.48
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.82

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.82   FLOW VELOCITY(FEET/SEC.) =  10.18
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     1598.71   32.55    1.475  0.30( 0.29) 0.97    1485.0   20100.00
      2     1611.48   38.16    1.362  0.30( 0.29) 0.97    1672.1   13600.00
      3     1611.93   74.55    0.964  0.30( 0.29) 0.96    2651.7   13510.00
      4     1526.38   83.75    0.912  0.30( 0.29) 0.96    2717.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1611.93  Tc(MIN.) =   74.55
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2651.67

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
```

```
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   74.55
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.964
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       20.65      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  USER-DEFINED               -        8.45      0.30     1.000     -
  USER-DEFINED               -       96.93      0.30     1.000     -
  USER-DEFINED               -       13.19      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =   85.35
  EFFECTIVE AREA(ACRES) =   2794.47   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =    1697.29

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1732.48   32.55    1.475  0.30( 0.29) 0.97    1627.8   20100.00
      2     1747.98   38.16    1.362  0.30( 0.29) 0.97    1814.9   13600.00
      3     1697.29   74.55    0.964  0.30( 0.29) 0.96    2794.5   13510.00
      4     1605.07   83.75    0.912  0.30( 0.29) 0.96    2860.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1747.98  Tc(MIN.) =   38.16
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97  EFFECTIVE AREA(ACRES) =    1814.89

********************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   38.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.362
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       42.54      0.30     1.000     -
  USER-DEFINED               -       16.96      0.30     1.000     -
  USER-DEFINED               -       80.60      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        2.00      0.30     1.000     -
  USER-DEFINED               -        3.11      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =  140.29
  EFFECTIVE AREA(ACRES) =   1961.66   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3007.2       PEAK FLOW RATE(CFS) =    1888.27

********************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  56
```



```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.77
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.320
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       23.73      0.30     1.000     -
  USER-DEFINED               -        0.27      0.30     1.000     -
  USER-DEFINED               -       19.87      0.30     1.000     -
  USER-DEFINED               -        6.40      0.30     1.000     -
  USER-DEFINED               -        3.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1913.20
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.30
  AVERAGE FLOW DEPTH(FEET) =   3.77   TRAVEL TIME(MIN.) =   2.16
  Tc(MIN.) =   40.32
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   49.86
  EFFECTIVE AREA(ACRES) =   2015.96     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    1888.27
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.74

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.74   FLOW VELOCITY(FEET/SEC.) =  12.24
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1887.68   34.70    1.432  0.30( 0.29) 0.98    1828.9   20100.00
      2     1888.27   40.32    1.320  0.30( 0.29) 0.98    2016.0   13600.00
      3     1785.01   76.74    0.952  0.30( 0.29) 0.97    2995.5   13510.00
      4     1685.95   85.99    0.900  0.30( 0.29) 0.96    3061.5   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1888.27  Tc(MIN.) =   40.32
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    2015.96

********************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   40.32
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.320
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.67      0.30      1.000     -
  USER-DEFINED                -        9.52      0.30      1.000     -
  USER-DEFINED                -        0.71      0.30      1.000     -
  USER-DEFINED                -        0.22      0.30      1.000     -
  USER-DEFINED                -       39.42      0.30      1.000     -
  USER-DEFINED                -        0.62      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   46.98
  EFFECTIVE AREA(ACRES) =   2067.12   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    1911.33

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1925.95   34.70    1.432  0.30( 0.29) 0.98    1880.1   20100.00
      2     1911.33   40.32    1.320  0.30( 0.29) 0.98    2067.1   13600.00
      3     1814.12   76.74    0.952  0.30( 0.29) 0.97    3046.7   13510.00
      4     1708.80   85.99    0.900  0.30( 0.29) 0.97    3112.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1925.95  Tc(MIN.) =   34.70
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1880.05

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.70
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.432
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.11      0.30      1.000     -
  USER-DEFINED                -        0.77      0.30      1.000     -
  USER-DEFINED                -        0.22      0.30      1.000     -
  USER-DEFINED                -        2.69      0.30      1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    3.86
  EFFECTIVE AREA(ACRES) =   1883.84   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    1929.81

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
```



```
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P25EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      479.23   14.36  0.30( 0.11) 0.36     173.1     110.00
      2      481.39   16.87  0.30( 0.11) 0.37     203.9     100.00
      3      473.65   18.15  0.30( 0.11) 0.38     213.8     100.00
      4      419.54   21.27  0.30( 0.12) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN 102.0 INCH PIPE IS  76.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  42.20
  ESTIMATED PIPE DIAMETER(INCH) = 102.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    1929.81
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =   35.05
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1929.81   35.05    1.425  0.30( 0.29) 0.98    1883.8   20100.00
      2     1914.81   40.66    1.315  0.30( 0.29) 0.98    2070.9   13600.00
      3     1816.34   77.09    0.950  0.30( 0.29) 0.97    3050.5   13510.00
      4     1710.85   86.35    0.898  0.30( 0.29) 0.97    3116.4   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      479.23   14.36    2.487  0.30( 0.11) 0.36     173.1     110.00
      2      481.39   16.87    2.242  0.30( 0.11) 0.37     203.9     100.00
      3      473.65   18.15    2.137  0.30( 0.11) 0.38     213.8     100.00
      4      419.54   21.27    1.922  0.30( 0.12) 0.40     221.1     130.00
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2012.29   14.36    2.487  0.30( 0.26) 0.87     945.0     110.00
      2     2080.98   16.87    2.242  0.30( 0.26) 0.87    1110.5     100.00
      3     2102.39   18.15    2.137  0.30( 0.26) 0.87    1189.4     100.00
      4     2105.75   21.27    1.922  0.30( 0.27) 0.88    1364.4     130.00
      5     2233.52   35.05    1.425  0.30( 0.28) 0.92    2104.9   20100.00
```

```
      6     2193.00   40.66    1.315  0.30( 0.28) 0.92    2292.0   13600.00
      7     2009.48   77.09    0.950  0.30( 0.28) 0.93    3271.6   13510.00
      8     1891.84   86.35    0.898  0.30( 0.28) 0.93    3337.5   13500.00
    TOTAL AREA(ACRES) =      3337.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2233.52  Tc(MIN.) =   35.049
  EFFECTIVE AREA(ACRES) =   2104.94  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3337.5
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.425
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.11      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.44      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.49      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        1.70      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.09      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.57      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   24.69
  EFFECTIVE AREA(ACRES) =   2129.34   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    2233.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.05
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.425
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       12.39      0.30     1.000    65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.30      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.19      0.30     1.000    79
```



```
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       28.71      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.17      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   49.35
  EFFECTIVE AREA(ACRES) =   2178.10   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    2251.51

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                 -        0.22      0.30     1.000     -
  USER-DEFINED                 -        9.23      0.30     1.000     -
  USER-DEFINED                 -        0.54      0.30     1.000     -
  USER-DEFINED                 -        5.66      0.30     1.000     -
  USER-DEFINED                 -        3.66      0.30     1.000     -
  USER-DEFINED                 -        0.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2261.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.00
  AVERAGE FLOW DEPTH(FEET) =   5.02   TRAVEL TIME(MIN.) =   1.56
  Tc(MIN.) =   36.60
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   19.66
  EFFECTIVE AREA(ACRES) =   2198.08     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    2251.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.01

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.01   FLOW VELOCITY(FEET/SEC.) =   9.99
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2038.00   15.96    2.316  0.30( 0.26) 0.88    1038.1     110.00
      2     2108.28   18.45    2.112  0.30( 0.26) 0.88    1203.7     100.00
      3     2128.98   19.73    2.008  0.30( 0.26) 0.88    1282.5     100.00
      4     2141.13   22.85    1.842  0.30( 0.27) 0.89    1457.6     130.00
```

```
     5     2251.51   36.60    1.393  0.30( 0.28) 0.92    2198.1   20100.00
     6     2209.48   42.23    1.291  0.30( 0.28) 0.92    2385.1   13600.00
     7     2018.73   78.70    0.941  0.30( 0.28) 0.93    3364.7   13510.00
     8     1899.14   87.98    0.888  0.30( 0.28) 0.93    3430.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2251.51  Tc(MIN.) =   36.60
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2198.08

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        9.40      0.30     1.000     -
  USER-DEFINED               -        2.76      0.30     1.000     -
  USER-DEFINED               -       17.38      0.30     1.000     -
  USER-DEFINED               -        2.46      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   38.49
  EFFECTIVE AREA(ACRES) =   2237.20   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    2251.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.65      0.30     1.000     -
  USER-DEFINED               -        1.70      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    2.31
  EFFECTIVE AREA(ACRES) =   2239.55   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    2251.51
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.29      0.30     1.000     -
  USER-DEFINED               -       31.25      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        6.26      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   42.62
  EFFECTIVE AREA(ACRES) =   2282.86   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    2293.29

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.30     0.850     -
  USER-DEFINED               -        3.06      0.30     0.850     -
  USER-DEFINED               -       17.76      0.30     0.500     -
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   42.14
  EFFECTIVE AREA(ACRES) =   2322.02   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    2335.43

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.393
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.52
 EFFECTIVE AREA(ACRES) =   2322.55   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    2335.95

****************************************************************************
 FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.82
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -        5.28      0.30     1.000     -
 USER-DEFINED               -        0.52      0.30     1.000     -
 USER-DEFINED               -        3.61      0.30     1.000     -
 USER-DEFINED               -        0.67      0.30     1.000     -
 USER-DEFINED               -        1.37      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2341.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.93
 AVERAGE FLOW DEPTH(FEET) =   4.82   TRAVEL TIME(MIN.) =   4.36
 Tc(MIN.) =   40.97
 SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =   10.61
 EFFECTIVE AREA(ACRES) =   2334.22     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
 TOTAL AREA(ACRES) =     3566.8         PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   4.81

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  4.81   FLOW VELOCITY(FEET/SEC.) =  10.93
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2146.94   20.42    1.965  0.30( 0.26) 0.88    1174.3     110.00
     2     2209.70   22.88    1.841  0.30( 0.26) 0.88    1339.8     100.00
     3     2208.11   24.16    1.776  0.30( 0.26) 0.88    1418.7     100.00
     4     2242.46   27.26    1.640  0.30( 0.27) 0.89    1593.7     130.00
     5     2335.95   40.97    1.310  0.30( 0.28) 0.92    2334.2   20100.00
     6     2291.36   46.61    1.225  0.30( 0.28) 0.92    2521.3   13600.00
     7     2078.40   83.21    0.915  0.30( 0.28) 0.93    3500.9   13510.00
     8     1950.98   92.58    0.867  0.30( 0.28) 0.93    3566.8   13500.00
```



```
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2335.95  Tc(MIN.) =   40.97
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2334.22

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   40.97
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        6.90      0.30     1.000     -
 USER-DEFINED               -       23.04      0.30     1.000     -
 USER-DEFINED               -        1.18      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       53.20      0.30     1.000     -
 USER-DEFINED               -        2.08      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   79.99
 EFFECTIVE AREA(ACRES) =   2422.18   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   40.97
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        0.18      0.30     1.000     -
 USER-DEFINED               -        0.38      0.30     1.000     -
 USER-DEFINED               -        0.22      0.30     1.000     -
 USER-DEFINED               -        7.73      0.30     1.000     -
 USER-DEFINED               -        4.37      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   11.72
 EFFECTIVE AREA(ACRES) =   2435.07   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```

```
 MAINLINE Tc(MIN.) =   40.97
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        2.57      0.30     1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        1.97      0.30     1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        1.00      0.30     1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        2.98      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.39      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.67      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =   11.44
 EFFECTIVE AREA(ACRES) =   2447.65   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   40.97
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.44      0.30     1.000    66
 PUBLIC PARK                B        2.65      0.30     0.850    56
 PUBLIC PARK                B        1.16      0.30     0.850    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.47      0.30     0.500    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.25      0.30     0.500    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30     1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
 SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   23.17
 EFFECTIVE AREA(ACRES) =   2472.86   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
 MAINLINE Tc(MIN.) =   40.97
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.310
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED                 -        7.08      0.30     1.000     -
 USER-DEFINED                 -        6.75      0.30     1.000     -
 USER-DEFINED                 -        0.02      0.30     1.000     -
 USER-DEFINED                 -        0.93      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =   13.44
 EFFECTIVE AREA(ACRES) =   2487.64   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.09
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED                 -        8.49      0.30     1.000     -
 USER-DEFINED                 -       13.31      0.30     1.000     -
 USER-DEFINED                 -        0.87      0.30     1.000     -
 USER-DEFINED                 -       20.26      0.30     1.000     -
 USER-DEFINED                 -        1.21      0.30     1.000     -
 USER-DEFINED                 -        0.05      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2354.80
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.24
 AVERAGE FLOW DEPTH(FEET) =   5.08   TRAVEL TIME(MIN.) =   4.11
 Tc(MIN.) =   45.08
 SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =   37.70
 EFFECTIVE AREA(ACRES) =   2531.83     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =    2335.95
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.06

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  5.06   FLOW VELOCITY(FEET/SEC.) =  10.21
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

 ** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	24.64	1.752	0.30(0.27)	0.90	1371.9	110.00
2	2209.70	27.06	1.648	0.30(0.27)	0.89	1537.4	100.00
3	2208.11	28.34	1.595	0.30(0.27)	0.90	1616.3	100.00
4	2242.46	31.42	1.497	0.30(0.27)	0.90	1791.3	130.00
5	2335.95	45.08	1.248	0.30(0.28)	0.93	2531.8	20100.00
6	2291.36	50.75	1.164	0.30(0.28)	0.93	2718.9	13600.00
7	2090.26	87.46	0.891	0.30(0.28)	0.93	3698.5	13510.00
8	1968.40	96.91	0.851	0.30(0.28)	0.93	3764.4	13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 2335.95 Tc(MIN.) = 45.08
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2531.83

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 45.08
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.56	0.30	1.000	-
USER-DEFINED	-	0.81	0.30	1.000	-
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	0.59	0.30	1.000	-
USER-DEFINED	-	3.04	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 18.12 SUBAREA RUNOFF(CFS) = 15.46
EFFECTIVE AREA(ACRES) = 2549.95 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3782.5 PEAK FLOW RATE(CFS) = 2335.95
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 45.08
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.30	0.30	0.850	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.70	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
PUBLIC PARK	B	2.90	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835
SUBAREA AREA(ACRES) = 6.20 SUBAREA RUNOFF(CFS) = 5.56
EFFECTIVE AREA(ACRES) = 2556.15 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3788.7 PEAK FLOW RATE(CFS) = 2335.95
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 45.08
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
CONDOMINIUMS	B	0.10	0.30	0.350	56
PUBLIC PARK	B	6.90	0.30	0.850	56
PUBLIC PARK	B	0.40	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839
SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 6.72
EFFECTIVE AREA(ACRES) = 2563.65 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3796.2 PEAK FLOW RATE(CFS) = 2335.95
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========
MEMORY BANK # 3 IS EMPTY - PROCESS IGNORED.

****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 45.08
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"FALLOW"	B	2.55	0.30	1.000	86
AGRICULTURAL POOR COVER					
"FALLOW"	B	0.01	0.30	1.000	86
AGRICULTURAL POOR COVER					
"FALLOW"	B	1.35	0.30	1.000	86
NATURAL FAIR COVER					
"GRASS"	B	0.44	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	0.67	0.30	1.000	69
NATURAL FAIR COVER					

```
  "OPEN BRUSH"                B        1.06      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    5.19
  EFFECTIVE AREA(ACRES) =   2569.73   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    2335.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.08
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.16      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        2.45      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        6.15      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"    B        1.34      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"    B       18.46      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"    B        4.13      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   29.59
  EFFECTIVE AREA(ACRES) =   2604.42   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    2335.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   45.08
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.248
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"    B        8.69      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.73      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.41      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        1.37      0.30     1.000    65
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"            B        3.11      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =   12.21
  EFFECTIVE AREA(ACRES) =   2618.73   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    2335.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.54
  CHANNEL FLOW THRU SUBAREA(CFS) =    2335.95
  FLOW VELOCITY(FEET/SEC.) =  16.22   FLOW DEPTH(FEET) =   3.54
  TRAVEL TIME(MIN.) =   0.30   Tc(MIN.) =   45.38
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.94   24.94    1.737  0.30( 0.27) 0.90    1458.8     110.00
      2     2209.70   27.36    1.636  0.30( 0.27) 0.90    1624.3     100.00
      3     2208.11   28.64    1.583  0.30( 0.27) 0.90    1703.2     100.00
      4     2242.46   31.72    1.491  0.30( 0.27) 0.91    1878.2     130.00
      5     2335.95   45.38    1.243  0.30( 0.28) 0.93    2618.7   20100.00
      6     2291.36   51.05    1.160  0.30( 0.28) 0.93    2805.8   13600.00
      7     2090.26   87.77    0.890  0.30( 0.28) 0.93    3785.4   13510.00
      8     1979.94   97.22    0.850  0.30( 0.28) 0.93    3851.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2335.95  Tc(MIN.) =   45.38
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2618.73

****************************************************************************
  FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.71
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.190
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        0.23      0.30     1.000     -
  USER-DEFINED                -        1.52      0.30     1.000     -
```

```
  USER-DEFINED               -        0.06      0.30     1.000     -
  USER-DEFINED               -        0.13      0.30     1.000     -
  USER-DEFINED               -        6.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2339.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.69
  AVERAGE FLOW DEPTH(FEET) =   5.71   TRAVEL TIME(MIN.) =   3.54
  Tc(MIN.) =   48.91
  SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    6.72
  EFFECTIVE AREA(ACRES) =   2627.12     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    2335.95
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.70   FLOW VELOCITY(FEET/SEC.) =   8.69
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.94   28.56    1.586  0.30( 0.27) 0.90    1467.2     110.00
      2     2209.70   30.95    1.507  0.30( 0.27) 0.90    1632.7     100.00
      3     2208.11   32.23    1.481  0.30( 0.27) 0.90    1711.6     100.00
      4     2242.46   35.30    1.420  0.30( 0.27) 0.91    1886.6     130.00
      5     2335.95   48.91    1.190  0.30( 0.28) 0.93    2627.1   20100.00
      6     2291.36   54.60    1.115  0.30( 0.28) 0.93    2814.2   13600.00
      7     2090.26   91.42    0.872  0.30( 0.28) 0.93    3793.8   13510.00
      8     1979.94  100.93    0.836  0.30( 0.28) 0.93    3859.7   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2335.95  Tc(MIN.) =   48.91
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2627.12
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     3859.7  TC(MIN.) =     48.91
  EFFECTIVE AREA(ACRES) =   2627.12  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.927
  PEAK FLOW RATE(CFS)   =    2335.95

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2146.94   28.56    1.586  0.30( 0.27) 0.90    1467.2     110.00
      2     2209.70   30.95    1.507  0.30( 0.27) 0.90    1632.7     100.00
      3     2208.11   32.23    1.481  0.30( 0.27) 0.90    1711.6     100.00
      4     2242.46   35.30    1.420  0.30( 0.27) 0.91    1886.6     130.00
      5     2335.95   48.91    1.190  0.30( 0.28) 0.93    2627.1   20100.00
      6     2291.36   54.60    1.115  0.30( 0.28) 0.93    2814.2   13600.00
      7     2090.26   91.42    0.872  0.30( 0.28) 0.93    3793.8   13510.00
      8     1979.94  100.93    0.836  0.30( 0.28) 0.93    3859.7   13500.00
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RU25EV37.DAT
  TIME/DATE OF STUDY: 00:11 08/11/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.753
   2)   10.00;  3.112
   3)   15.00;  2.390
   4)   20.00;  1.984
   5)   25.00;  1.732
   6)   30.00;  1.524
   7)   40.00;  1.323
   8)   50.00;  1.171
   9)   60.00;  1.045
  10)   90.00;  0.875
  11)  120.00;  0.763
  12)  180.00;  0.634
  13)  360.00;  0.464
  14) 1200.00;  0.203
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    21237.61   15.31  0.30( 0.25) 0.83    3822.1     300.00
      2    25917.35   32.60  0.30( 0.25) 0.84    9167.8     100.00
      3    27357.00   38.38  0.30( 0.25) 0.85   11470.1   10100.00
      4    28019.00   43.26  0.30( 0.26) 0.86   13361.9     150.00
      5    29051.24   51.34  0.30( 0.26) 0.87   16261.5     600.00
      6    29764.04   56.51  0.30( 0.26) 0.88   18523.8   31100.00
      7    31474.11   68.05  0.30( 0.27) 0.90   23548.8   40100.00
      8    32899.73   75.65  0.30( 0.27) 0.91   26896.6   11801.00
      9    35170.61   86.14  0.30( 0.28) 0.92   32218.1   11530.00
     10    36428.26   94.69  0.30( 0.28) 0.93   37459.3   11910.00
     11    38297.56  104.51  0.30( 0.28) 0.94   44131.4   11350.00
     12    38742.60  109.18  0.30( 0.28) 0.94   47305.6   11130.00
     13    38398.52  115.25  0.30( 0.28) 0.95   50232.2   12300.00
     14    37714.45  124.02  0.30( 0.28) 0.95   54492.8   12400.00
     15    36745.69  133.53  0.30( 0.29) 0.95   57894.4   12201.00
     16    35827.67  141.02  0.30( 0.29) 0.95   59787.4   12231.00
     17    34869.02  148.51  0.30( 0.29) 0.95   61340.1   10400.00
     18    33359.44  157.96  0.30( 0.29) 0.95   62786.6   12010.00
     19    32344.50  163.36  0.30( 0.29) 0.95   63049.1   10210.00
     20    28143.16  193.80  0.30( 0.29) 0.95   63808.9   10100.00
   TOTAL AREA(ACRES) =    63808.9

************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    21237.61   15.31  0.30( 0.25) 0.83    3822.1     300.00
      2    25917.35   32.60  0.30( 0.25) 0.84    9167.8     100.00
      3    27357.00   38.38  0.30( 0.25) 0.85   11470.1   10100.00
      4    28019.00   43.26  0.30( 0.26) 0.86   13361.9     150.00
      5    29051.24   51.34  0.30( 0.26) 0.87   16261.5     600.00
      6    29764.04   56.51  0.30( 0.26) 0.88   18523.8   31100.00
      7    31474.11   68.05  0.30( 0.27) 0.90   23548.8   40100.00
      8    32899.73   75.65  0.30( 0.27) 0.91   26896.6   11801.00
      9    35170.61   86.14  0.30( 0.28) 0.92   32218.1   11530.00
     10    36428.26   94.69  0.30( 0.28) 0.93   37459.3   11910.00
     11    38297.56  104.51  0.30( 0.28) 0.94   44131.4   11350.00
     12    38742.60  109.18  0.30( 0.28) 0.94   47305.6   11130.00
     13    38398.52  115.25  0.30( 0.28) 0.95   50232.2   12300.00
```

```
     14    37714.45  124.02  0.30( 0.28) 0.95   54492.8   12400.00
     15    36745.69  133.53  0.30( 0.29) 0.95   57894.4   12201.00
     16    35827.67  141.02  0.30( 0.29) 0.95   59787.4   12231.00
     17    34869.02  148.51  0.30( 0.29) 0.95   61340.1   10400.00
     18    33359.44  157.96  0.30( 0.29) 0.95   62786.6   12010.00
     19    32344.50  163.36  0.30( 0.29) 0.95   63049.1   10210.00
     20    28143.16  193.80  0.30( 0.29) 0.95   63808.9   10100.00
    TOTAL AREA(ACRES) =     63808.9

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.86
  CHANNEL FLOW THRU SUBAREA(CFS) =   38742.60
  FLOW VELOCITY(FEET/SEC.) =  11.40   FLOW DEPTH(FEET) =  12.86
  TRAVEL TIME(MIN.) =   2.77   Tc(MIN.) =  111.95
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102D.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      321.17   15.37  0.30( 0.29) 0.96     192.9   10230.00
      2      293.25   24.48  0.30( 0.29) 0.95     241.2   10200.00
      3      292.00   24.71  0.30( 0.29) 0.95     241.7   10250.00
      4      266.33   28.63  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21237.61   18.66    2.093  0.30( 0.25) 0.83    3822.1     300.00
      2    25917.35   35.74    1.409  0.30( 0.25) 0.84    9167.8     100.00
      3    27357.00   41.47    1.301  0.30( 0.25) 0.85   11470.1   10100.00
```



```
      4    28019.00   46.32    1.227  0.30( 0.26) 0.86   13361.9     150.00
      5    29051.24   54.37    1.116  0.30( 0.26) 0.87   16261.5     600.00
      6    29764.04   59.51    1.051  0.30( 0.26) 0.88   18523.8   31100.00
      7    31474.11   71.00    0.983  0.30( 0.27) 0.90   23548.8   40100.00
      8    32899.73   78.57    0.940  0.30( 0.27) 0.91   26896.6   11801.00
      9    35170.61   88.99    0.881  0.30( 0.28) 0.92   32218.1   11530.00
     10    36428.26   97.51    0.847  0.30( 0.28) 0.93   37459.3   11910.00
     11    38297.56  107.28    0.810  0.30( 0.28) 0.94   44131.4   11350.00
     12    38742.60  111.95    0.793  0.30( 0.28) 0.94   47305.6   11130.00
     13    38398.52  118.03    0.770  0.30( 0.28) 0.95   50232.2   12300.00
     14    37714.45  126.81    0.748  0.30( 0.28) 0.95   54492.8   12400.00
     15    36745.69  136.34    0.728  0.30( 0.29) 0.95   57894.4   12201.00
     16    35827.67  143.86    0.712  0.30( 0.29) 0.95   59787.4   12231.00
     17    34869.02  151.37    0.696  0.30( 0.29) 0.95   61340.1   10400.00
     18    33359.44  160.86    0.675  0.30( 0.29) 0.95   62786.6   12010.00
     19    32344.50  166.29    0.663  0.30( 0.29) 0.95   63049.1   10210.00
     20    28143.16  196.86    0.618  0.30( 0.29) 0.95   63808.9   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      321.17   15.37    2.360  0.30( 0.29) 0.96     192.9   10230.00
    2      293.25   24.48    1.758  0.30( 0.29) 0.95     241.2   10200.00
    3      292.00   24.71    1.747  0.30( 0.29) 0.95     241.7   10250.00
    4      266.33   28.63    1.581  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20348.04   15.37    2.360  0.30( 0.25) 0.84    3340.5   10230.00
    2    21548.68   18.66    2.093  0.30( 0.25) 0.84    4032.5     300.00
    3    23124.51   24.48    1.758  0.30( 0.25) 0.84    5883.7   10200.00
    4    23187.05   24.71    1.747  0.30( 0.25) 0.84    5957.1   10250.00
    5    24234.40   28.63    1.581  0.30( 0.25) 0.84    7187.4   10220.00
    6    26148.21   35.74    1.409  0.30( 0.25) 0.84    9414.1     100.00
    7    27565.66   41.47    1.301  0.30( 0.26) 0.85   11716.3   10100.00
    8    28212.48   46.32    1.227  0.30( 0.26) 0.86   13608.1     150.00
    9    29221.91   54.37    1.116  0.30( 0.26) 0.87   16507.7     600.00
   10    29921.38   59.51    1.051  0.30( 0.27) 0.88   18770.1   31100.00
   11    31617.36   71.00    0.983  0.30( 0.27) 0.90   23795.1   40100.00
   12    33034.18   78.57    0.940  0.30( 0.27) 0.91   27142.9   11801.00
   13    35292.91   88.99    0.881  0.30( 0.28) 0.92   32464.3   11530.00
   14    36543.61   97.51    0.847  0.30( 0.28) 0.93   37705.6   11910.00
   15    38405.41  107.28    0.810  0.30( 0.28) 0.94   44377.7   11350.00
   16    38846.86  111.95    0.793  0.30( 0.28) 0.94   47551.9   11130.00
   17    38498.12  118.03    0.770  0.30( 0.28) 0.95   50478.5   12300.00
   18    37809.52  126.81    0.748  0.30( 0.28) 0.95   54739.1   12400.00
   19    36836.55  136.34    0.728  0.30( 0.29) 0.95   58140.6   12201.00
   20    35915.20  143.86    0.712  0.30( 0.29) 0.95   60033.7   12231.00
   21    34953.23  151.37    0.696  0.30( 0.29) 0.95   61586.4   10400.00
   22    33439.46  160.86    0.675  0.30( 0.29) 0.95   63032.8   12010.00
   23    32422.12  166.29    0.663  0.30( 0.29) 0.95   63295.4   10210.00
   24    28211.44  196.86    0.618  0.30( 0.29) 0.95   64055.1   10100.00
  TOTAL AREA(ACRES) =     64055.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    38846.86  Tc(MIN.) =  111.950
  EFFECTIVE AREA(ACRES) =  47551.88  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    64055.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.21
  CHANNEL FLOW THRU SUBAREA(CFS) =   38846.86
  FLOW VELOCITY(FEET/SEC.) =  11.05   FLOW DEPTH(FEET) =  13.21
  TRAVEL TIME(MIN.) =   3.12   Tc(MIN.) =  115.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103D.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      651.40   18.38  0.30( 0.23) 0.76     399.7   10300.00
      2      652.99   19.22  0.30( 0.23) 0.76     413.6   10380.00
      3      641.00   21.63  0.30( 0.23) 0.76     440.0   10320.00
      4      618.06   23.73  0.30( 0.23) 0.76     451.6   10360.00
      5      581.15   26.62  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20348.04   19.20    2.049  0.30( 0.25) 0.84    3340.5   10230.00
      2    21548.68   22.42    1.862  0.30( 0.25) 0.84    4032.5     300.00
      3    23124.51   28.16    1.601  0.30( 0.25) 0.84    5883.7   10200.00
      4    23187.05   28.39    1.591  0.30( 0.25) 0.84    5957.1   10250.00
      5    24234.40   32.25    1.479  0.30( 0.25) 0.84    7187.4   10220.00
```



```
      6    26148.21   39.27    1.338  0.30( 0.25) 0.84    9414.1     100.00
      7    27565.66   44.94    1.248  0.30( 0.26) 0.85   11716.3   10100.00
      8    28212.48   49.77    1.174  0.30( 0.26) 0.86   13608.1     150.00
      9    29221.91   57.78    1.073  0.30( 0.26) 0.87   16507.7     600.00
     10    29921.38   62.90    1.029  0.30( 0.27) 0.88   18770.1   31100.00
     11    31617.36   74.33    0.964  0.30( 0.27) 0.90   23795.1   40100.00
     12    33034.18   81.85    0.921  0.30( 0.27) 0.91   27142.9   11801.00
     13    35292.91   92.20    0.867  0.30( 0.28) 0.92   32464.3   11530.00
     14    36543.61  100.69    0.835  0.30( 0.28) 0.93   37705.6   11910.00
     15    38405.41  110.41    0.799  0.30( 0.28) 0.94   44377.7   11350.00
     16    38846.86  115.07    0.781  0.30( 0.28) 0.94   47551.9   11130.00
     17    38498.12  121.15    0.761  0.30( 0.28) 0.95   50478.5   12300.00
     18    37809.52  129.95    0.742  0.30( 0.28) 0.95   54739.1   12400.00
     19    36836.55  139.51    0.721  0.30( 0.29) 0.95   58140.6   12201.00
     20    35915.20  147.05    0.705  0.30( 0.29) 0.95   60033.7   12231.00
     21    34953.23  154.59    0.689  0.30( 0.29) 0.95   61586.4   10400.00
     22    33439.46  164.13    0.668  0.30( 0.29) 0.95   63032.8   12010.00
     23    32422.12  169.59    0.656  0.30( 0.29) 0.95   63295.4   10210.00
     24    28211.44  200.31    0.615  0.30( 0.29) 0.95   64055.1   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      651.40   18.38    2.116  0.30( 0.23) 0.76     399.7   10300.00
    2      652.99   19.22    2.047  0.30( 0.23) 0.76     413.6   10380.00
    3      641.00   21.63    1.902  0.30( 0.23) 0.76     440.0   10320.00
    4      618.06   23.73    1.796  0.30( 0.23) 0.76     451.6   10360.00
    5      581.15   26.62    1.665  0.30( 0.23) 0.76     460.8   10340.00
LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20851.65   18.38    2.116  0.30( 0.25) 0.83    3597.3   10300.00
    2    21000.99   19.20    2.049  0.30( 0.25) 0.83    3753.8   10230.00
    3    21007.40   19.22    2.047  0.30( 0.25) 0.83    3757.8   10380.00
    4    21895.53   21.63    1.902  0.30( 0.25) 0.83    4302.9   10320.00
    5    22181.04   22.42    1.862  0.30( 0.25) 0.83    4476.8     300.00
    6    22526.39   23.73    1.796  0.30( 0.25) 0.83    4906.6   10360.00
    7    23283.42   26.62    1.665  0.30( 0.25) 0.83    5848.5   10340.00
    8    23679.80   28.16    1.601  0.30( 0.25) 0.83    6344.5   10200.00
    9    23738.47   28.39    1.591  0.30( 0.25) 0.83    6417.9   10250.00
   10    24740.34   32.25    1.479  0.30( 0.25) 0.84    7648.2   10220.00
   11    26596.98   39.27    1.338  0.30( 0.25) 0.84    9874.9     100.00
   12    27978.11   44.94    1.248  0.30( 0.25) 0.85   12177.1   10100.00
   13    28595.22   49.77    1.174  0.30( 0.26) 0.86   14068.9     150.00
   14    29563.54   57.78    1.073  0.30( 0.26) 0.87   16968.5     600.00
   15    30245.05   62.90    1.029  0.30( 0.26) 0.88   19230.9   31100.00
   16    31914.81   74.33    0.964  0.30( 0.27) 0.90   24255.9   40100.00
   17    33314.38   81.85    0.921  0.30( 0.27) 0.91   27603.7   11801.00
   18    35551.08   92.20    0.867  0.30( 0.28) 0.92   32925.1   11530.00
   19    36788.96  100.69    0.835  0.30( 0.28) 0.93   38166.4   11910.00
   20    38636.06  110.41    0.799  0.30( 0.28) 0.94   44838.5   11350.00
   21    39070.48  115.07    0.781  0.30( 0.28) 0.94   48012.7   11130.00
   22    38713.27  121.15    0.761  0.30( 0.28) 0.94   50939.3   12300.00
   23    38017.02  129.95    0.742  0.30( 0.28) 0.95   55199.9   12400.00
   24    37035.72  139.51    0.721  0.30( 0.28) 0.95   58601.4   12201.00
```

```
    25    36107.82  147.05    0.705  0.30( 0.29) 0.95   60494.5   12231.00
    26    35139.28  154.59    0.689  0.30( 0.29) 0.95   62047.2   10400.00
    27    33617.21  164.13    0.668  0.30( 0.29) 0.95   63493.6   12010.00
    28    32595.11  169.59    0.656  0.30( 0.29) 0.95   63756.2   10210.00
    29    28367.62  200.31    0.615  0.30( 0.29) 0.95   64515.9   10100.00
   TOTAL AREA(ACRES) =     64515.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    39070.48  Tc(MIN.) =  115.067
  EFFECTIVE AREA(ACRES) =  48012.68  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    64515.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.67
  CHANNEL FLOW THRU SUBAREA(CFS) =   39070.48
  FLOW VELOCITY(FEET/SEC.) =  38.97   FLOW DEPTH(FEET) =   7.67
  TRAVEL TIME(MIN.) =   0.16   Tc(MIN.) =  115.22
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104D.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       65.97   19.78  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20851.65   18.57    2.100  0.30( 0.25) 0.83    3597.3   10300.00
```



```
    2    21000.99   19.39    2.033  0.30( 0.25) 0.83    3753.8   10230.00
    3    21007.40   19.41    2.032  0.30( 0.25) 0.83    3757.8   10380.00
    4    21895.53   21.82    1.892  0.30( 0.25) 0.83    4302.9   10320.00
    5    22181.04   22.61    1.852  0.30( 0.25) 0.83    4476.8     300.00
    6    22526.39   23.92    1.787  0.30( 0.25) 0.83    4906.6   10360.00
    7    23283.42   26.80    1.657  0.30( 0.25) 0.83    5848.5   10340.00
    8    23679.80   28.34    1.593  0.30( 0.25) 0.83    6344.5   10200.00
    9    23738.47   28.57    1.584  0.30( 0.25) 0.83    6417.9   10250.00
   10    24740.34   32.43    1.475  0.30( 0.25) 0.84    7648.2   10220.00
   11    26596.98   39.45    1.334  0.30( 0.25) 0.84    9874.9     100.00
   12    27978.11   45.12    1.245  0.30( 0.25) 0.85   12177.1   10100.00
   13    28595.22   49.94    1.172  0.30( 0.26) 0.86   14068.9     150.00
   14    29563.54   57.95    1.071  0.30( 0.26) 0.87   16968.5     600.00
   15    30245.05   63.07    1.028  0.30( 0.26) 0.88   19230.9   31100.00
   16    31914.81   74.50    0.963  0.30( 0.27) 0.90   24255.9   40100.00
   17    33314.38   82.01    0.920  0.30( 0.27) 0.91   27603.7   11801.00
   18    35551.08   92.36    0.866  0.30( 0.28) 0.92   32925.1   11530.00
   19    36788.96  100.85    0.835  0.30( 0.28) 0.93   38166.4   11910.00
   20    38636.06  110.57    0.798  0.30( 0.28) 0.94   44838.5   11350.00
   21    39070.48  115.22    0.781  0.30( 0.28) 0.94   48012.7   11130.00
   22    38713.27  121.31    0.760  0.30( 0.28) 0.94   50939.3   12300.00
   23    38017.02  130.11    0.741  0.30( 0.28) 0.95   55199.9   12400.00
   24    37035.72  139.67    0.721  0.30( 0.28) 0.95   58601.4   12201.00
   25    36107.82  147.21    0.704  0.30( 0.29) 0.95   60494.5   12231.00
   26    35139.28  154.75    0.688  0.30( 0.29) 0.95   62047.2   10400.00
   27    33617.21  164.29    0.668  0.30( 0.29) 0.95   63493.6   12010.00
   28    32595.11  169.75    0.656  0.30( 0.29) 0.95   63756.2   10210.00
   29    28367.62  200.48    0.615  0.30( 0.29) 0.95   64515.9   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       65.97   19.78    2.002  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20917.04   18.57    2.100  0.30( 0.25) 0.83    3638.9   10300.00
    2    21066.82   19.39    2.033  0.30( 0.25) 0.83    3797.2   10230.00
    3    21073.25   19.41    2.032  0.30( 0.25) 0.83    3801.2   10380.00
    4    21209.72   19.78    2.002  0.30( 0.25) 0.83    3885.8   10400.00
    5    21957.39   21.82    1.892  0.30( 0.25) 0.83    4347.2   10320.00
    6    22241.42   22.61    1.852  0.30( 0.25) 0.83    4521.1     300.00
    7    22584.30   23.92    1.787  0.30( 0.25) 0.83    4950.9   10360.00
    8    23336.48   26.80    1.657  0.30( 0.25) 0.83    5892.8   10340.00
    9    23730.47   28.34    1.593  0.30( 0.25) 0.83    6388.8   10200.00
   10    23788.78   28.57    1.584  0.30( 0.25) 0.83    6462.2   10250.00
   11    24786.60   32.43    1.475  0.30( 0.25) 0.84    7692.5   10220.00
   12    26637.95   39.45    1.334  0.30( 0.25) 0.84    9919.2     100.00
   13    28015.76   45.12    1.245  0.30( 0.25) 0.85   12221.4   10100.00
   14    28630.12   49.94    1.172  0.30( 0.26) 0.86   14113.2     150.00
   15    29594.66   57.95    1.071  0.30( 0.26) 0.87   17012.8     600.00
   16    30274.55   63.07    1.028  0.30( 0.26) 0.88   19275.2   31100.00
   17    31941.88   74.50    0.963  0.30( 0.27) 0.90   24300.2   40100.00
   18    33339.86   82.01    0.920  0.30( 0.27) 0.91   27648.0   11801.00
   19    35574.54   92.36    0.866  0.30( 0.28) 0.92   32969.4   11530.00
```

20	36811.23	100.85	0.835	0.30(0.28)	0.93	38210.7	11910.00
21	38656.97	110.57	0.798	0.30(0.28)	0.94	44882.8	11350.00
22	39090.74	115.22	0.781	0.30(0.28)	0.94	48057.0	11130.00
23	38732.76	121.31	0.760	0.30(0.28)	0.94	50983.6	12300.00
24	38035.80	130.11	0.741	0.30(0.28)	0.95	55244.2	12400.00
25	37053.74	139.67	0.721	0.30(0.28)	0.95	58645.7	12201.00
26	36125.22	147.21	0.704	0.30(0.29)	0.95	60538.8	12231.00
27	35156.08	154.75	0.688	0.30(0.29)	0.95	62091.5	10400.00
28	33633.24	164.29	0.668	0.30(0.29)	0.95	63537.9	12010.00
29	32610.71	169.75	0.656	0.30(0.29)	0.95	63800.5	10210.00
30	28381.66	200.48	0.615	0.30(0.29)	0.95	64560.2	10100.00

TOTAL AREA(ACRES) = 64560.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39090.74 Tc(MIN.) = 115.223
EFFECTIVE AREA(ACRES) = 48056.98 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64560.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128872.66 FEET.

****
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 15.61
CHANNEL FLOW THRU SUBAREA(CFS) = 39090.74
FLOW VELOCITY(FEET/SEC.) = 15.41 FLOW DEPTH(FEET) = 15.61
TRAVEL TIME(MIN.) = 1.66 Tc(MIN.) = 116.88
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506105K.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	355.73	14.74	0.30(0.27)	0.90	206.7	10520.00
2	414.68	31.61	0.30(0.28)	0.93	403.6	10500.00

TOTAL AREA(ACRES) = 403.6

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20917.04	20.56	1.956	0.30(0.25)	0.83	3638.9	10300.00
2	21066.82	21.38	1.915	0.30(0.25)	0.83	3797.2	10230.00
3	21073.25	21.39	1.914	0.30(0.25)	0.83	3801.2	10380.00
4	21209.72	21.76	1.895	0.30(0.25)	0.83	3885.8	10400.00
5	21957.39	23.78	1.793	0.30(0.25)	0.83	4347.2	10320.00
6	22241.42	24.56	1.754	0.30(0.25)	0.83	4521.1	300.00
7	22584.30	25.86	1.696	0.30(0.25)	0.83	4950.9	10360.00
8	23336.48	28.73	1.577	0.30(0.25)	0.83	5892.8	10340.00
9	23730.47	30.25	1.519	0.30(0.25)	0.83	6388.8	10200.00
10	23788.78	30.48	1.514	0.30(0.25)	0.83	6462.2	10250.00
11	24786.60	34.32	1.437	0.30(0.25)	0.84	7692.5	10220.00
12	26637.95	41.30	1.303	0.30(0.25)	0.84	9919.2	100.00
13	28015.76	46.94	1.218	0.30(0.25)	0.85	12221.4	10100.00
14	28630.12	51.76	1.149	0.30(0.26)	0.86	14113.2	150.00
15	29594.66	59.75	1.048	0.30(0.26)	0.87	17012.8	600.00
16	30274.55	64.85	1.018	0.30(0.26)	0.88	19275.2	31100.00
17	31941.88	76.25	0.953	0.30(0.27)	0.90	24300.2	40100.00
18	33339.86	83.75	0.910	0.30(0.27)	0.91	27648.0	11801.00
19	35574.54	94.07	0.860	0.30(0.28)	0.92	32969.4	11530.00
20	36811.23	102.53	0.828	0.30(0.28)	0.93	38210.7	11910.00
21	38656.97	112.23	0.792	0.30(0.28)	0.94	44882.8	11350.00
22	39090.74	116.88	0.775	0.30(0.28)	0.94	48057.0	11130.00
23	38732.76	122.97	0.757	0.30(0.28)	0.94	50983.6	12300.00
24	38035.80	131.78	0.738	0.30(0.28)	0.95	55244.2	12400.00
25	37053.74	141.36	0.717	0.30(0.28)	0.95	58645.7	12201.00
26	36125.22	148.91	0.701	0.30(0.29)	0.95	60538.8	12231.00
27	35156.08	156.46	0.685	0.30(0.29)	0.95	62091.5	10400.00
28	33633.24	166.02	0.664	0.30(0.29)	0.95	63537.9	12010.00
29	32610.71	171.50	0.652	0.30(0.29)	0.95	63800.5	10210.00
30	28381.66	202.30	0.613	0.30(0.29)	0.95	64560.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	355.73	14.74	2.428	0.30(0.27)	0.90	206.7	10520.00
2	414.68	31.61	1.492	0.30(0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19496.04	14.74	2.428	0.30(0.25)	0.83	2815.2	10520.00
2	21293.11	20.56	1.956	0.30(0.25)	0.83	3913.5	10300.00
3	21445.74	21.38	1.915	0.30(0.25)	0.83	4081.3	10230.00
4	21452.22	21.39	1.914	0.30(0.25)	0.83	4085.5	10380.00
5	21589.98	21.76	1.895	0.30(0.25)	0.83	4174.3	10400.00
6	22344.71	23.78	1.793	0.30(0.25)	0.83	4659.4	10320.00
7	22631.47	24.56	1.754	0.30(0.25)	0.83	4842.5	300.00
8	22978.89	25.86	1.696	0.30(0.25)	0.84	5287.4	10360.00
9	23741.08	28.73	1.577	0.30(0.25)	0.84	6262.7	10340.00
10	24140.40	30.25	1.519	0.30(0.25)	0.84	6776.5	10200.00

11	24199.51	30.48	1.514	0.30(0.25)	0.84	6852.6	10250.00
12	24497.92	31.61	1.492	0.30(0.25)	0.84	7228.9	10500.00
13	25182.70	34.32	1.437	0.30(0.25)	0.84	8096.1	10220.00
14	26988.27	41.30	1.303	0.30(0.25)	0.84	10322.8	100.00
15	28336.79	46.94	1.218	0.30(0.26)	0.85	12625.0	10100.00
16	28927.71	51.76	1.149	0.30(0.26)	0.86	14516.8	150.00
17	29857.84	59.75	1.048	0.30(0.26)	0.87	17416.4	600.00
18	30527.25	64.85	1.018	0.30(0.26)	0.88	19678.8	31100.00
19	32172.50	76.25	0.953	0.30(0.27)	0.90	24703.8	40100.00
20	33555.97	83.75	0.910	0.30(0.27)	0.91	28051.6	11801.00
21	35773.35	94.07	0.860	0.30(0.28)	0.92	33373.0	11530.00
22	36999.25	102.53	0.828	0.30(0.28)	0.93	38614.3	11910.00
23	38832.61	112.23	0.792	0.30(0.28)	0.94	45286.4	11350.00
24	39260.45	116.88	0.775	0.30(0.28)	0.94	48460.6	11130.00
25	38896.31	122.97	0.757	0.30(0.28)	0.94	51387.2	12300.00
26	38192.88	131.78	0.738	0.30(0.28)	0.95	55647.8	12400.00
27	37203.78	141.36	0.717	0.30(0.28)	0.95	59049.3	12201.00
28	36269.71	148.91	0.701	0.30(0.29)	0.95	60942.4	12231.00
29	35295.02	156.46	0.685	0.30(0.29)	0.95	62495.1	10400.00
30	33765.16	166.02	0.664	0.30(0.29)	0.95	63941.5	12010.00
31	32738.60	171.50	0.652	0.30(0.29)	0.95	64204.1	10210.00
32	28496.11	202.30	0.613	0.30(0.29)	0.95	64963.9	10100.00

TOTAL AREA(ACRES) = 64963.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39260.45 Tc(MIN.) = 116.881
EFFECTIVE AREA(ACRES) = 48460.58 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 64963.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 134.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0000
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 45.25
CHANNEL FLOW THRU SUBAREA(CFS) = 39260.45
FLOW VELOCITY(FEET/SEC.) = 3.09 FLOW DEPTH(FEET) = 45.25
TRAVEL TIME(MIN.) = 1.12 Tc(MIN.) = 118.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==

PEAK FLOWRATE TABLE FILE NAME: 0506106D.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	59.23	17.66	0.30(0.20)	0.67	36.9	10600.00

TOTAL AREA(ACRES) = 36.9

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19496.04	16.08	2.302	0.30(0.25)	0.83	2815.2	10520.00
2	21293.11	21.87	1.890	0.30(0.25)	0.83	3913.5	10300.00
3	21445.74	22.68	1.849	0.30(0.25)	0.83	4081.3	10230.00
4	21452.22	22.70	1.848	0.30(0.25)	0.83	4085.5	10380.00
5	21589.98	23.07	1.829	0.30(0.25)	0.83	4174.3	10400.00
6	22344.71	25.08	1.729	0.30(0.25)	0.83	4659.4	10320.00
7	22631.47	25.86	1.696	0.30(0.25)	0.83	4842.5	300.00
8	22978.89	27.15	1.643	0.30(0.25)	0.84	5287.4	10360.00
9	23741.08	30.00	1.524	0.30(0.25)	0.84	6262.7	10340.00
10	24140.40	31.52	1.493	0.30(0.25)	0.84	6776.5	10200.00
11	24199.51	31.75	1.489	0.30(0.25)	0.84	6852.6	10250.00
12	24497.92	32.88	1.466	0.30(0.25)	0.84	7228.9	10500.00
13	25182.70	35.57	1.412	0.30(0.25)	0.84	8096.1	10220.00
14	26988.27	42.53	1.284	0.30(0.25)	0.84	10322.8	100.00
15	28336.79	48.16	1.199	0.30(0.26)	0.85	12625.0	10100.00
16	28927.71	52.97	1.134	0.30(0.26)	0.86	14516.8	150.00
17	29857.84	60.95	1.040	0.30(0.26)	0.87	17416.4	600.00
18	30527.25	66.04	1.011	0.30(0.26)	0.88	19678.8	31100.00
19	32172.50	77.43	0.946	0.30(0.27)	0.90	24703.8	40100.00
20	33555.97	84.91	0.904	0.30(0.27)	0.91	28051.6	11801.00
21	35773.35	95.21	0.856	0.30(0.28)	0.92	33373.0	11530.00
22	36999.25	103.67	0.824	0.30(0.28)	0.93	38614.3	11910.00
23	38832.61	113.35	0.788	0.30(0.28)	0.94	45286.4	11350.00
24	39260.45	118.00	0.770	0.30(0.28)	0.94	48460.6	11130.00
25	38896.31	124.09	0.754	0.30(0.28)	0.94	51387.2	12300.00
26	38192.88	132.90	0.735	0.30(0.28)	0.95	55647.8	12400.00
27	37203.78	142.49	0.715	0.30(0.28)	0.95	59049.3	12201.00
28	36269.71	150.05	0.698	0.30(0.29)	0.95	60942.4	12231.00
29	35295.02	157.61	0.682	0.30(0.29)	0.95	62495.1	10400.00
30	33765.16	167.19	0.662	0.30(0.29)	0.95	63941.5	12010.00
31	32738.60	172.67	0.650	0.30(0.29)	0.95	64204.1	10210.00
32	28496.11	203.51	0.612	0.30(0.29)	0.95	64963.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	59.23	17.66	2.174	0.30(0.20)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	19553.48	16.08	2.302	0.30(0.25)	0.83	2848.8	10520.00
2	20045.15	17.66	2.174	0.30(0.25)	0.83	3151.5	10600.00
3	21343.80	21.87	1.890	0.30(0.25)	0.83	3950.4	10300.00
4	21495.20	22.68	1.849	0.30(0.25)	0.83	4118.2	10230.00
5	21501.66	22.70	1.848	0.30(0.25)	0.83	4122.4	10380.00
6	21638.86	23.07	1.829	0.30(0.25)	0.83	4211.2	10400.00
7	22390.58	25.08	1.729	0.30(0.25)	0.83	4696.3	10320.00
8	22676.37	25.86	1.696	0.30(0.25)	0.83	4879.4	300.00
9	23022.17	27.15	1.643	0.30(0.25)	0.83	5324.3	10360.00
10	23780.80	30.00	1.524	0.30(0.25)	0.84	6299.6	10340.00
11	24179.20	31.52	1.493	0.30(0.25)	0.84	6813.4	10200.00
12	24238.17	31.75	1.489	0.30(0.25)	0.84	6889.5	10250.00
13	24535.89	32.88	1.466	0.30(0.25)	0.84	7265.8	10500.00
14	25219.05	35.57	1.412	0.30(0.25)	0.84	8133.0	10220.00
15	27020.80	42.53	1.284	0.30(0.25)	0.84	10359.7	100.00
16	28366.75	48.16	1.199	0.30(0.26)	0.85	12661.9	10100.00
17	28955.71	52.97	1.134	0.30(0.26)	0.86	14553.7	150.00
18	29883.02	60.95	1.040	0.30(0.26)	0.87	17453.3	600.00
19	30551.56	66.04	1.011	0.30(0.26)	0.88	19715.7	31100.00
20	32194.88	77.43	0.946	0.30(0.27)	0.90	24740.7	40100.00
21	33577.07	84.91	0.904	0.30(0.27)	0.91	28088.5	11801.00
22	35793.00	95.21	0.856	0.30(0.28)	0.92	33409.9	11530.00
23	37017.95	103.67	0.824	0.30(0.28)	0.93	38651.2	11910.00
24	38850.23	113.35	0.788	0.30(0.28)	0.94	45323.3	11350.00
25	39277.55	118.00	0.770	0.30(0.28)	0.94	48497.5	11130.00
26	38912.91	124.09	0.754	0.30(0.28)	0.94	51424.1	12300.00
27	38208.91	132.90	0.735	0.30(0.28)	0.95	55684.7	12400.00
28	37219.20	142.49	0.715	0.30(0.28)	0.95	59086.2	12201.00
29	36284.65	150.05	0.698	0.30(0.28)	0.95	60979.3	12231.00
30	35309.47	157.61	0.682	0.30(0.29)	0.95	62532.0	10400.00
31	33778.98	167.19	0.662	0.30(0.29)	0.95	63978.4	12010.00
32	32752.07	172.67	0.650	0.30(0.29)	0.95	64241.0	10210.00
33	28508.45	203.51	0.612	0.30(0.29)	0.95	65000.8	10100.00

TOTAL AREA(ACRES) = 65000.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39277.55 Tc(MIN.) = 118.000
EFFECTIVE AREA(ACRES) = 48497.48 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65000.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 65000.8 TC(MIN.) = 118.00
EFFECTIVE AREA(ACRES) = 48497.48 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 39277.55

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19553.48	16.08	2.302	0.30(0.25)	0.83	2848.8	10520.00
2	20045.15	17.66	2.174	0.30(0.25)	0.83	3151.5	10600.00
3	21343.80	21.87	1.890	0.30(0.25)	0.83	3950.4	10300.00
4	21495.20	22.68	1.849	0.30(0.25)	0.83	4118.2	10230.00
5	21501.66	22.70	1.848	0.30(0.25)	0.83	4122.4	10380.00
6	21638.86	23.07	1.829	0.30(0.25)	0.83	4211.2	10400.00

7	22390.58	25.08	1.729	0.30(0.25)	0.83	4696.3	10320.00
8	22676.37	25.86	1.696	0.30(0.25)	0.83	4879.4	300.00
9	23022.17	27.15	1.643	0.30(0.25)	0.83	5324.3	10360.00
10	23780.80	30.00	1.524	0.30(0.25)	0.84	6299.6	10340.00
11	24179.20	31.52	1.493	0.30(0.25)	0.84	6813.4	10200.00
12	24238.17	31.75	1.489	0.30(0.25)	0.84	6889.5	10250.00
13	24535.89	32.88	1.466	0.30(0.25)	0.84	7265.8	10500.00
14	25219.05	35.57	1.412	0.30(0.25)	0.84	8133.0	10220.00
15	27020.80	42.53	1.284	0.30(0.25)	0.84	10359.7	100.00
16	28366.75	48.16	1.199	0.30(0.26)	0.85	12661.9	10100.00
17	28955.71	52.97	1.134	0.30(0.26)	0.86	14553.7	150.00
18	29883.02	60.95	1.040	0.30(0.26)	0.87	17453.3	600.00
19	30551.56	66.04	1.011	0.30(0.26)	0.88	19715.7	31100.00
20	32194.88	77.43	0.946	0.30(0.27)	0.90	24740.7	40100.00
21	33577.07	84.91	0.904	0.30(0.27)	0.91	28088.5	11801.00
22	35793.00	95.21	0.856	0.30(0.28)	0.92	33409.9	11530.00
23	37017.95	103.67	0.824	0.30(0.28)	0.93	38651.2	11910.00
24	38850.23	113.35	0.788	0.30(0.28)	0.94	45323.3	11350.00
25	39277.55	118.00	0.770	0.30(0.28)	0.94	48497.5	11130.00
26	38912.91	124.09	0.754	0.30(0.28)	0.94	51424.1	12300.00
27	38208.91	132.90	0.735	0.30(0.28)	0.95	55684.7	12400.00
28	37219.20	142.49	0.715	0.30(0.28)	0.95	59086.2	12201.00
29	36284.65	150.05	0.698	0.30(0.28)	0.95	60979.3	12231.00
30	35309.47	157.61	0.682	0.30(0.29)	0.95	62532.0	10400.00
31	33778.98	167.19	0.662	0.30(0.29)	0.95	63978.4	12010.00
32	32752.07	172.67	0.650	0.30(0.29)	0.95	64241.0	10210.00
33	28508.45	203.51	0.612	0.30(0.29)	0.95	65000.8	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 25-YR EV AUG 2023 ROKAMOTO                                           *
 ***********************************************************************

  FILE NAME: RU25EV38.DAT
  TIME/DATE OF STUDY: 00:11 08/11/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.741
   2)   10.00;  3.104
   3)   15.00;  2.386
   4)   20.00;  1.981
   5)   25.00;  1.730
   6)   30.00;  1.523
   7)   40.00;  1.322
   8)   50.00;  1.169
   9)   60.00;  1.043
  10)   90.00;  0.873
  11)  120.00;  0.761
  12)  180.00;  0.632
  13)  360.00;  0.462
  14) 1200.00;  0.202
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20045.15   17.66  0.30( 0.25) 0.83    3151.5   10600.00
      2    21638.86   23.07  0.30( 0.25) 0.83    4211.2   10400.00
      3    25219.05   35.57  0.30( 0.25) 0.84    8133.0   10220.00
      4    27020.80   42.53  0.30( 0.25) 0.84   10359.7     100.00
      5    28955.71   52.97  0.30( 0.26) 0.86   14553.7     150.00
      6    29883.02   60.95  0.30( 0.26) 0.87   17453.3     600.00
      7    30551.56   66.04  0.30( 0.26) 0.88   19715.7   31100.00
      8    32194.88   77.43  0.30( 0.27) 0.90   24740.7   40100.00
      9    33577.07   84.91  0.30( 0.27) 0.91   28088.5   11801.00
     10    35793.00   95.21  0.30( 0.28) 0.92   33409.9   11530.00
     11    37017.95  103.67  0.30( 0.28) 0.93   38651.2   11910.00
     12    39277.55  118.00  0.30( 0.28) 0.94   48497.5   11130.00
     13    38912.91  124.09  0.30( 0.28) 0.94   51424.1   12300.00
     14    38208.91  132.90  0.30( 0.28) 0.95   55684.7   12400.00
     15    37219.20  142.49  0.30( 0.28) 0.95   59086.2   12201.00
     16    36284.65  150.05  0.30( 0.28) 0.95   60979.3   12231.00
     17    35309.47  157.61  0.30( 0.29) 0.95   62532.0   10400.00
     18    33778.98  167.19  0.30( 0.29) 0.95   63978.4   12010.00
     19    32752.07  172.67  0.30( 0.29) 0.95   64241.0   10210.00
     20    28508.45  203.51  0.30( 0.29) 0.95   65000.8   10100.00
   TOTAL AREA(ACRES) =    65000.8

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20045.15   17.66  0.30( 0.25) 0.83    3151.5   10600.00
      2    21638.86   23.07  0.30( 0.25) 0.83    4211.2   10400.00
      3    25219.05   35.57  0.30( 0.25) 0.84    8133.0   10220.00
      4    27020.80   42.53  0.30( 0.25) 0.84   10359.7     100.00
      5    28955.71   52.97  0.30( 0.26) 0.86   14553.7     150.00
      6    29883.02   60.95  0.30( 0.26) 0.87   17453.3     600.00
      7    30551.56   66.04  0.30( 0.26) 0.88   19715.7   31100.00
      8    32194.88   77.43  0.30( 0.27) 0.90   24740.7   40100.00
      9    33577.07   84.91  0.30( 0.27) 0.91   28088.5   11801.00
     10    35793.00   95.21  0.30( 0.28) 0.92   33409.9   11530.00
     11    37017.95  103.67  0.30( 0.28) 0.93   38651.2   11910.00
     12    39277.55  118.00  0.30( 0.28) 0.94   48497.5   11130.00
     13    38912.91  124.09  0.30( 0.28) 0.94   51424.1   12300.00
```

```
     14    38208.91  132.90  0.30( 0.28) 0.95   55684.7   12400.00
     15    37219.20  142.49  0.30( 0.28) 0.95   59086.2   12201.00
     16    36284.65  150.05  0.30( 0.28) 0.95   60979.3   12231.00
     17    35309.47  157.61  0.30( 0.29) 0.95   62532.0   10400.00
     18    33778.98  167.19  0.30( 0.29) 0.95   63978.4   12010.00
     19    32752.07  172.67  0.30( 0.29) 0.95   64241.0   10210.00
     20    28508.45  203.51  0.30( 0.29) 0.95   65000.8   10100.00
    TOTAL AREA(ACRES) =     65000.8

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    134.99  DOWNSTREAM(FEET) =    134.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  21.76
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.762
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   39284.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.65
  AVERAGE FLOW DEPTH(FEET) =  21.76   TRAVEL TIME(MIN.) =   1.60
  Tc(MIN.) =  119.60
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =   13.23
  EFFECTIVE AREA(ACRES) =  48528.92     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65032.2         PEAK FLOW RATE(CFS) =   39277.55
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  21.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 21.75   FLOW VELOCITY(FEET/SEC.) =   9.65
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  119.60
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   48528.92
  TOTAL STREAM AREA(ACRES) =   65032.19
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   39277.55

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.775
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    65   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     12.43
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =     12.43

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.497
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.00
  AVERAGE FLOW DEPTH(FEET) =   0.42   TRAVEL TIME(MIN.) =   1.93
  Tc(MIN.) =   14.23
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   29.25
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4          PEAK FLOW RATE(CFS) =      40.28
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.53   FLOW VELOCITY(FEET/SEC.) =   6.88
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.99
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.261
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.91
  AVERAGE FLOW DEPTH(FEET) =   0.97   TRAVEL TIME(MIN.) =   2.31
  Tc(MIN.) =   16.54
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   32.50
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      68.45
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.08

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   5.21
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.027
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      90.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.39
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   2.89
  Tc(MIN.) =   19.43
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   44.38
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =     104.66
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.11

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.11   FLOW VELOCITY(FEET/SEC.) =   7.72
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  22.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.06
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     104.66
  PIPE TRAVEL TIME(MIN.) =   1.82    Tc(MIN.) =   21.26
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.26
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.918
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =  131.50
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     229.62

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   21.26
  RAINFALL INTENSITY(INCH/HR) =   1.92
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
```

TOTAL STREAM AREA(ACRES) = 150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 229.62

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20045.15	19.59	2.014	0.30(0.25)	0.83	3183.0	10600.00
1	21638.86	24.95	1.732	0.30(0.25)	0.83	4242.7	10400.00
1	25219.05	37.38	1.375	0.30(0.25)	0.84	8164.4	10220.00
1	27020.80	44.31	1.256	0.30(0.25)	0.84	10391.1	100.00
1	28955.71	54.71	1.110	0.30(0.26)	0.86	14585.2	150.00
1	29883.02	62.67	1.028	0.30(0.26)	0.87	17484.8	600.00
1	30551.56	67.76	0.999	0.30(0.26)	0.88	19747.1	31100.00
1	32194.88	79.12	0.935	0.30(0.27)	0.90	24772.1	40100.00
1	33577.07	86.58	0.892	0.30(0.27)	0.91	28119.9	11801.00
1	35793.00	96.85	0.847	0.30(0.28)	0.92	33441.4	11530.00
1	37017.95	105.29	0.816	0.30(0.28)	0.93	38682.6	11910.00
1	39277.55	119.60	0.762	0.30(0.28)	0.94	48528.9	11130.00
1	38912.91	125.70	0.749	0.30(0.28)	0.94	51455.5	12300.00
1	38208.91	134.52	0.730	0.30(0.28)	0.95	55716.1	12400.00
1	37219.20	144.11	0.709	0.30(0.28)	0.95	59117.7	12201.00
1	36284.65	151.68	0.693	0.30(0.28)	0.95	61010.7	12231.00
1	35309.47	159.26	0.677	0.30(0.29)	0.95	62563.4	10400.00
1	33778.98	168.85	0.656	0.30(0.29)	0.95	64009.9	12010.00
1	32752.07	174.35	0.644	0.30(0.29)	0.95	64272.4	10210.00
1	28508.45	205.26	0.608	0.30(0.29)	0.95	65032.2	10100.00
2	229.62	21.26	1.918	0.30(0.22)	0.73	150.3	13810.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20268.77	19.59	2.014	0.30(0.25)	0.83	3321.4	10600.00
2	20770.94	21.26	1.918	0.30(0.25)	0.83	3663.2	13810.00
3	21843.39	24.95	1.732	0.30(0.25)	0.83	4393.0	10400.00
4	25375.19	37.38	1.375	0.30(0.25)	0.84	8314.7	10220.00
5	27160.91	44.31	1.256	0.30(0.25)	0.84	10541.4	100.00
6	29076.01	54.71	1.110	0.30(0.26)	0.86	14735.5	150.00
7	29992.26	62.67	1.028	0.30(0.26)	0.87	17635.1	600.00
8	30656.89	67.76	0.999	0.30(0.26)	0.88	19897.4	31100.00
9	32291.50	79.12	0.935	0.30(0.27)	0.90	24922.4	40100.00
10	33667.98	86.58	0.892	0.30(0.27)	0.91	28270.2	11801.00
11	35877.83	96.85	0.847	0.30(0.28)	0.92	33591.7	11530.00
12	37098.52	105.29	0.816	0.30(0.28)	0.93	38832.9	11910.00
13	39350.89	119.60	0.762	0.30(0.28)	0.94	48679.2	11130.00
14	38984.40	125.70	0.749	0.30(0.28)	0.94	51605.8	12300.00
15	38277.83	134.52	0.730	0.30(0.28)	0.95	55866.4	12400.00
16	37285.33	144.11	0.709	0.30(0.28)	0.95	59268.0	12201.00
17	36348.57	151.68	0.693	0.30(0.28)	0.95	61161.0	12231.00
18	35371.20	159.26	0.677	0.30(0.29)	0.95	62713.7	10400.00
19	33837.91	168.85	0.656	0.30(0.29)	0.95	64160.2	12010.00
20	32809.41	174.35	0.644	0.30(0.29)	0.95	64422.7	10210.00
21	28560.91	205.26	0.608	0.30(0.29)	0.95	65182.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39350.89 Tc(MIN.) = 119.60

EFFECTIVE AREA(ACRES) = 48679.21 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65182.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.54
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.759
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.60	0.30	0.683	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 39358.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.32
AVERAGE FLOW DEPTH(FEET) = 16.54 TRAVEL TIME(MIN.) = 1.47
Tc(MIN.) = 121.07
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 15.75
EFFECTIVE AREA(ACRES) = 48710.81 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65214.1 PEAK FLOW RATE(CFS) = 39350.89
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 16.54 FLOW VELOCITY(FEET/SEC.) = 14.31
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 121.07
RAINFALL INTENSITY(INCH/HR) = 0.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48710.81
TOTAL STREAM AREA(ACRES) = 65214.08
PEAK FLOW RATE(CFS) AT CONFLUENCE = 39350.89

****
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

```
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.550
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    65   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.25
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =     10.25

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.219
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      38.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.60
  AVERAGE FLOW DEPTH(FEET) =   0.61   TRAVEL TIME(MIN.) =   3.21
  Tc(MIN.) =   17.06
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   56.25
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      64.99
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.83

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.83   FLOW VELOCITY(FEET/SEC.) =   6.73
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.928
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      88.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.85
  AVERAGE FLOW DEPTH(FEET) =   0.95   TRAVEL TIME(MIN.) =   4.00
  Tc(MIN.) =   21.06
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   47.22
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     102.34
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   8.27
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     121.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.01
  AVERAGE FLOW DEPTH(FEET) =   1.22   TRAVEL TIME(MIN.) =   1.96
  Tc(MIN.) =   23.03
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   37.86
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =     134.01
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.29

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.29   FLOW VELOCITY(FEET/SEC.) =   8.24
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.77
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.673
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     192.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.18
  AVERAGE FLOW DEPTH(FEET) =   1.74   TRAVEL TIME(MIN.) =   3.36
  Tc(MIN.) =   26.38
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =  116.41
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     236.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.95   FLOW VELOCITY(FEET/SEC.) =   8.73
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.531
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     366.16
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.28
  AVERAGE FLOW DEPTH(FEET) =   2.83   TRAVEL TIME(MIN.) =   3.42
  Tc(MIN.) =   29.80
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  258.52
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     470.85
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.22

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.22   FLOW VELOCITY(FEET/SEC.) =   8.89
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.421
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     540.99
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.98
  AVERAGE FLOW DEPTH(FEET) =   3.83   TRAVEL TIME(MIN.) =   5.28
  Tc(MIN.) =   35.08
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  140.27
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     568.89
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.93   FLOW VELOCITY(FEET/SEC.) =   8.09
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
```

DEPTH OF FLOW IN 63.0 INCH PIPE IS 46.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 33.24
ESTIMATED PIPE DIAMETER(INCH) = 63.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 568.89
PIPE TRAVEL TIME(MIN.) = 0.58 Tc(MIN.) = 35.65
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

****
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 35.65
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.409
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.97	0.30	0.622	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622
SUBAREA AREA(ACRES) = 5.97 SUBAREA RUNOFF(CFS) = 6.57
EFFECTIVE AREA(ACRES) = 565.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 565.5 PEAK FLOW RATE(CFS) = 569.62

****
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 35.65
RAINFALL INTENSITY(INCH/HR) = 1.41
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 565.50
TOTAL STREAM AREA(ACRES) = 565.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 569.62

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20268.77	21.36	1.913	0.30(0.25)	0.83	3353.0	10600.00
1	20770.94	23.02	1.829	0.30(0.25)	0.83	3694.8	13810.00
1	21843.39	26.69	1.660	0.30(0.25)	0.83	4424.6	10400.00
1	25375.19	39.05	1.341	0.30(0.25)	0.84	8346.3	10220.00
1	27160.91	45.94	1.231	0.30(0.25)	0.84	10573.0	100.00
1	29076.01	56.31	1.090	0.30(0.26)	0.86	14767.1	150.00
1	29992.26	64.26	1.019	0.30(0.26)	0.87	17666.7	600.00
1	30656.89	69.33	0.990	0.30(0.26)	0.88	19929.0	31100.00
1	32291.50	80.67	0.926	0.30(0.27)	0.90	24954.0	40100.00
1	33667.98	88.12	0.884	0.30(0.27)	0.91	28301.8	11801.00
1	35877.83	98.36	0.842	0.30(0.28)	0.92	33623.3	11530.00
1	37098.52	106.79	0.810	0.30(0.28)	0.93	38864.5	11910.00
1	39350.89	121.07	0.759	0.30(0.28)	0.94	48710.8	11130.00
1	38984.40	127.17	0.746	0.30(0.28)	0.94	51637.4	12300.00
1	38277.83	136.00	0.727	0.30(0.28)	0.95	55898.0	12400.00
1	37285.33	145.60	0.706	0.30(0.28)	0.95	59299.6	12201.00
1	36348.57	153.19	0.690	0.30(0.28)	0.95	61192.6	12231.00
1	35371.20	160.77	0.673	0.30(0.29)	0.95	62745.3	10400.00
1	33837.91	170.39	0.653	0.30(0.29)	0.95	64191.8	12010.00
1	32809.41	175.90	0.641	0.30(0.29)	0.95	64454.3	10210.00
1	28560.91	206.87	0.607	0.30(0.29)	0.95	65214.1	10100.00
2	569.62	35.65	1.409	0.30(0.29)	0.97	565.5	13830.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20763.53	21.36	1.913	0.30(0.25)	0.84	3691.9	10600.00
2	21276.75	23.02	1.829	0.30(0.25)	0.84	4059.9	13810.00
3	22365.32	26.69	1.660	0.30(0.25)	0.84	4847.9	10400.00
4	24974.95	35.65	1.409	0.30(0.25)	0.84	7834.9	13830.00
5	25910.11	39.05	1.341	0.30(0.25)	0.85	8911.8	10220.00
6	27639.81	45.94	1.231	0.30(0.25)	0.85	11138.5	100.00
7	29482.85	56.31	1.090	0.30(0.26)	0.86	15332.6	150.00
8	30363.13	64.26	1.019	0.30(0.26)	0.87	18232.2	600.00
9	31013.13	69.33	0.990	0.30(0.26)	0.88	20494.5	31100.00
10	32615.04	80.67	0.926	0.30(0.27)	0.90	25519.5	40100.00
11	33970.05	88.12	0.884	0.30(0.27)	0.91	28867.3	11801.00
12	36158.58	98.36	0.842	0.30(0.28)	0.92	34188.8	11530.00
13	37363.25	106.79	0.810	0.30(0.28)	0.93	39430.0	11910.00
14	39589.36	121.07	0.759	0.30(0.28)	0.94	49276.3	11130.00
15	39216.19	127.17	0.746	0.30(0.28)	0.94	52202.9	12300.00
16	38499.96	136.00	0.727	0.30(0.28)	0.95	56463.5	12400.00
17	37496.94	145.60	0.706	0.30(0.28)	0.95	59865.1	12201.00
18	36551.89	153.19	0.690	0.30(0.28)	0.95	61758.1	12231.00
19	35566.21	160.77	0.673	0.30(0.29)	0.95	63310.8	10400.00
20	34022.41	170.39	0.653	0.30(0.29)	0.95	64757.3	12010.00
21	32987.88	175.90	0.641	0.30(0.29)	0.95	65019.8	10210.00
22	28721.97	206.87	0.607	0.30(0.29)	0.95	65779.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39589.36 Tc(MIN.) = 121.07
EFFECTIVE AREA(ACRES) = 49276.31 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65779.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

****
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 15.09
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.757

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.61      0.30     0.975     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   39590.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.37
  AVERAGE FLOW DEPTH(FEET) =  15.09   TRAVEL TIME(MIN.) =   0.67
  Tc(MIN.) =  121.73
  SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    2.77
  EFFECTIVE AREA(ACRES) =  49282.92     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65786.2         PEAK FLOW RATE(CFS) =   39589.36
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 15.09   FLOW VELOCITY(FEET/SEC.) =  16.37
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  121.73
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49282.92
  TOTAL STREAM AREA(ACRES) =   65786.19
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   39589.36

****************************************************************************
  FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
  ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    65   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```



```
  SUBAREA RUNOFF(CFS) =     11.12
  TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =     11.12

****************************************************************************
  FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.34
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.598
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.02      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.23
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   1.38
  Tc(MIN.) =   13.52
  SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    8.32
  EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      18.56
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.38   FLOW VELOCITY(FEET/SEC.) =   4.58
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
  CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.53
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.349
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.17      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.42
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.93
```

```
  Tc(MIN.) =   15.45
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =   13.22
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      29.77
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.57

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.57   FLOW VELOCITY(FEET/SEC.) =   4.69
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.63
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.230
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.64
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.04
  AVERAGE FLOW DEPTH(FEET) =   0.63   TRAVEL TIME(MIN.) =   1.47
  Tc(MIN.) =   16.92
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =   11.74
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      39.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.67

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.67   FLOW VELOCITY(FEET/SEC.) =   5.25
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.81
```



```
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.009
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.77
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.87
  AVERAGE FLOW DEPTH(FEET) =   0.79   TRAVEL TIME(MIN.) =   2.73
  Tc(MIN.) =   19.65
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   27.94
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      63.16
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.87   FLOW VELOCITY(FEET/SEC.) =   6.21
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.828
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      90.46
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.02
  AVERAGE FLOW DEPTH(FEET) =   1.21   TRAVEL TIME(MIN.) =   3.40
  Tc(MIN.) =   23.06
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   54.54
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =     111.00
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.36   FLOW VELOCITY(FEET/SEC.) =   6.41
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

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

```
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.74
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     111.00
  PIPE TRAVEL TIME(MIN.) =   1.97    Tc(MIN.) =   25.02
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.02
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.729
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   59.27
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     163.19

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   25.02
  RAINFALL INTENSITY(INCH/HR) =   1.73
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     163.19

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20763.53   22.17    1.872  0.30( 0.25) 0.84    3698.5   10600.00
      1    21276.75   23.82    1.789  0.30( 0.25) 0.84    4066.5   13810.00
      1    22365.32   27.48    1.627  0.30( 0.25) 0.84    4854.5   10400.00
      1    24974.95   36.41    1.394  0.30( 0.25) 0.84    7841.5   13830.00
      1    25910.11   39.80    1.326  0.30( 0.25) 0.85    8918.4   10220.00
      1    27639.81   46.68    1.220  0.30( 0.25) 0.85   11145.1     100.00
```



```
      1    29482.85   57.03    1.080  0.30( 0.26) 0.86   15339.2     150.00
      1    30363.13   64.98    1.015  0.30( 0.26) 0.87   18238.8     600.00
      1    31013.13   70.05    0.986  0.30( 0.26) 0.88   20501.1   31100.00
      1    32615.04   81.38    0.922  0.30( 0.27) 0.90   25526.1   40100.00
      1    33970.05   88.81    0.880  0.30( 0.27) 0.91   28873.9   11801.00
      1    36158.58   99.04    0.839  0.30( 0.28) 0.92   34195.4   11530.00
      1    37363.25  107.46    0.808  0.30( 0.28) 0.93   39436.6   11910.00
      1    39589.36  121.73    0.757  0.30( 0.28) 0.94   49282.9   11130.00
      1    39216.19  127.84    0.744  0.30( 0.28) 0.94   52209.5   12300.00
      1    38499.96  136.67    0.725  0.30( 0.28) 0.95   56470.1   12400.00
      1    37496.94  146.28    0.704  0.30( 0.28) 0.95   59871.7   12201.00
      1    36551.89  153.87    0.688  0.30( 0.28) 0.95   61764.7   12231.00
      1    35566.21  161.46    0.672  0.30( 0.29) 0.95   63317.4   10400.00
      1    34022.41  171.08    0.651  0.30( 0.29) 0.95   64763.9   12010.00
      1    32987.88  176.60    0.639  0.30( 0.29) 0.95   65026.4   10210.00
      1    28721.97  207.60    0.606  0.30( 0.29) 0.95   65786.2   10100.00
      2      163.19   25.02    1.729  0.30( 0.26) 0.86     123.2   13850.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20922.17   22.17    1.872  0.30( 0.25) 0.84    3807.7   10600.00
      2    21438.46   23.82    1.789  0.30( 0.25) 0.84    4183.8   13810.00
      3    21797.21   25.02    1.729  0.30( 0.25) 0.84    4448.4   13850.00
      4    22517.23   27.48    1.627  0.30( 0.25) 0.84    4977.8   10400.00
      5    25100.99   36.41    1.394  0.30( 0.25) 0.84    7964.7   13830.00
      6    26028.60   39.80    1.326  0.30( 0.25) 0.85    9041.7   10220.00
      7    27746.52   46.68    1.220  0.30( 0.25) 0.85   11268.3     100.00
      8    29574.10   57.03    1.080  0.30( 0.26) 0.86   15462.4     150.00
      9    30447.11   64.98    1.015  0.30( 0.26) 0.87   18362.0     600.00
     10    31093.92   70.05    0.986  0.30( 0.26) 0.88   20624.3   31100.00
     11    32688.71   81.38    0.922  0.30( 0.27) 0.90   25649.3   40100.00
     12    34039.05   88.81    0.880  0.30( 0.27) 0.91   28997.1   11801.00
     13    36223.09   99.04    0.839  0.30( 0.28) 0.92   34318.6   11530.00
     14    37424.27  107.46    0.808  0.30( 0.28) 0.93   39559.8   11910.00
     15    39644.77  121.73    0.757  0.30( 0.28) 0.94   49406.1   11130.00
     16    39270.15  127.84    0.744  0.30( 0.28) 0.94   52332.7   12300.00
     17    38551.82  136.67    0.725  0.30( 0.28) 0.95   56593.3   12400.00
     18    37546.50  146.28    0.704  0.30( 0.28) 0.95   59994.9   12201.00
     19    36599.65  153.87    0.688  0.30( 0.28) 0.95   61887.9   12231.00
     20    35612.16  161.46    0.672  0.30( 0.29) 0.95   63440.7   10400.00
     21    34066.07  171.08    0.651  0.30( 0.29) 0.95   64887.1   12010.00
     22    33030.21  176.60    0.639  0.30( 0.29) 0.95   65149.7   10210.00
     23    28760.61  207.60    0.606  0.30( 0.29) 0.95   65909.4   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   39644.77    Tc(MIN.) =   121.73
  EFFECTIVE AREA(ACRES) =   49406.14   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    65909.4
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.95
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.756
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   39645.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  25.18
  AVERAGE FLOW DEPTH(FEET) =  10.95   TRAVEL TIME(MIN.) =   0.40
  Tc(MIN.) =  122.14
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    2.01
  EFFECTIVE AREA(ACRES) =  49411.03     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65914.3         PEAK FLOW RATE(CFS) =   39644.77
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.95

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.95   FLOW VELOCITY(FEET/SEC.) =  25.17
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  122.14
  RAINFALL INTENSITY(INCH/HR) =   0.76
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49411.03
  TOTAL STREAM AREA(ACRES) =   65914.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   39644.77

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
```



```
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.329
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    65   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.37
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =     13.37

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.48
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.75
  AVERAGE FLOW DEPTH(FEET) =   0.46   TRAVEL TIME(MIN.) =   2.91
  Tc(MIN.) =   18.61
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   21.00
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      32.82
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   5.33
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.88
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.895
```

```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.99      0.30     0.923     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.65
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   3.10
  Tc(MIN.) =   21.70
  SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   48.06
  EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      77.25
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.03   FLOW VELOCITY(FEET/SEC.) =   6.25
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.01
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.739
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       30.94      0.30     0.900     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.12
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   3.12
  Tc(MIN.) =   24.82
  SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   40.91
  EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =     110.65
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   8.49
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.631
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       73.67      0.30     0.930     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     155.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.76
  AVERAGE FLOW DEPTH(FEET) =   2.69   TRAVEL TIME(MIN.) =   2.58
  Tc(MIN.) =   27.40
  SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =   89.62
  EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     192.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.00

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.00   FLOW VELOCITY(FEET/SEC.) =   4.00
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
  FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  48.0 INCH PIPE IS  38.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.59
  ESTIMATED PIPE DIAMETER(INCH) =  48.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     192.04
  PIPE TRAVEL TIME(MIN.) =   1.76    Tc(MIN.) =   29.16
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.16
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  1.558
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.90      0.30     0.743     -
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.743
  SUBAREA AREA(ACRES) =   34.90      SUBAREA RUNOFF(CFS) =   41.93
  EFFECTIVE AREA(ACRES) =    192.83   AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =      192.8       PEAK FLOW RATE(CFS) =     223.63

****************************************************************************
  FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   29.16
  RAINFALL INTENSITY(INCH/HR) =   1.56
  AREA-AVERAGED Fm(INCH/HR) =  0.27
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.90
  EFFECTIVE STREAM AREA(ACRES) =     192.83
  TOTAL STREAM AREA(ACRES) =     192.83
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     223.63

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    20922.17   22.66    1.848  0.30( 0.25) 0.84    3812.6   10600.00
      1    21438.46   24.31    1.765  0.30( 0.25) 0.84    4188.7   13810.00
      1    21797.21   25.51    1.709  0.30( 0.25) 0.84    4453.3   13850.00
      1    22517.23   27.96    1.608  0.30( 0.25) 0.84    4982.7   10400.00
      1    25100.99   36.88    1.385  0.30( 0.25) 0.84    7969.6   13830.00
      1    26028.60   40.26    1.318  0.30( 0.25) 0.85    9046.5   10220.00
      1    27746.52   47.13    1.213  0.30( 0.25) 0.85   11273.2     100.00
      1    29574.10   57.47    1.075  0.30( 0.26) 0.86   15467.3     150.00
      1    30447.11   65.41    1.012  0.30( 0.26) 0.87   18366.9     600.00
      1    31093.92   70.48    0.984  0.30( 0.26) 0.88   20629.2   31100.00
      1    32688.71   81.81    0.919  0.30( 0.27) 0.90   25654.2   40100.00
      1    34039.05   89.24    0.877  0.30( 0.27) 0.91   29002.0   11801.00
      1    36223.09   99.46    0.838  0.30( 0.28) 0.92   34323.5   11530.00
      1    37424.27  107.88    0.806  0.30( 0.28) 0.93   39564.7   11910.00
      1    39644.77  122.14    0.756  0.30( 0.28) 0.94   49411.0   11130.00
      1    39270.15  128.24    0.743  0.30( 0.28) 0.94   52337.6   12300.00
      1    38551.82  137.08    0.724  0.30( 0.28) 0.95   56598.2   12400.00
      1    37546.50  146.69    0.704  0.30( 0.28) 0.95   59999.8   12201.00
      1    36599.65  154.28    0.687  0.30( 0.28) 0.95   61892.8   12231.00
      1    35612.16  161.88    0.671  0.30( 0.29) 0.95   63445.5   10400.00
      1    34066.07  171.51    0.650  0.30( 0.29) 0.95   64892.0   12010.00
      1    33030.21  177.03    0.638  0.30( 0.29) 0.95   65154.5   10210.00
      1    28760.61  208.05    0.606  0.30( 0.29) 0.95   65914.3   10100.00
      2      223.63   29.16    1.558  0.30( 0.27) 0.90     192.8   13870.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```



```
      1    21135.01   22.66    1.848  0.30( 0.25) 0.84    3962.4   10600.00
      2    21654.82   24.31    1.765  0.30( 0.25) 0.84    4349.5   13810.00
      3    22015.78   25.51    1.709  0.30( 0.25) 0.84    4621.9   13850.00
      4    22739.92   27.96    1.608  0.30( 0.25) 0.84    5167.5   10400.00
      5    23088.97   29.16    1.558  0.30( 0.25) 0.84    5577.9   13870.00
      6    25294.59   36.88    1.385  0.30( 0.25) 0.85    8162.4   13830.00
      7    26210.62   40.26    1.318  0.30( 0.25) 0.85    9239.4   10220.00
      8    27910.30   47.13    1.213  0.30( 0.25) 0.85   11466.0     100.00
      9    29713.92   57.47    1.075  0.30( 0.26) 0.86   15660.1     150.00
     10    30576.08   65.41    1.012  0.30( 0.26) 0.87   18559.7     600.00
     11    31217.90   70.48    0.984  0.30( 0.26) 0.88   20822.0   31100.00
     12    32801.55   81.81    0.919  0.30( 0.27) 0.90   25847.0   40100.00
     13    34144.59   89.24    0.877  0.30( 0.27) 0.91   29194.8   11801.00
     14    36321.75   99.46    0.838  0.30( 0.28) 0.92   34516.3   11530.00
     15    37517.48  107.88    0.806  0.30( 0.28) 0.93   39757.5   11910.00
     16    39729.33  122.14    0.756  0.30( 0.28) 0.94   49603.9   11130.00
     17    39352.42  128.24    0.743  0.30( 0.28) 0.94   52530.4   12300.00
     18    38630.80  137.08    0.724  0.30( 0.28) 0.95   56791.0   12400.00
     19    37621.89  146.69    0.704  0.30( 0.28) 0.95   60192.6   12201.00
     20    36672.21  154.28    0.687  0.30( 0.28) 0.95   62085.6   12231.00
     21    35681.89  161.88    0.671  0.30( 0.29) 0.95   63638.4   10400.00
     22    34132.20  171.51    0.650  0.30( 0.29) 0.95   65084.8   12010.00
     23    33094.28  177.03    0.638  0.30( 0.29) 0.95   65347.4   10210.00
     24    28818.97  208.05    0.606  0.30( 0.29) 0.95   66107.1   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   39729.33    Tc(MIN.) =   122.14
  EFFECTIVE AREA(ACRES) =   49603.86   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    66107.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    120.57  DOWNSTREAM(FEET) =    119.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1190.21   CHANNEL SLOPE =  0.0007
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  24.04
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.751
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
        LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      117.69      0.30     0.724     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.724
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   39757.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.44
  AVERAGE FLOW DEPTH(FEET) =  24.03   TRAVEL TIME(MIN.) =   2.35
  Tc(MIN.) =  124.49
  SUBAREA AREA(ACRES) =   117.69       SUBAREA RUNOFF(CFS) =   56.58
  EFFECTIVE AREA(ACRES) =  49721.55     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    66224.8         PEAK FLOW RATE(CFS) =   39729.33
```

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  24.02

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 24.02   FLOW VELOCITY(FEET/SEC.) =   8.43
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  124.49
  RAINFALL INTENSITY(INCH/HR) =   0.75
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49721.55
  TOTAL STREAM AREA(ACRES) =   66224.81
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   39729.33

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  4.094
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    65    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =     10.38
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =     10.38

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.621
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.58
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.03
  AVERAGE FLOW DEPTH(FEET) =   0.41   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =    8.42
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   24.30
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1         PEAK FLOW RATE(CFS) =      33.40
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   5.80
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.60
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  3.151
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      49.47
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.69
  AVERAGE FLOW DEPTH(FEET) =   0.58   TRAVEL TIME(MIN.) =   1.44
  Tc(MIN.) =    9.86
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   32.08
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6         PEAK FLOW RATE(CFS) =      60.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   8.23
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
```

```
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.82
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.847
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      78.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.46
  AVERAGE FLOW DEPTH(FEET) =   0.80   TRAVEL TIME(MIN.) =   1.93
  Tc(MIN.) =   11.79
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   36.39
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =      90.68
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.87   FLOW VELOCITY(FEET/SEC.) =   8.85
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.11
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.542
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     119.45
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.96
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =   2.13
  Tc(MIN.) =   13.91
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   57.44
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =     137.24
```



```
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.18   FLOW VELOCITY(FEET/SEC.) =   9.41
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.06
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     137.24
  PIPE TRAVEL TIME(MIN.) =   1.86    Tc(MIN.) =   15.77
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.77
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.324
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   22.45
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =     146.34

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.77
  RAINFALL INTENSITY(INCH/HR) =   2.32
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     146.34
```

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21135.01	25.45	1.711	0.30(0.25)	0.84	4080.1	10600.00
1	21654.82	27.08	1.644	0.30(0.25)	0.84	4467.2	13810.00
1	22015.78	28.27	1.595	0.30(0.25)	0.84	4739.6	13850.00
1	22739.92	30.70	1.509	0.30(0.25)	0.84	5285.2	10400.00
1	23088.97	31.89	1.485	0.30(0.25)	0.84	5695.6	13870.00
1	25294.59	39.54	1.331	0.30(0.25)	0.84	8280.1	13830.00
1	26210.62	42.89	1.278	0.30(0.25)	0.85	9357.1	10220.00
1	27910.30	49.72	1.173	0.30(0.25)	0.85	11583.7	100.00
1	29713.92	60.02	1.043	0.30(0.26)	0.86	15777.8	150.00
1	30576.08	67.94	0.998	0.30(0.26)	0.87	18677.4	600.00
1	31217.90	72.99	0.969	0.30(0.26)	0.88	20939.7	31100.00
1	32801.55	84.28	0.905	0.30(0.27)	0.90	25964.7	40100.00
1	34144.59	91.69	0.867	0.30(0.27)	0.91	29312.5	11801.00
1	36321.75	101.87	0.829	0.30(0.28)	0.92	34634.0	11530.00
1	37517.48	110.26	0.797	0.30(0.28)	0.93	39875.2	11910.00
1	39729.33	124.49	0.751	0.30(0.28)	0.94	49721.5	11130.00
1	39352.42	130.60	0.738	0.30(0.28)	0.94	52648.1	12300.00
1	38630.80	139.45	0.719	0.30(0.28)	0.95	56908.7	12400.00
1	37621.89	149.08	0.698	0.30(0.28)	0.95	60310.3	12201.00
1	36672.21	156.69	0.682	0.30(0.28)	0.95	62203.3	12231.00
1	35681.89	164.30	0.666	0.30(0.28)	0.95	63756.1	10400.00
1	34132.20	173.96	0.645	0.30(0.29)	0.95	65202.5	12010.00
1	33094.28	179.50	0.633	0.30(0.29)	0.95	65465.1	10210.00
1	28818.97	210.61	0.603	0.30(0.29)	0.95	66224.8	10100.00
2	146.34	15.77	2.324	0.30(0.28)	0.94	79.6	13889.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18737.02	15.77	2.324	0.30(0.25)	0.84	2607.7	13889.00
2	21237.48	25.45	1.711	0.30(0.25)	0.84	4159.7	10600.00
3	21752.45	27.08	1.644	0.30(0.25)	0.84	4546.8	13810.00
4	22109.89	28.27	1.595	0.30(0.25)	0.84	4819.2	13850.00
5	22827.89	30.70	1.509	0.30(0.25)	0.84	5364.8	10400.00
6	23175.23	31.89	1.485	0.30(0.25)	0.84	5775.2	13870.00
7	25369.82	39.54	1.331	0.30(0.25)	0.85	8359.7	13830.00
8	26282.02	42.89	1.278	0.30(0.25)	0.85	9436.7	10220.00
9	27974.22	49.72	1.173	0.30(0.25)	0.85	11663.4	100.00
10	29768.49	60.02	1.043	0.30(0.26)	0.86	15857.4	150.00
11	30627.43	67.94	0.998	0.30(0.26)	0.87	18757.0	600.00
12	31267.21	72.99	0.969	0.30(0.26)	0.88	21019.4	31100.00
13	32846.27	84.28	0.905	0.30(0.27)	0.90	26044.4	40100.00
14	34186.54	91.69	0.867	0.30(0.27)	0.91	29392.2	11801.00
15	36360.97	101.87	0.829	0.30(0.28)	0.92	34713.6	11530.00
16	37554.46	110.26	0.797	0.30(0.28)	0.93	39954.9	11910.00
17	39763.01	124.49	0.751	0.30(0.28)	0.94	49801.2	11130.00
18	39385.16	130.60	0.738	0.30(0.28)	0.94	52727.8	12300.00
19	38662.17	139.45	0.719	0.30(0.28)	0.95	56988.3	12400.00
20	37651.79	149.08	0.698	0.30(0.28)	0.95	60389.9	12201.00
21	36700.93	156.69	0.682	0.30(0.28)	0.95	62283.0	12231.00
22	35709.43	164.30	0.666	0.30(0.28)	0.95	63835.7	10400.00
23	34158.26	173.96	0.645	0.30(0.29)	0.95	65282.1	12010.00

24	33119.49	179.50	0.633	0.30(0.29)	0.95	65544.7	10210.00
25	28842.03	210.61	0.603	0.30(0.29)	0.95	66304.4	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 39763.01 Tc(MIN.) = 124.49
EFFECTIVE AREA(ACRES) = 49801.17 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66304.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66304.4 TC(MIN.) = 124.49
EFFECTIVE AREA(ACRES) = 49801.17 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.939
PEAK FLOW RATE(CFS) = 39763.01

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18737.02	15.77	2.324	0.30(0.25)	0.84	2607.7	13889.00
2	21237.48	25.45	1.711	0.30(0.25)	0.84	4159.7	10600.00
3	21752.45	27.08	1.644	0.30(0.25)	0.84	4546.8	13810.00
4	22109.89	28.27	1.595	0.30(0.25)	0.84	4819.2	13850.00
5	22827.89	30.70	1.509	0.30(0.25)	0.84	5364.8	10400.00
6	23175.23	31.89	1.485	0.30(0.25)	0.84	5775.2	13870.00
7	25369.82	39.54	1.331	0.30(0.25)	0.85	8359.7	13830.00
8	26282.02	42.89	1.278	0.30(0.25)	0.85	9436.7	10220.00
9	27974.22	49.72	1.173	0.30(0.25)	0.85	11663.4	100.00
10	29768.49	60.02	1.043	0.30(0.26)	0.86	15857.4	150.00
11	30627.43	67.94	0.998	0.30(0.26)	0.87	18757.0	600.00
12	31267.21	72.99	0.969	0.30(0.26)	0.88	21019.4	31100.00
13	32846.27	84.28	0.905	0.30(0.27)	0.90	26044.4	40100.00
14	34186.54	91.69	0.867	0.30(0.27)	0.91	29392.2	11801.00
15	36360.97	101.87	0.829	0.30(0.28)	0.92	34713.6	11530.00
16	37554.46	110.26	0.797	0.30(0.28)	0.93	39954.9	11910.00
17	39763.01	124.49	0.751	0.30(0.28)	0.94	49801.2	11130.00
18	39385.16	130.60	0.738	0.30(0.28)	0.94	52727.8	12300.00
19	38662.17	139.45	0.719	0.30(0.28)	0.95	56988.3	12400.00
20	37651.79	149.08	0.698	0.30(0.28)	0.95	60389.9	12201.00
21	36700.93	156.69	0.682	0.30(0.28)	0.95	62283.0	12231.00
22	35709.43	164.30	0.666	0.30(0.28)	0.95	63835.7	10400.00
23	34158.26	173.96	0.645	0.30(0.29)	0.95	65282.1	12010.00
24	33119.49	179.50	0.633	0.30(0.29)	0.95	65544.7	10210.00
25	28842.03	210.61	0.603	0.30(0.29)	0.95	66304.4	10100.00

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 25-YR EV AUG 2023 ROKAMOTO                                            *
 ************************************************************************

  FILE NAME: RU25EV39.DAT
  TIME/DATE OF STUDY: 00:11 08/11/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  4.737
   2)   10.00;  3.102
   3)   15.00;  2.384
   4)   20.00;  1.980
   5)   25.00;  1.729
   6)   30.00;  1.522
   7)   40.00;  1.321
   8)   50.00;  1.169
   9)   60.00;  1.042
  10)   90.00;  0.872
  11)  120.00;  0.761
  12)  180.00;  0.631
  13)  360.00;  0.462
  14) 1200.00;  0.201
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.979
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    65   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      9.64
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =      9.64

************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.30
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.725
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.90
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.10
  AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   1.77
  Tc(MIN.) =   12.63
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   18.48
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      27.21
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.36   FLOW VELOCITY(FEET/SEC.) =   6.98
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.54
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.544
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      51.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.88
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   1.26
  Tc(MIN.) =   13.88
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   48.29
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      73.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   9.98
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  20.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.45
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      73.48
  PIPE TRAVEL TIME(MIN.) =   0.84    Tc(MIN.) =   14.72
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   14.72
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.424
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   40.72
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =     110.27

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  29.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.28
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     110.27
  PIPE TRAVEL TIME(MIN.) =   2.14    Tc(MIN.) =   16.86
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.86
  *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  2.234
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   79.88
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     180.28

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU25EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18737.02	15.77	0.30(0.25)	0.84	2607.7	13889.00
2	23175.23	31.89	0.30(0.25)	0.84	5775.2	13870.00
3	26282.02	42.89	0.30(0.25)	0.85	9436.7	10220.00
4	27974.22	49.72	0.30(0.25)	0.85	11663.4	100.00
5	29768.49	60.02	0.30(0.26)	0.86	15857.4	150.00
6	30627.43	67.94	0.30(0.26)	0.87	18757.0	600.00
7	31267.21	72.99	0.30(0.26)	0.88	21019.4	31100.00
8	32846.27	84.28	0.30(0.27)	0.90	26044.4	40100.00
9	34186.54	91.69	0.30(0.27)	0.91	29392.2	11801.00
10	36360.97	101.87	0.30(0.28)	0.92	34713.6	11530.00
11	37554.46	110.26	0.30(0.28)	0.93	39954.9	11910.00
12	39763.01	124.49	0.30(0.28)	0.94	49801.2	11130.00
13	39385.16	130.60	0.30(0.28)	0.94	52727.8	12300.00
14	38662.17	139.45	0.30(0.28)	0.95	56988.3	12400.00
15	37651.79	149.08	0.30(0.28)	0.95	60389.9	12201.00
16	36700.93	156.69	0.30(0.28)	0.95	62283.0	12231.00
17	35709.43	164.30	0.30(0.28)	0.95	63835.7	10400.00
18	34158.26	173.96	0.30(0.29)	0.95	65282.1	12010.00
19	33119.49	179.50	0.30(0.29)	0.95	65544.7	10210.00
20	28842.03	210.61	0.30(0.29)	0.95	66304.4	10100.00

TOTAL AREA(ACRES) = 66304.4

****
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18737.02	15.77	0.30(0.25)	0.84	2607.7	13889.00
2	23175.23	31.89	0.30(0.25)	0.84	5775.2	13870.00
3	26282.02	42.89	0.30(0.25)	0.85	9436.7	10220.00
4	27974.22	49.72	0.30(0.25)	0.85	11663.4	100.00
5	29768.49	60.02	0.30(0.26)	0.86	15857.4	150.00
6	30627.43	67.94	0.30(0.26)	0.87	18757.0	600.00
7	31267.21	72.99	0.30(0.26)	0.88	21019.4	31100.00
8	32846.27	84.28	0.30(0.27)	0.90	26044.4	40100.00
9	34186.54	91.69	0.30(0.27)	0.91	29392.2	11801.00
10	36360.97	101.87	0.30(0.28)	0.92	34713.6	11530.00
11	37554.46	110.26	0.30(0.28)	0.93	39954.9	11910.00
12	39763.01	124.49	0.30(0.28)	0.94	49801.2	11130.00
13	39385.16	130.60	0.30(0.28)	0.94	52727.8	12300.00
14	38662.17	139.45	0.30(0.28)	0.95	56988.3	12400.00
15	37651.79	149.08	0.30(0.28)	0.95	60389.9	12201.00
16	36700.93	156.69	0.30(0.28)	0.95	62283.0	12231.00
17	35709.43	164.30	0.30(0.28)	0.95	63835.7	10400.00
18	34158.26	173.96	0.30(0.29)	0.95	65282.1	12010.00
19	33119.49	179.50	0.30(0.29)	0.95	65544.7	10210.00
20	28842.03	210.61	0.30(0.29)	0.95	66304.4	10100.00

TOTAL AREA(ACRES) = 66304.4

****
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 21.12
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.746
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.09	0.30	0.535	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 39788.34
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.22
AVERAGE FLOW DEPTH(FEET) = 21.12 TRAVEL TIME(MIN.) = 2.25
Tc(MIN.) = 126.74
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 50.67
EFFECTIVE AREA(ACRES) = 49897.26 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66400.5 PEAK FLOW RATE(CFS) = 39763.01
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 21.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 21.11 FLOW VELOCITY(FEET/SEC.) = 10.21
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

****
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18737.02	18.54	2.098	0.30(0.25)	0.83	2703.7	13889.00
2	23175.23	34.49	1.432	0.30(0.25)	0.84	5871.3	13870.00
3	26282.02	45.41	1.239	0.30(0.25)	0.84	9532.8	10220.00
4	27974.22	52.19	1.141	0.30(0.25)	0.84	11759.4	100.00
5	29768.49	62.45	1.028	0.30(0.26)	0.86	15953.5	150.00
6	30627.43	70.35	0.983	0.30(0.26)	0.87	18853.1	600.00
7	31267.21	75.39	0.955	0.30(0.26)	0.88	21115.4	31100.00
8	32846.27	86.65	0.891	0.30(0.27)	0.90	26140.4	40100.00
9	34186.54	94.03	0.857	0.30(0.27)	0.91	29488.2	11801.00
10	36360.97	104.17	0.820	0.30(0.28)	0.92	34809.7	11530.00
11	37554.46	112.55	0.789	0.30(0.28)	0.93	40050.9	11910.00
12	39763.01	126.74	0.746	0.30(0.28)	0.94	49897.3	11130.00
13	39385.16	132.85	0.733	0.30(0.28)	0.94	52823.8	12300.00
14	38662.17	141.71	0.714	0.30(0.28)	0.95	57084.4	12400.00
15	37651.79	151.36	0.693	0.30(0.28)	0.95	60486.0	12201.00
16	36700.93	158.98	0.677	0.30(0.28)	0.95	62379.0	12231.00

```
   17    35709.43  166.61    0.660  0.30( 0.28) 0.95   63931.8   10400.00
   18    34158.26  176.30    0.639  0.30( 0.29) 0.95   65378.2   12010.00
   19    33119.49  181.86    0.629  0.30( 0.29) 0.95   65640.8   10210.00
   20    28842.03  213.07    0.600  0.30( 0.29) 0.95   66400.5   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      180.28   16.86    2.234  0.30( 0.25) 0.84     101.1   13900.00
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    18471.36   16.86    2.234  0.30( 0.25) 0.83    2560.2   13900.00
     2    18904.96   18.54    2.098  0.30( 0.25) 0.83    2804.9   13889.00
     3    23282.51   34.49    1.432  0.30( 0.25) 0.84    5972.5   13870.00
     4    26371.75   45.41    1.239  0.30( 0.25) 0.84    9633.9   10220.00
     5    28055.06   52.19    1.141  0.30( 0.25) 0.84   11860.6     100.00
     6    29839.04   62.45    1.028  0.30( 0.26) 0.86   16054.6     150.00
     7    30693.90   70.35    0.983  0.30( 0.26) 0.87   18954.2     600.00
     8    31331.08   75.39    0.955  0.30( 0.26) 0.88   21216.6   31100.00
     9    32904.34   86.65    0.891  0.30( 0.27) 0.90   26241.6   40100.00
    10    34241.52   94.03    0.857  0.30( 0.27) 0.91   29589.4   11801.00
    11    36412.53  104.17    0.820  0.30( 0.28) 0.92   34910.9   11530.00
    12    37603.20  112.55    0.789  0.30( 0.28) 0.93   40152.1   11910.00
    13    39807.91  126.74    0.746  0.30( 0.28) 0.94   49998.4   11130.00
    14    39428.86  132.85    0.733  0.30( 0.28) 0.94   52925.0   12300.00
    15    38704.12  141.71    0.714  0.30( 0.28) 0.94   57185.6   12400.00
    16    37691.84  151.36    0.693  0.30( 0.28) 0.95   60587.2   12201.00
    17    36739.47  158.98    0.677  0.30( 0.28) 0.95   62480.2   12231.00
    18    35746.47  166.61    0.660  0.30( 0.28) 0.95   64032.9   10400.00
    19    34193.39  176.30    0.639  0.30( 0.28) 0.95   65479.3   12010.00
    20    33153.73  181.86    0.629  0.30( 0.29) 0.95   65741.9   10210.00
    21    28873.61  213.07    0.600  0.30( 0.29) 0.95   66501.7   10100.00
   TOTAL AREA(ACRES) =     66501.7

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    39807.91  Tc(MIN.) =  126.736
 EFFECTIVE AREA(ACRES) =  49998.40  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =    66501.7
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
 CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  13.04
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.746
 SUBAREA LOSS RATE DATA(AMC  II):
```



```
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      134.30      0.30      0.658     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   39841.05
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.09
 AVERAGE FLOW DEPTH(FEET) =  13.04   TRAVEL TIME(MIN.) =   0.28
 Tc(MIN.) =  127.01
 SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   66.29
 EFFECTIVE AREA(ACRES) =  50132.70     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    66636.0         PEAK FLOW RATE(CFS) =   39807.91
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  13.03

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 13.03   FLOW VELOCITY(FEET/SEC.) =  20.09
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  12.04
 *  25 YEAR RAINFALL INTENSITY(INCH/HR) =  0.744
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       96.27      0.30      0.723     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   39830.73
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  22.34
 AVERAGE FLOW DEPTH(FEET) =  12.04   TRAVEL TIME(MIN.) =   1.04
 Tc(MIN.) =  128.06
 SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   45.63
 EFFECTIVE AREA(ACRES) =  50228.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
 TOTAL AREA(ACRES) =    66732.2         PEAK FLOW RATE(CFS) =   39807.91
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) =  12.03

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 12.03   FLOW VELOCITY(FEET/SEC.) =  22.33
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
 END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 66732.2 TC(MIN.) = 128.06
EFFECTIVE AREA(ACRES) = 50228.97 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.937
PEAK FLOW RATE(CFS) = 39807.91

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18471.36	18.52	2.099	0.30(0.25)	0.82	2790.7	13900.00
2	18904.96	20.19	1.970	0.30(0.25)	0.82	3035.5	13889.00
3	23282.51	36.04	1.401	0.30(0.25)	0.83	6203.0	13870.00
4	26371.75	46.90	1.216	0.30(0.25)	0.84	9864.5	10220.00
5	28055.06	53.66	1.123	0.30(0.25)	0.84	12091.2	100.00
6	29839.04	63.89	1.020	0.30(0.26)	0.86	16285.2	150.00
7	30693.90	71.78	0.975	0.30(0.26)	0.87	19184.8	600.00
8	31331.08	76.81	0.947	0.30(0.26)	0.88	21447.2	31100.00
9	32904.34	88.05	0.883	0.30(0.27)	0.90	26472.2	40100.00
10	34241.52	95.41	0.852	0.30(0.27)	0.91	29820.0	11801.00
11	36412.53	105.53	0.815	0.30(0.27)	0.92	35141.4	11530.00
12	37603.20	113.89	0.784	0.30(0.28)	0.92	40382.7	11910.00
13	39807.91	128.06	0.744	0.30(0.28)	0.94	50229.0	11130.00
14	39428.86	134.18	0.730	0.30(0.28)	0.94	53155.6	12300.00
15	38704.12	143.04	0.711	0.30(0.28)	0.94	57416.1	12400.00
16	37691.84	152.70	0.690	0.30(0.28)	0.95	60817.7	12201.00
17	36739.47	160.33	0.674	0.30(0.28)	0.95	62710.8	12231.00
18	35746.47	167.97	0.657	0.30(0.28)	0.95	64263.5	10400.00
19	34193.39	177.68	0.636	0.30(0.28)	0.95	65709.9	12010.00
20	33153.73	183.25	0.628	0.30(0.28)	0.95	65972.5	10210.00
21	28873.61	214.52	0.599	0.30(0.28)	0.95	66732.2	10100.00

==========
==========

END OF RATIONAL METHOD ANALYSIS

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2013 Advanced Engineering Software (aes)
             Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                          Analysis prepared by:

                        Michael Baker International
                      5 Hutton Centre Drive, Suite 500
                           Santa Ana, CA 92707


 ************************ DESCRIPTION OF STUDY *************************
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP - NODE 119 COMPLEX              *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 50-YR RM EV APRIL 2019 FKAZI                                          *
 ************************************************************************

  FILE NAME: RU50EV19.DAT
  TIME/DATE OF STUDY: 11:51 04/01/2019
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.535
   2)   10.00;  3.529
   3)   15.00;  2.693
   4)   20.00;  2.246
   5)   25.00;  1.938
   6)   30.00;  1.744
   7)   40.00;  1.475
   8)   50.00;  1.313
   9)   60.00;  1.214
  10)   90.00;  1.010
  11)  120.00;  0.880
  12)  180.00;  0.760
  13)  360.00;  0.566
  14) 1200.00;  0.250
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  11900.00 TO NODE  11901.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   295.79
  ELEVATION DATA: UPSTREAM(FEET) =   2369.48  DOWNSTREAM(FEET) =   2332.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.203
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.651
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  RESIDENTIAL
  ".4 DWELLING/ACRE"         -        1.62      0.30      0.999    56    7.20
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA RUNOFF(CFS) =      6.34
  TOTAL AREA(ACRES) =      1.62   PEAK FLOW RATE(CFS) =      6.34

************************************************************************
  FLOW PROCESS FROM NODE  11901.00 TO NODE  11902.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2332.92  DOWNSTREAM(FEET) =   2297.70
  CHANNEL LENGTH THRU SUBAREA(FEET) =   664.26   CHANNEL SLOPE =  0.0530
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.443
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.35      0.30      0.906     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.40
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.34
  AVERAGE FLOW DEPTH(FEET) =   0.50   TRAVEL TIME(MIN.) =   3.31
  Tc(MIN.) =   10.52
  SUBAREA AREA(ACRES) =     8.35       SUBAREA RUNOFF(CFS) =   23.83
  EFFECTIVE AREA(ACRES) =      9.97     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =       10.0          PEAK FLOW RATE(CFS) =      28.41
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.65   FLOW VELOCITY(FEET/SEC.) =   3.90
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.00 =     960.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.00 TO NODE  11902.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2297.70  DOWNSTREAM(FEET) =   2263.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.77   CHANNEL SLOPE =  0.0369
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.887
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       34.48      0.30     0.904     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.904
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      69.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.65
  AVERAGE FLOW DEPTH(FEET) =   1.20   TRAVEL TIME(MIN.) =   3.33
  Tc(MIN.) =   13.84
  SUBAREA AREA(ACRES) =    34.48       SUBAREA RUNOFF(CFS) =   81.16
  EFFECTIVE AREA(ACRES) =     44.45     AREA-AVERAGED Fm(INCH/HR) =   0.27
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.91
  TOTAL AREA(ACRES) =       44.5         PEAK FLOW RATE(CFS) =     104.58
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.51

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.51   FLOW VELOCITY(FEET/SEC.) =   5.30
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11902.50 =    1888.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11902.50 TO NODE  11903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.40  DOWNSTREAM(FEET) =   2252.14
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.50   CHANNEL SLOPE =  0.0126
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.451
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.65      0.30     0.958     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.958
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     127.65
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.87
  AVERAGE FLOW DEPTH(FEET) =   2.27   TRAVEL TIME(MIN.) =   3.86
```



```
  Tc(MIN.) =   17.70
  SUBAREA AREA(ACRES) =    23.65       SUBAREA RUNOFF(CFS) =   46.06
  EFFECTIVE AREA(ACRES) =     68.10     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =       68.1         PEAK FLOW RATE(CFS) =     133.24
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   3.91
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11903.00 =    2784.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11903.00 TO NODE  11904.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2252.14  DOWNSTREAM(FEET) =   2186.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1924.35   CHANNEL SLOPE =  0.0343
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.21
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.067
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       68.53      0.30     0.961     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.961
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     188.28
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.16
  AVERAGE FLOW DEPTH(FEET) =   2.14   TRAVEL TIME(MIN.) =   5.20
  Tc(MIN.) =   22.91
  SUBAREA AREA(ACRES) =    68.53       SUBAREA RUNOFF(CFS) =  109.71
  EFFECTIVE AREA(ACRES) =    136.63     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =      136.6         PEAK FLOW RATE(CFS) =     219.39
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.32   FLOW VELOCITY(FEET/SEC.) =   6.45
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11904.00 =    4708.67 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11904.00 TO NODE  11905.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2186.04  DOWNSTREAM(FEET) =   1957.34
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1926.87   CHANNEL SLOPE =  0.1187
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.86
```

```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.901
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       63.15      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     264.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.57
  AVERAGE FLOW DEPTH(FEET) =   1.83   TRAVEL TIME(MIN.) =   3.04
  Tc(MIN.) =   25.94
  SUBAREA AREA(ACRES) =    63.15       SUBAREA RUNOFF(CFS) =   91.02
  EFFECTIVE AREA(ACRES) =    199.78     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =      199.8         PEAK FLOW RATE(CFS) =     290.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.93   FLOW VELOCITY(FEET/SEC.) =  10.86
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11905.00 =    6635.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11905.00 TO NODE  11906.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1957.34  DOWNSTREAM(FEET) =   1244.16
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2498.96   CHANNEL SLOPE =  0.2854
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.68
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.797
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       84.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     347.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.54
  AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   2.68
  Tc(MIN.) =   28.62
  SUBAREA AREA(ACRES) =    84.87       SUBAREA RUNOFF(CFS) =  114.38
  EFFECTIVE AREA(ACRES) =    284.65     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      284.6         PEAK FLOW RATE(CFS) =     385.73
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.77

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.77   FLOW VELOCITY(FEET/SEC.) =  16.06
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11906.00 =    9134.50 FEET.

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



```
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1244.16  DOWNSTREAM(FEET) =    873.95
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3370.75   CHANNEL SLOPE =  0.1098
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.70
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.659
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      199.43      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     507.80
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.43
  AVERAGE FLOW DEPTH(FEET) =   2.67   TRAVEL TIME(MIN.) =   4.52
  Tc(MIN.) =   33.14
  SUBAREA AREA(ACRES) =   199.43       SUBAREA RUNOFF(CFS) =  244.01
  EFFECTIVE AREA(ACRES) =    484.08     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =      484.1         PEAK FLOW RATE(CFS) =     594.38
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.90

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.90   FLOW VELOCITY(FEET/SEC.) =  12.99
  LONGEST FLOWPATH FROM NODE  11900.00 TO NODE  11920.00 =   12505.25 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11906.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   33.14
  RAINFALL INTENSITY(INCH/HR) =   1.66
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =     484.08
  TOTAL STREAM AREA(ACRES) =     484.08
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     594.38

****************************************************************************
  FLOW PROCESS FROM NODE  11910.00 TO NODE  11911.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   517.62
  ELEVATION DATA: UPSTREAM(FEET) =   2531.88  DOWNSTREAM(FEET) =   2441.33
```

```
  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.185
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.164
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       -        3.46      0.30     1.000    56   12.19
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.92
  TOTAL AREA(ACRES) =      3.46   PEAK FLOW RATE(CFS) =      8.92

****************************************************************************
  FLOW PROCESS FROM NODE  11911.00 TO NODE  11912.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2441.33  DOWNSTREAM(FEET) =   2382.20
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.30   CHANNEL SLOPE =  0.1488
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.35
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.909
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        5.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      15.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.35
  AVERAGE FLOW DEPTH(FEET) =   0.34   TRAVEL TIME(MIN.) =   1.52
  Tc(MIN.) =   13.71
  SUBAREA AREA(ACRES) =     5.79       SUBAREA RUNOFF(CFS) =   13.60
  EFFECTIVE AREA(ACRES) =      9.25     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.2         PEAK FLOW RATE(CFS) =      21.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.41   FLOW VELOCITY(FEET/SEC.) =   4.93
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11912.00 =     914.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11912.00 TO NODE  11913.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2382.20  DOWNSTREAM(FEET) =   2263.77
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.47   CHANNEL SLOPE =  0.0626
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.16
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.308
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       54.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      71.48
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.63
  AVERAGE FLOW DEPTH(FEET) =   1.05   TRAVEL TIME(MIN.) =   5.60
  Tc(MIN.) =   19.31
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   98.12
  EFFECTIVE AREA(ACRES) =     63.55     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       63.5         PEAK FLOW RATE(CFS) =     114.83
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.38

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.38   FLOW VELOCITY(FEET/SEC.) =   6.54
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11913.00 =    2806.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11913.00 TO NODE  11914.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2263.77  DOWNSTREAM(FEET) =   1845.23
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1957.31   CHANNEL SLOPE =  0.2138
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.23
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.110
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -       65.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     167.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.26
  AVERAGE FLOW DEPTH(FEET) =   1.20   TRAVEL TIME(MIN.) =   2.90
  Tc(MIN.) =   22.21
  SUBAREA AREA(ACRES) =    65.14       SUBAREA RUNOFF(CFS) =  106.12
  EFFECTIVE AREA(ACRES) =    128.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      128.7         PEAK FLOW RATE(CFS) =     209.64
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.37   FLOW VELOCITY(FEET/SEC.) =  12.03
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11914.00 =    4763.70 FEET.

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

```
 FLOW PROCESS FROM NODE  11914.00 TO NODE  11915.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1845.23  DOWNSTREAM(FEET) =   1557.21
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1686.78   CHANNEL SLOPE =  0.1708
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.69
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.966
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.52      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     268.54
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.02
 AVERAGE FLOW DEPTH(FEET) =   1.67   TRAVEL TIME(MIN.) =   2.34
 Tc(MIN.) =   24.55
 SUBAREA AREA(ACRES) =    78.52       SUBAREA RUNOFF(CFS) =  117.73
 EFFECTIVE AREA(ACRES) =    207.21     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      207.2         PEAK FLOW RATE(CFS) =     310.69
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.81

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.81   FLOW VELOCITY(FEET/SEC.) =  12.58
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11915.00 =    6450.48 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11915.00 TO NODE  11916.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1557.21  DOWNSTREAM(FEET) =   1403.38
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1909.39   CHANNEL SLOPE =  0.0806
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.42
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.833
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       70.48      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     359.32
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.08
 AVERAGE FLOW DEPTH(FEET) =   2.41   TRAVEL TIME(MIN.) =   3.16
 Tc(MIN.) =   27.70
 SUBAREA AREA(ACRES) =    70.48       SUBAREA RUNOFF(CFS) =   97.25
 EFFECTIVE AREA(ACRES) =    277.69     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```



```
 TOTAL AREA(ACRES) =      277.7         PEAK FLOW RATE(CFS) =     383.17
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.49

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.49   FLOW VELOCITY(FEET/SEC.) =  10.27
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11916.00 =    8359.87 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11916.00 TO NODE  11917.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1403.38  DOWNSTREAM(FEET) =   1079.99
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1945.82   CHANNEL SLOPE =  0.1662
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.747
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -      232.20      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     534.42
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.62
 AVERAGE FLOW DEPTH(FEET) =   2.45   TRAVEL TIME(MIN.) =   2.22
 Tc(MIN.) =   29.92
 SUBAREA AREA(ACRES) =   232.20       SUBAREA RUNOFF(CFS) =  302.42
 EFFECTIVE AREA(ACRES) =    509.89     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =      509.9         PEAK FLOW RATE(CFS) =     664.09
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.75

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.75   FLOW VELOCITY(FEET/SEC.) =  15.57
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11917.00 =   10305.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1079.99  DOWNSTREAM(FEET) =    873.95
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2563.91   CHANNEL SLOPE =  0.0804
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.51
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.653
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  USER-DEFINED                -      110.82      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     731.56
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.30
  AVERAGE FLOW DEPTH(FEET) =   3.50   TRAVEL TIME(MIN.) =   3.47
  Tc(MIN.) =   33.40
  SUBAREA AREA(ACRES) =   110.82       SUBAREA RUNOFF(CFS) =  134.92
  EFFECTIVE AREA(ACRES) =    620.71     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      620.7          PEAK FLOW RATE(CFS) =     755.69
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.56   FLOW VELOCITY(FEET/SEC.) =  12.41
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11917.00 TO NODE  11920.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   33.40
  RAINFALL INTENSITY(INCH/HR) =   1.65
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     620.71
  TOTAL STREAM AREA(ACRES) =     620.71
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     755.69

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      594.38   33.14    1.659  0.30( 0.30) 0.98     484.1   11900.00
      2      755.69   33.40    1.653  0.30( 0.30) 1.00     620.7   11910.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1348.14   33.14    1.659  0.30( 0.30) 0.99    1100.1   11900.00
      2     1347.14   33.40    1.653  0.30( 0.30) 0.99    1104.8   11910.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    1348.14    Tc(MIN.) =    33.14
  EFFECTIVE AREA(ACRES) =    1100.13   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =     1104.8
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11920.00 =   12869.60 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  11920.00 TO NODE  11921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    873.95  DOWNSTREAM(FEET) =    827.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1417.25   CHANNEL SLOPE =  0.0325
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.599
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -      107.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1410.97
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.52
  AVERAGE FLOW DEPTH(FEET) =   6.06   TRAVEL TIME(MIN.) =   2.25
  Tc(MIN.) =   35.39
  SUBAREA AREA(ACRES) =   107.47       SUBAREA RUNOFF(CFS) =  125.65
  EFFECTIVE AREA(ACRES) =   1207.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =     1212.3          PEAK FLOW RATE(CFS) =    1413.99
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.07   FLOW VELOCITY(FEET/SEC.) =  10.52
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11921.00 =   14286.85 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1413.99   35.39    1.599  0.30( 0.30) 0.99    1207.6   11900.00
      2     1412.02   35.64    1.592  0.30( 0.30) 0.99    1212.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1413.99  Tc(MIN.) =   35.39
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99  EFFECTIVE AREA(ACRES) =    1207.60

****************************************************************************
  FLOW PROCESS FROM NODE  11921.00 TO NODE  11922.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    827.94  DOWNSTREAM(FEET) =    753.55
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1886.43   CHANNEL SLOPE =  0.0394
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.527
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      344.27      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1604.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.68
  AVERAGE FLOW DEPTH(FEET) =   6.15   TRAVEL TIME(MIN.) =   2.69
  Tc(MIN.) =   38.08
  SUBAREA AREA(ACRES) =   344.27       SUBAREA RUNOFF(CFS) =  380.08
  EFFECTIVE AREA(ACRES) =   1551.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1556.5         PEAK FLOW RATE(CFS) =    1715.40
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.35

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.35   FLOW VELOCITY(FEET/SEC.) =  11.89
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11922.00 =   16173.28 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1715.40   38.08    1.527  0.30( 0.30) 1.00    1551.9   11900.00
      2     1710.87   38.34    1.520  0.30( 0.30) 1.00    1556.5   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1715.40  Tc(MIN.) =   38.08
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    1551.87

****************************************************************************
  FLOW PROCESS FROM NODE  11922.00 TO NODE  11923.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    753.55  DOWNSTREAM(FEET) =    641.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.88   CHANNEL SLOPE =  0.0391
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.53
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.442
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      165.18      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1800.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.01
  AVERAGE FLOW DEPTH(FEET) =   6.51   TRAVEL TIME(MIN.) =   3.97
  Tc(MIN.) =   42.05
  SUBAREA AREA(ACRES) =   165.18       SUBAREA RUNOFF(CFS) =  169.74
  EFFECTIVE AREA(ACRES) =   1717.05     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     1721.7         PEAK FLOW RATE(CFS) =    1766.60
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.46   FLOW VELOCITY(FEET/SEC.) =  11.94
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11923.00 =   19034.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1766.60   42.05    1.442  0.30( 0.30) 1.00    1717.1   11900.00
      2     1764.86   42.31    1.438  0.30( 0.30) 1.00    1721.7   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1766.60  Tc(MIN.) =   42.05
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    1717.05

****************************************************************************
  FLOW PROCESS FROM NODE  11923.00 TO NODE  11924.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    641.58  DOWNSTREAM(FEET) =    579.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1844.02   CHANNEL SLOPE =  0.0335
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.399
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      433.73      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1981.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.61
  AVERAGE FLOW DEPTH(FEET) =   7.07   TRAVEL TIME(MIN.) =   2.65
  Tc(MIN.) =   44.70
  SUBAREA AREA(ACRES) =   433.73       SUBAREA RUNOFF(CFS) =  428.97
  EFFECTIVE AREA(ACRES) =   2150.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2155.4         PEAK FLOW RATE(CFS) =    2129.29
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.31   FLOW VELOCITY(FEET/SEC.) =  11.83
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11924.00 =   20878.18 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2129.29   44.70    1.399  0.30( 0.30) 1.00    2150.8   11900.00
      2     2125.66   44.96    1.395  0.30( 0.30) 1.00    2155.4   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2129.29  Tc(MIN.) =   44.70
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
```

```
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2150.78

****************************************************************************
  FLOW PROCESS FROM NODE  11924.00 TO NODE  11925.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    579.89  DOWNSTREAM(FEET) =    494.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2756.15   CHANNEL SLOPE =  0.0311
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.65
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.335
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      265.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2252.94
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.68
  AVERAGE FLOW DEPTH(FEET) =   7.63   TRAVEL TIME(MIN.) =   3.93
  Tc(MIN.) =   48.63
  SUBAREA AREA(ACRES) =   265.42       SUBAREA RUNOFF(CFS) =  247.29
  EFFECTIVE AREA(ACRES) =   2416.20     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2420.9         PEAK FLOW RATE(CFS) =    2253.25
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.63   FLOW VELOCITY(FEET/SEC.) =  11.68
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11925.00 =   23634.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2253.25   48.63    1.335  0.30( 0.30) 1.00    2416.2   11900.00
      2     2248.30   48.90    1.331  0.30( 0.30) 1.00    2420.9   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2253.25  Tc(MIN.) =   48.63
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2416.20

****************************************************************************
  FLOW PROCESS FROM NODE  11925.00 TO NODE  11926.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.12  DOWNSTREAM(FEET) =    458.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1922.70   CHANNEL SLOPE =  0.0186
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.68
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.294
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       97.46      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2296.83
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.69
  AVERAGE FLOW DEPTH(FEET) =   8.67   TRAVEL TIME(MIN.) =   3.31
  Tc(MIN.) =   51.94
  SUBAREA AREA(ACRES) =    97.46       SUBAREA RUNOFF(CFS) =   87.17
  EFFECTIVE AREA(ACRES) =   2513.66     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =     2518.3         PEAK FLOW RATE(CFS) =    2253.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.60   FLOW VELOCITY(FEET/SEC.) =   9.64
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11926.00 =   25557.03 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2253.25   51.94    1.294  0.30( 0.30) 1.00    2513.7   11900.00
      2     2248.71   52.21    1.291  0.30( 0.30) 1.00    2518.3   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2253.25  Tc(MIN.) =   51.94
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2513.66

****************************************************************************
  FLOW PROCESS FROM NODE  11926.00 TO NODE  11927.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    458.40  DOWNSTREAM(FEET) =    399.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2170.13   CHANNEL SLOPE =  0.0274
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.90
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.262
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       53.83      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2276.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.17
  AVERAGE FLOW DEPTH(FEET) =   7.90   TRAVEL TIME(MIN.) =   3.24
  Tc(MIN.) =   55.18
  SUBAREA AREA(ACRES) =    53.83       SUBAREA RUNOFF(CFS) =   46.60
  EFFECTIVE AREA(ACRES) =   2567.49     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
```

```
  TOTAL AREA(ACRES) =     2572.1         PEAK FLOW RATE(CFS) =    2253.25
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.86   FLOW VELOCITY(FEET/SEC.) =  11.14
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2253.25   55.18    1.262  0.30( 0.30) 1.00    2567.5   11900.00
      2     2248.71   55.45    1.259  0.30( 0.30) 1.00    2572.1   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2253.25  Tc(MIN.) =   55.18
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    2567.49

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P401XX50.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)         (ACRES)    NODE
      1      850.75   25.74  0.30( 0.30) 1.00     624.8   40130.00
      2      844.35   27.56  0.30( 0.30) 1.00     654.2   40100.00
    TOTAL AREA(ACRES) =      654.2

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2253.25   55.18    1.262  0.30( 0.30) 1.00    2567.5   11900.00
      2     2248.71   55.45    1.259  0.30( 0.30) 1.00    2572.1   11910.00
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      850.75   25.74    1.909  0.30( 0.30) 1.00     624.8   40130.00
      2      844.35   27.56    1.839  0.30( 0.30) 1.00     654.2   40100.00
  LONGEST FLOWPATH FROM NODE  40100.00 TO NODE  11927.00 =   10245.00 FEET.
```



```
  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2608.92   25.74    1.909  0.30( 0.30) 1.00    1822.6   40130.00
      2     2644.22   27.56    1.839  0.30( 0.30) 1.00    1936.6   40100.00
      3     2781.01   55.18    1.262  0.30( 0.30) 1.00    3221.7   11900.00
      4     2775.02   55.45    1.259  0.30( 0.30) 1.00    3226.4   11910.00
    TOTAL AREA(ACRES) =      3226.4

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2781.01  Tc(MIN.) =   55.180
  EFFECTIVE AREA(ACRES) =   3221.69  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =     3226.4
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.00 =   27727.16 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  11927.00 TO NODE  11927.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    399.00  DOWNSTREAM(FEET) =    384.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   986.26   CHANNEL SLOPE =  0.0152
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.89
  CHANNEL FLOW THRU SUBAREA(CFS) =    2781.01
  FLOW VELOCITY(FEET/SEC.) =   9.44   FLOW DEPTH(FEET) =   9.89
  TRAVEL TIME(MIN.) =   1.74   Tc(MIN.) =   56.92
  LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11927.50 =   28713.42 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2608.92   27.51    1.841  0.30( 0.30) 1.00    1822.6   40130.00
      2     2644.22   29.32    1.770  0.30( 0.30) 1.00    1936.6   40100.00
      3     2781.01   56.92    1.244  0.30( 0.30) 1.00    3221.7   11900.00
      4     2775.02   57.19    1.242  0.30( 0.30) 1.00    3226.4   11910.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2781.01  Tc(MIN.) =   56.92
  AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3221.69

****************************************************************************
  FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   56.92
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
```

```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.70      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.50      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.30      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.90      0.30     1.000    66
 NATURAL FAIR COVER
 "GRASS"                    B        0.60      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.40      SUBAREA RUNOFF(CFS) =    7.14
 EFFECTIVE AREA(ACRES) =   3230.09   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3234.8       PEAK FLOW RATE(CFS) =    2781.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   56.92
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.30      0.30     1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.43
 EFFECTIVE AREA(ACRES) =   3230.59   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3235.2       PEAK FLOW RATE(CFS) =    2781.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11927.50 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   56.92
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.244
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
```



```
 "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.20      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.10      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.00      SUBAREA RUNOFF(CFS) =    1.70
 EFFECTIVE AREA(ACRES) =   3232.59   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3237.2       PEAK FLOW RATE(CFS) =    2781.01
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11927.50 TO NODE  11928.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    384.00  DOWNSTREAM(FEET) =    359.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   647.19   CHANNEL SLOPE =  0.0386
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.05
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.237
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       78.01      0.30     0.984     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2814.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  13.40
 AVERAGE FLOW DEPTH(FEET) =   8.05   TRAVEL TIME(MIN.) =   0.80
 Tc(MIN.) =   57.73
 SUBAREA AREA(ACRES) =    78.01       SUBAREA RUNOFF(CFS) =   66.09
 EFFECTIVE AREA(ACRES) =   3310.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3315.3         PEAK FLOW RATE(CFS) =    2792.98
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   8.02

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  8.02   FLOW VELOCITY(FEET/SEC.) =  13.37
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11928.00 =   29360.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2608.92   28.33    1.809  0.30( 0.30) 1.00    1911.5   40130.00
     2     2644.22   30.14    1.740  0.30( 0.30) 1.00    2025.5   40100.00
     3     2792.98   57.73    1.237  0.30( 0.30) 1.00    3310.6   11900.00
     4     2789.01   57.99    1.234  0.30( 0.30) 1.00    3315.3   11910.00
```

```
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2792.98  Tc(MIN.) =   57.73
 AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3310.60

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11928.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   57.73
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.237
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.60      0.30     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    1.70      SUBAREA RUNOFF(CFS) =    1.43
 EFFECTIVE AREA(ACRES) =   3312.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3317.0       PEAK FLOW RATE(CFS) =    2794.41

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    359.00  DOWNSTREAM(FEET) =    341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1322.66   CHANNEL SLOPE =  0.0131
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.25
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.213
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        8.18      0.30     0.890     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2797.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.95
 AVERAGE FLOW DEPTH(FEET) =  10.25   TRAVEL TIME(MIN.) =   2.46
 Tc(MIN.) =   60.19
 SUBAREA AREA(ACRES) =     8.18       SUBAREA RUNOFF(CFS) =    6.96
 EFFECTIVE AREA(ACRES) =   3320.48     AREA-AVERAGED Fm(INCH/HR) =   0.30
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
 TOTAL AREA(ACRES) =     3325.1         PEAK FLOW RATE(CFS) =    2794.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =  10.24

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```



```
 DEPTH(FEET) = 10.24   FLOW VELOCITY(FEET/SEC.) =   8.95
 LONGEST FLOWPATH FROM NODE  11910.00 TO NODE  11929.00 =   30683.27 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     2608.92   30.83    1.722  0.30( 0.30) 1.00    1921.4   40130.00
     2     2644.22   32.64    1.673  0.30( 0.30) 1.00    2035.4   40100.00
     3     2794.41   60.19    1.213  0.30( 0.30) 1.00    3320.5   11900.00
     4     2790.44   60.46    1.211  0.30( 0.30) 1.00    3325.1   11910.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    2794.41  Tc(MIN.) =   60.19
 AREA-AVERAGED Fm(INCH/HR) =  0.30  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  1.00  EFFECTIVE AREA(ACRES) =    3320.48

****************************************************************************
 FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   60.19
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.213
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.90      0.30     1.000    66
 NATURAL FAIR COVER
 "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.50      SUBAREA RUNOFF(CFS) =    2.05
 EFFECTIVE AREA(ACRES) =   3322.98   AREA-AVERAGED Fm(INCH/HR) =  0.30
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
 TOTAL AREA(ACRES) =     3327.6       PEAK FLOW RATE(CFS) =    2794.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  11928.00 TO NODE  11929.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  11841.00 TO NODE  12527.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: S18X50.DNA
 MEMORY BANK #  1 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
     1    18863.84   37.77  0.30( 0.30) 1.00    7696.5   11831.00
     2    19171.93   40.18  0.30( 0.30) 1.00    8206.0   11801.00
     3    20870.42   51.52  0.30( 0.30) 1.00   11178.6   11530.00
     4    21741.74   56.15  0.30( 0.30) 1.00   12836.1   11701.00
     5    22206.97   58.56  0.30( 0.30) 1.00   13761.0   11000.00
     6    24578.79   68.37  0.30( 0.30) 1.00   18741.7   11330.00
```

7	24998.78	70.58	0.30(0.30)	1.00	19900.2	10800.00
8	25620.24	74.96	0.30(0.30)	1.00	22211.8	11130.00
9	25459.58	83.55	0.30(0.30)	1.00	25307.4	11620.00
10	25389.29	85.79	0.30(0.30)	1.00	26059.8	11600.00
11	25269.09	87.43	0.30(0.30)	1.00	26526.1	10600.00
12	25052.94	92.79	0.30(0.30)	1.00	28070.1	11201.00
13	24726.86	98.42	0.30(0.30)	1.00	29254.4	10710.00
14	24565.08	100.41	0.30(0.30)	1.00	29586.3	10410.00
15	24070.54	105.10	0.30(0.30)	1.00	30247.3	10700.00
16	23353.04	112.10	0.30(0.30)	1.00	31166.7	10400.00
17	23163.67	114.42	0.30(0.30)	1.00	31437.3	10200.00
18	22543.84	120.36	0.30(0.30)	1.00	32015.5	10300.00
19	21907.93	125.43	0.30(0.30)	1.00	32220.3	10210.00
20	19363.37	152.55	0.30(0.30)	1.00	32916.6	10100.00

TOTAL AREA(ACRES) = 32916.6

****

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<

==========

PEAK FLOWRATE TABLE FILE NAME: S25X50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	0.30(0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	0.30(0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	0.30(0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	0.30(0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	0.30(0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.30(0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.30(0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.30(0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.30(0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.30(0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.30(0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.30(0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.30(0.29)	0.98	13237.1	12000.00

TOTAL AREA(ACRES) = 13237.1

****

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	0.30(0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	0.30(0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	0.30(0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	0.30(0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	0.30(0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.30(0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.30(0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.30(0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.30(0.29)	0.98	11967.4	12231.00

10	8145.23	107.37	0.30(0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.30(0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.30(0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.30(0.29)	0.98	13237.1	12000.00

TOTAL AREA(ACRES) = 13237.1

****

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	1.167	0.30(0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	1.074	0.30(0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	1.065	0.30(0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	1.047	0.30(0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	1.018	0.30(0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.995	0.30(0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.977	0.30(0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.958	0.30(0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.947	0.30(0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.935	0.30(0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.931	0.30(0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.881	0.30(0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.863	0.30(0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18863.84	37.77	1.535	0.30(0.30)	1.00	7696.5	11831.00
2	19171.93	40.18	1.472	0.30(0.30)	1.00	8206.0	11801.00
3	20870.42	51.52	1.298	0.30(0.30)	1.00	11178.6	11530.00
4	21741.74	56.15	1.252	0.30(0.30)	1.00	12836.1	11701.00
5	22206.97	58.56	1.228	0.30(0.30)	1.00	13761.0	11000.00
6	24578.79	68.37	1.157	0.30(0.30)	1.00	18741.7	11330.00
7	24998.78	70.58	1.142	0.30(0.30)	1.00	19900.2	10800.00
8	25620.24	74.96	1.112	0.30(0.30)	1.00	22211.8	11130.00
9	25459.58	83.55	1.054	0.30(0.30)	1.00	25307.4	11620.00
10	25389.29	85.79	1.039	0.30(0.30)	1.00	26059.8	11600.00
11	25269.09	87.43	1.027	0.30(0.30)	1.00	26526.1	10600.00
12	25052.94	92.79	0.998	0.30(0.30)	1.00	28070.1	11201.00
13	24726.86	98.42	0.974	0.30(0.30)	1.00	29254.4	10710.00
14	24565.08	100.41	0.965	0.30(0.30)	1.00	29586.3	10410.00
15	24070.54	105.10	0.945	0.30(0.30)	1.00	30247.3	10700.00
16	23353.04	112.10	0.914	0.30(0.30)	1.00	31166.7	10400.00
17	23163.67	114.42	0.904	0.30(0.30)	1.00	31437.3	10200.00
18	22543.84	120.36	0.879	0.30(0.30)	1.00	32015.5	10300.00
19	21907.93	125.43	0.869	0.30(0.30)	1.00	32220.3	10210.00
20	19363.37	152.55	0.815	0.30(0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE

1	24335.68	37.77	1.535	0.30(0.30)	0.99	11305.9	11831.00
2	24697.44	40.18	1.472	0.30(0.30)	0.99	12045.5	11801.00
3	26906.53	51.52	1.298	0.30(0.30)	0.99	16101.8	11530.00
4	28019.04	56.15	1.252	0.30(0.30)	0.99	18201.1	11701.00
5	28590.34	58.56	1.228	0.30(0.30)	0.99	19356.3	11000.00
6	31039.95	66.91	1.167	0.30(0.30)	0.99	24392.9	12500.00
7	31468.57	68.37	1.157	0.30(0.30)	0.99	25346.5	11330.00
8	32002.18	70.58	1.142	0.30(0.30)	0.99	26824.3	10800.00
9	32849.10	74.96	1.112	0.30(0.30)	0.99	29769.7	11130.00
10	33031.62	80.53	1.074	0.30(0.30)	0.99	32580.5	12300.00
11	33114.20	81.91	1.065	0.30(0.30)	0.99	33368.0	12330.00
12	33186.01	83.55	1.054	0.30(0.30)	0.99	34276.0	11620.00
13	33217.38	84.57	1.047	0.30(0.30)	0.99	34810.9	12410.00
14	33238.92	85.79	1.039	0.30(0.30)	0.99	35437.1	11600.00
15	33199.04	87.43	1.027	0.30(0.30)	0.99	36189.6	10600.00
16	33210.37	88.75	1.018	0.30(0.30)	0.99	36799.1	12400.00
17	33179.69	92.79	0.998	0.30(0.30)	0.99	38550.0	11201.00
18	33161.66	93.51	0.995	0.30(0.30)	0.99	38804.9	12211.00
19	33011.46	97.70	0.977	0.30(0.30)	0.99	40281.7	12201.00
20	32963.01	98.42	0.974	0.30(0.30)	0.99	40515.8	10710.00
21	32783.54	100.41	0.965	0.30(0.30)	0.99	41070.9	10410.00
22	32611.09	101.92	0.958	0.30(0.30)	0.99	41453.0	12111.00
23	32307.60	104.56	0.947	0.30(0.30)	0.99	42138.9	12231.00
24	32244.16	105.10	0.945	0.30(0.30)	0.99	42271.8	10700.00
25	31982.44	107.37	0.935	0.30(0.30)	0.99	42812.2	12101.10
26	31863.89	108.34	0.931	0.30(0.30)	0.99	43030.2	12261.00
27	31330.23	112.10	0.914	0.30(0.30)	0.99	43773.2	10400.00
28	31049.28	114.42	0.904	0.30(0.30)	0.99	44197.6	10200.00
29	30284.07	119.74	0.881	0.30(0.30)	0.99	45068.3	12010.00
30	30186.30	120.36	0.879	0.30(0.30)	0.99	45137.4	10300.00
31	29278.79	125.43	0.869	0.30(0.30)	0.99	45415.2	10210.00
32	28847.68	128.35	0.863	0.30(0.30)	0.99	45532.4	12000.00
33	25964.49	152.55	0.815	0.30(0.30)	0.99	46153.7	10100.00

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 33238.92 Tc(MIN.) = 85.792
EFFECTIVE AREA(ACRES) = 35437.09 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

****
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.035
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.30	0.987	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33243.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.02
AVERAGE FLOW DEPTH(FEET) = 9.03 TRAVEL TIME(MIN.) = 0.59
Tc(MIN.) = 86.38
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 9.55
EFFECTIVE AREA(ACRES) = 35451.46 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 33238.92
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.03 FLOW VELOCITY(FEET/SEC.) = 15.01
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24335.68	38.43	1.517	0.30(0.30)	0.99	11320.3	11831.00
2	24697.44	40.83	1.461	0.30(0.30)	0.99	12059.9	11801.00
3	26906.53	52.16	1.292	0.30(0.30)	0.99	16116.2	11530.00
4	28019.04	56.77	1.246	0.30(0.30)	0.99	18215.4	11701.00
5	28590.34	59.18	1.222	0.30(0.30)	0.99	19370.6	11000.00
6	31039.95	67.51	1.163	0.30(0.30)	0.99	24407.3	12500.00
7	31468.57	68.97	1.153	0.30(0.30)	0.99	25360.9	11330.00
8	32002.18	71.18	1.138	0.30(0.30)	0.99	26838.7	10800.00
9	32849.10	75.55	1.108	0.30(0.30)	0.99	29784.1	11130.00
10	33031.62	81.12	1.070	0.30(0.30)	0.99	32594.9	12300.00
11	33114.20	82.50	1.061	0.30(0.30)	0.99	33382.4	12330.00
12	33186.01	84.14	1.050	0.30(0.30)	0.99	34290.4	11620.00
13	33217.38	85.16	1.043	0.30(0.30)	0.99	34825.3	12410.00
14	33238.92	86.38	1.035	0.30(0.30)	0.99	35451.5	11600.00
15	33199.04	88.02	1.023	0.30(0.30)	0.99	36204.0	10600.00
16	33210.37	89.34	1.014	0.30(0.30)	0.99	36813.4	12400.00
17	33179.69	93.38	0.995	0.30(0.30)	0.99	38564.4	11201.00
18	33161.66	94.10	0.992	0.30(0.30)	0.99	38819.3	12211.00
19	33011.46	98.29	0.974	0.30(0.30)	0.99	40296.1	12201.00
20	32963.01	99.01	0.971	0.30(0.30)	0.99	40530.1	10710.00
21	32783.54	101.00	0.962	0.30(0.30)	0.99	41085.2	10410.00
22	32611.09	102.51	0.956	0.30(0.30)	0.99	41467.3	12111.00
23	32307.60	105.16	0.944	0.30(0.30)	0.99	42153.2	12231.00
24	32244.16	105.69	0.942	0.30(0.30)	0.99	42286.1	10700.00
25	31982.44	107.97	0.932	0.30(0.30)	0.99	42826.5	12101.10
26	31863.89	108.94	0.928	0.30(0.30)	0.99	43044.6	12261.00
27	31330.23	112.70	0.912	0.30(0.30)	0.99	43787.5	10400.00
28	31049.28	115.02	0.902	0.30(0.30)	0.99	44211.9	10200.00
29	30284.07	120.35	0.879	0.30(0.30)	0.99	45082.6	12010.00
30	30186.30	120.97	0.878	0.30(0.30)	0.99	45151.8	10300.00
31	29278.79	126.04	0.868	0.30(0.30)	0.99	45429.6	10210.00
32	28847.68	128.97	0.862	0.30(0.30)	0.99	45546.8	12000.00
33	25964.49	153.19	0.814	0.30(0.30)	0.99	46168.0	10100.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 33238.92 Tc(MIN.) = 86.38
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 35451.46

****
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24335.68	38.43	1.517	0.30(0.30)	0.99	11320.3	11831.00
2	24697.44	40.83	1.461	0.30(0.30)	0.99	12059.9	11801.00
3	26906.53	52.16	1.292	0.30(0.30)	0.99	16116.2	11530.00
4	28019.04	56.77	1.246	0.30(0.30)	0.99	18215.4	11701.00
5	28590.34	59.18	1.222	0.30(0.30)	0.99	19370.6	11000.00
6	31039.95	67.51	1.163	0.30(0.30)	0.99	24407.3	12500.00
7	31468.57	68.97	1.153	0.30(0.30)	0.99	25360.9	11330.00
8	32002.18	71.18	1.138	0.30(0.30)	0.99	26838.7	10800.00
9	32849.10	75.55	1.108	0.30(0.30)	0.99	29784.1	11130.00
10	33031.62	81.12	1.070	0.30(0.30)	0.99	32594.9	12300.00
11	33114.20	82.50	1.061	0.30(0.30)	0.99	33382.4	12330.00
12	33186.01	84.14	1.050	0.30(0.30)	0.99	34290.4	11620.00
13	33217.38	85.16	1.043	0.30(0.30)	0.99	34825.3	12410.00
14	33238.92	86.38	1.035	0.30(0.30)	0.99	35451.5	11600.00
15	33199.04	88.02	1.023	0.30(0.30)	0.99	36204.0	10600.00
16	33210.37	89.34	1.014	0.30(0.30)	0.99	36813.4	12400.00
17	33179.69	93.38	0.995	0.30(0.30)	0.99	38564.4	11201.00
18	33161.66	94.10	0.992	0.30(0.30)	0.99	38819.3	12211.00
19	33011.46	98.29	0.974	0.30(0.30)	0.99	40296.1	12201.00
20	32963.01	99.01	0.971	0.30(0.30)	0.99	40530.1	10710.00
21	32783.54	101.00	0.962	0.30(0.30)	0.99	41085.2	10410.00
22	32611.09	102.51	0.956	0.30(0.30)	0.99	41467.3	12111.00
23	32307.60	105.16	0.944	0.30(0.30)	0.99	42153.2	12231.00
24	32244.16	105.69	0.942	0.30(0.30)	0.99	42286.1	10700.00
25	31982.44	107.97	0.932	0.30(0.30)	0.99	42826.5	12101.10
26	31863.89	108.94	0.928	0.30(0.30)	0.99	43044.6	12261.00
27	31330.23	112.70	0.912	0.30(0.30)	0.99	43787.5	10400.00
28	31049.28	115.02	0.902	0.30(0.30)	0.99	44211.9	10200.00
29	30284.07	120.35	0.879	0.30(0.30)	0.99	45082.6	12010.00
30	30186.30	120.97	0.878	0.30(0.30)	0.99	45151.8	10300.00
31	29278.79	126.04	0.868	0.30(0.30)	0.99	45429.6	10210.00
32	28847.68	128.97	0.862	0.30(0.30)	0.99	45546.8	12000.00
33	25964.49	153.19	0.814	0.30(0.30)	0.99	46168.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2608.92	30.83	1.722	0.30(0.30)	1.00	1923.9	40130.00
2	2644.22	32.64	1.673	0.30(0.30)	1.00	2037.9	40100.00
3	2794.41	60.19	1.213	0.30(0.30)	1.00	3323.0	11900.00
4	2790.44	60.46	1.211	0.30(0.30)	1.00	3327.6	11910.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE

1	25406.30	30.83	1.722	0.30(0.30)	0.99	11007.2	40130.00
2	25952.56	32.64	1.673	0.30(0.30)	0.99	11652.1	40100.00
3	27011.47	38.43	1.517	0.30(0.30)	0.99	13628.3	11831.00
4	27386.34	40.83	1.461	0.30(0.30)	0.99	14480.1	11801.00
5	29657.15	52.16	1.292	0.30(0.30)	0.99	19064.5	11530.00
6	30794.82	56.77	1.246	0.30(0.30)	0.99	21379.0	11701.00
7	31379.23	59.18	1.222	0.30(0.30)	0.99	22646.4	11000.00
8	31682.43	60.19	1.213	0.30(0.30)	0.99	23305.7	11900.00
9	31757.19	60.46	1.211	0.30(0.30)	0.99	23472.2	11910.00
10	33683.59	67.51	1.163	0.30(0.30)	0.99	27734.9	12500.00
11	34081.84	68.97	1.153	0.30(0.30)	0.99	28688.5	11330.00
12	34569.59	71.18	1.138	0.30(0.30)	0.99	30166.4	10800.00
13	35325.47	75.55	1.108	0.30(0.30)	0.99	33111.7	11130.00
14	35392.14	81.12	1.070	0.30(0.30)	0.99	35922.5	12300.00
15	35445.93	82.50	1.061	0.30(0.30)	0.99	36710.1	12330.00
16	35483.55	84.14	1.050	0.30(0.30)	0.99	37618.1	11620.00
17	35493.85	85.16	1.043	0.30(0.30)	0.99	38152.9	12410.00
18	35489.87	86.38	1.035	0.30(0.30)	0.99	38779.1	11600.00
19	35415.85	88.02	1.023	0.30(0.30)	0.99	39531.6	10600.00
20	35399.76	89.34	1.014	0.30(0.30)	0.99	40141.1	12400.00
21	35310.54	93.38	0.995	0.30(0.30)	0.99	41892.0	11201.00
22	35283.00	94.10	0.992	0.30(0.30)	0.99	42146.9	12211.00
23	35077.23	98.29	0.974	0.30(0.30)	0.99	43623.7	12201.00
24	35019.16	99.01	0.971	0.30(0.30)	0.99	43857.8	10710.00
25	34813.35	101.00	0.962	0.30(0.30)	0.99	44412.9	10410.00
26	34620.89	102.51	0.956	0.30(0.30)	0.99	44795.0	12111.00
27	34282.30	105.16	0.944	0.30(0.30)	0.99	45480.9	12231.00
28	34211.72	105.69	0.942	0.30(0.30)	0.99	45613.8	10700.00
29	33919.79	107.97	0.932	0.30(0.30)	0.99	46154.2	12101.10
30	33788.43	108.94	0.928	0.30(0.30)	0.99	46372.2	12261.00
31	33204.87	112.70	0.912	0.30(0.30)	0.99	47115.2	10400.00
32	32893.12	115.02	0.902	0.30(0.30)	0.99	47539.6	10200.00
33	32059.78	120.35	0.879	0.30(0.30)	0.99	48410.3	12010.00
34	31958.21	120.97	0.878	0.30(0.30)	0.99	48479.4	10300.00
35	31019.66	126.04	0.868	0.30(0.30)	0.99	48757.2	10210.00
36	30570.63	128.97	0.862	0.30(0.30)	0.99	48874.4	12000.00
37	27539.19	153.19	0.814	0.30(0.30)	0.99	49495.7	10100.00

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 35493.85 Tc(MIN.) = 85.157
EFFECTIVE AREA(ACRES) = 38152.91 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

==========
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 85.16
EFFECTIVE AREA(ACRES) = 38152.91 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE(CFS) = 35493.85

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25406.30	30.83	1.722	0.30(0.30)	0.99	11007.2	40130.00
2	25952.56	32.64	1.673	0.30(0.30)	0.99	11652.1	40100.00
3	27011.47	38.43	1.517	0.30(0.30)	0.99	13628.3	11831.00

4	27386.34	40.83	1.461	0.30(0.30)	0.99	14480.1	11801.00
5	29657.15	52.16	1.292	0.30(0.30)	0.99	19064.5	11530.00
6	30794.82	56.77	1.246	0.30(0.30)	0.99	21379.0	11701.00
7	31379.23	59.18	1.222	0.30(0.30)	0.99	22646.4	11000.00
8	31682.43	60.19	1.213	0.30(0.30)	0.99	23305.7	11900.00
9	31757.19	60.46	1.211	0.30(0.30)	0.99	23472.2	11910.00
10	33683.59	67.51	1.163	0.30(0.30)	0.99	27734.9	12500.00
11	34081.84	68.97	1.153	0.30(0.30)	0.99	28688.5	11330.00
12	34569.59	71.18	1.138	0.30(0.30)	0.99	30166.4	10800.00
13	35325.47	75.55	1.108	0.30(0.30)	0.99	33111.7	11130.00
14	35392.14	81.12	1.070	0.30(0.30)	0.99	35922.5	12300.00
15	35445.93	82.50	1.061	0.30(0.30)	0.99	36710.1	12330.00
16	35483.55	84.14	1.050	0.30(0.30)	0.99	37618.1	11620.00
17	35493.85	85.16	1.043	0.30(0.30)	0.99	38152.9	12410.00
18	35489.87	86.38	1.035	0.30(0.30)	0.99	38779.1	11600.00
19	35415.85	88.02	1.023	0.30(0.30)	0.99	39531.6	10600.00
20	35399.76	89.34	1.014	0.30(0.30)	0.99	40141.1	12400.00
21	35310.54	93.38	0.995	0.30(0.30)	0.99	41892.0	11201.00
22	35283.00	94.10	0.992	0.30(0.30)	0.99	42146.9	12211.00
23	35077.23	98.29	0.974	0.30(0.30)	0.99	43623.7	12201.00
24	35019.16	99.01	0.971	0.30(0.30)	0.99	43857.8	10710.00
25	34813.35	101.00	0.962	0.30(0.30)	0.99	44412.9	10410.00
26	34620.89	102.51	0.956	0.30(0.30)	0.99	44795.0	12111.00
27	34282.30	105.16	0.944	0.30(0.30)	0.99	45480.9	12231.00
28	34211.72	105.69	0.942	0.30(0.30)	0.99	45613.8	10700.00
29	33919.79	107.97	0.932	0.30(0.30)	0.99	46154.2	12101.10
30	33788.43	108.94	0.928	0.30(0.30)	0.99	46372.2	12261.00
31	33204.87	112.70	0.912	0.30(0.30)	0.99	47115.2	10400.00
32	32893.12	115.02	0.902	0.30(0.30)	0.99	47539.6	10200.00
33	32059.78	120.35	0.879	0.30(0.30)	0.99	48410.3	12010.00
34	31958.21	120.97	0.878	0.30(0.30)	0.99	48479.4	10300.00
35	31019.66	126.04	0.868	0.30(0.30)	0.99	48757.2	10210.00
36	30570.63	128.97	0.862	0.30(0.30)	0.99	48874.4	12000.00
37	27539.19	153.19	0.814	0.30(0.30)	0.99	49495.7	10100.00

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 126 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 50-YR EV JULY 2023 ROKAMOTO                                          *
 ****************************************************************************

  FILE NAME: RU50EV26.DAT
  TIME/DATE OF STUDY: 13:10 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.515
   2)   10.00;  3.520
   3)   15.00;  2.687
   4)   20.00;  2.242
   5)   25.00;  1.935
   6)   30.00;  1.741
   7)   40.00;  1.473
   8)   50.00;  1.311
   9)   60.00;  1.211
  10)   90.00;  1.007
  11)  120.00;  0.877
  12)  180.00;  0.757
  13)  360.00;  0.563
  14) 1200.00;  0.248
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV19.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25952.56   32.64  0.30( 0.30) 0.99   11652.1   40100.00
      2    27386.34   40.83  0.30( 0.30) 0.99   14480.1   11801.00
      3    29657.15   52.16  0.30( 0.30) 0.99   19064.5   11530.00
      4    30794.82   56.77  0.30( 0.30) 0.99   21379.0   11701.00
      5    31757.19   60.46  0.30( 0.30) 0.99   23472.2   11910.00
      6    34569.59   71.18  0.30( 0.30) 0.99   30166.4   10800.00
      7    35325.47   75.55  0.30( 0.30) 0.99   33111.7   11130.00
      8    35445.93   82.50  0.30( 0.30) 0.99   36710.1   12330.00
      9    35493.85   85.16  0.30( 0.30) 0.99   38152.9   12410.00
     10    35415.85   88.02  0.30( 0.30) 0.99   39531.6   10600.00
     11    35310.54   93.38  0.30( 0.30) 0.99   41892.0   11201.00
     12    35077.23   98.29  0.30( 0.30) 0.99   43623.7   12201.00
     13    34813.35  101.00  0.30( 0.30) 0.99   44412.9   10410.00
     14    34282.30  105.16  0.30( 0.30) 0.99   45480.9   12231.00
     15    33919.79  107.97  0.30( 0.30) 0.99   46154.2   12101.10
     16    33204.87  112.70  0.30( 0.30) 0.99   47115.2   10400.00
     17    32059.78  120.35  0.30( 0.30) 0.99   48410.3   12010.00
     18    31019.66  126.04  0.30( 0.30) 0.99   48757.2   10210.00
     19    30570.63  128.97  0.30( 0.30) 0.99   48874.4   12000.00
     20    27539.19  153.19  0.30( 0.30) 0.99   49495.7   10100.00
    TOTAL AREA(ACRES) =    49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  11929.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    25952.56   32.64  0.30( 0.30) 0.99   11652.1   40100.00
      2    27386.34   40.83  0.30( 0.30) 0.99   14480.1   11801.00
      3    29657.15   52.16  0.30( 0.30) 0.99   19064.5   11530.00
      4    30794.82   56.77  0.30( 0.30) 0.99   21379.0   11701.00
      5    31757.19   60.46  0.30( 0.30) 0.99   23472.2   11910.00
      6    34569.59   71.18  0.30( 0.30) 0.99   30166.4   10800.00
      7    35325.47   75.55  0.30( 0.30) 0.99   33111.7   11130.00
      8    35445.93   82.50  0.30( 0.30) 0.99   36710.1   12330.00
      9    35493.85   85.16  0.30( 0.30) 0.99   38152.9   12410.00
     10    35415.85   88.02  0.30( 0.30) 0.99   39531.6   10600.00
     11    35310.54   93.38  0.30( 0.30) 0.99   41892.0   11201.00
     12    35077.23   98.29  0.30( 0.30) 0.99   43623.7   12201.00
     13    34813.35  101.00  0.30( 0.30) 0.99   44412.9   10410.00
```

```
    14    34282.30  105.16  0.30( 0.30) 0.99   45480.9   12231.00
    15    33919.79  107.97  0.30( 0.30) 0.99   46154.2   12101.10
    16    33204.87  112.70  0.30( 0.30) 0.99   47115.2   10400.00
    17    32059.78  120.35  0.30( 0.30) 0.99   48410.3   12010.00
    18    31019.66  126.04  0.30( 0.30) 0.99   48757.2   10210.00
    19    30570.63  128.97  0.30( 0.30) 0.99   48874.4   12000.00
    20    27539.19  153.19  0.30( 0.30) 0.99   49495.7   10100.00
   TOTAL AREA(ACRES) =     49495.7

****************************************************************************
  FLOW PROCESS FROM NODE  11929.00 TO NODE  12601.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    341.63  DOWNSTREAM(FEET) =    325.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1467.93   CHANNEL SLOPE =  0.0113
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.89
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.031
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.50      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.90      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.50      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   35498.49
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  18.80
  AVERAGE FLOW DEPTH(FEET) =   7.89   TRAVEL TIME(MIN.) =   1.30
  Tc(MIN.) =   86.46
  SUBAREA AREA(ACRES) =    14.10       SUBAREA RUNOFF(CFS) =    9.28
  EFFECTIVE AREA(ACRES) =  38167.02     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    49509.8         PEAK FLOW RATE(CFS) =   35493.85
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   7.89

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  7.89   FLOW VELOCITY(FEET/SEC.) =  18.80
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE = 15.1
----------------------------------------------------------------------------
```



```
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3O50EVRL.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)           (ACRES)     NODE
      1      103.71   16.55  0.30( 0.29) 0.98       51.1     600.00
    TOTAL AREA(ACRES) =       51.1

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12601.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    25952.56   34.08    1.632  0.30( 0.30) 0.99   11666.2   40100.00
      2    27386.34   42.25    1.436  0.30( 0.30) 0.99   14494.2   11801.00
      3    29657.15   53.54    1.276  0.30( 0.30) 0.99   19078.6   11530.00
      4    30794.82   58.14    1.230  0.30( 0.30) 0.99   21393.1   11701.00
      5    31757.19   61.81    1.199  0.30( 0.30) 0.99   23486.3   11910.00
      6    34569.59   72.49    1.126  0.30( 0.30) 0.99   30180.5   10800.00
      7    35325.47   76.85    1.096  0.30( 0.30) 0.99   33125.8   11130.00
      8    35445.93   83.80    1.049  0.30( 0.30) 0.99   36724.2   12330.00
      9    35493.85   86.46    1.031  0.30( 0.30) 0.99   38167.0   12410.00
     10    35415.85   89.33    1.012  0.30( 0.30) 0.99   39545.7   10600.00
     11    35310.54   94.68    0.987  0.30( 0.30) 0.99   41906.1   11201.00
     12    35077.23   99.59    0.965  0.30( 0.30) 0.99   43637.8   12201.00
     13    34813.35  102.31    0.954  0.30( 0.30) 0.99   44427.0   10410.00
     14    34282.30  106.47    0.936  0.30( 0.30) 0.99   45495.0   12231.00
     15    33919.79  109.29    0.923  0.30( 0.30) 0.99   46168.3   12101.10
     16    33204.87  114.03    0.903  0.30( 0.30) 0.99   47129.3   10400.00
     17    32059.78  121.70    0.874  0.30( 0.30) 0.99   48424.4   12010.00
     18    31019.66  127.40    0.862  0.30( 0.30) 0.99   48771.3   10210.00
     19    30570.63  130.34    0.856  0.30( 0.30) 0.99   48888.6   12000.00
     20    27539.19  154.61    0.808  0.30( 0.30) 0.99   49509.8   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      103.71   16.55    2.549  0.30( 0.29) 0.98       51.1     600.00
  LONGEST FLOWPATH FROM NODE    600.00 TO NODE  12601.00 =    4850.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1    21375.29   16.55    2.549  0.30( 0.30) 0.99    5716.0     600.00
      2    26014.07   34.08    1.632  0.30( 0.30) 0.99   11717.3   40100.00
      3    27438.89   42.25    1.436  0.30( 0.30) 0.99   14545.3   11801.00
      4    29702.30   53.54    1.276  0.30( 0.30) 0.99   19129.7   11530.00
      5    30837.85   58.14    1.230  0.30( 0.30) 0.99   21444.2   11701.00
      6    31798.79   61.81    1.199  0.30( 0.30) 0.99   23537.4   11910.00
      7    34607.86   72.49    1.126  0.30( 0.30) 0.99   30231.6   10800.00
      8    35362.37   76.85    1.096  0.30( 0.30) 0.99   33176.9   11130.00
      9    35480.66   83.80    1.049  0.30( 0.30) 0.99   36775.3   12330.00
```

```
    10    35527.75   86.46    1.031  0.30( 0.30) 0.99   38218.1   12410.00
    11    35448.85   89.33    1.012  0.30( 0.30) 0.99   39596.8   10600.00
    12    35342.40   94.68    0.987  0.30( 0.30) 0.99   41957.2   11201.00
    13    35108.11   99.59    0.965  0.30( 0.30) 0.99   43688.9   12201.00
    14    34843.69  102.31    0.954  0.30( 0.30) 0.99   44478.1   10410.00
    15    34311.80  106.47    0.936  0.30( 0.30) 0.99   45546.1   12231.00
    16    33948.73  109.29    0.923  0.30( 0.30) 0.99   46219.4   12101.10
    17    33232.87  114.03    0.903  0.30( 0.30) 0.99   47180.4   10400.00
    18    32086.44  121.70    0.874  0.30( 0.30) 0.99   48475.5   12010.00
    19    31045.79  127.40    0.862  0.30( 0.30) 0.99   48822.4   10210.00
    20    30596.49  130.34    0.856  0.30( 0.30) 0.99   48939.7   12000.00
    21    27562.82  154.61    0.808  0.30( 0.30) 0.99   49560.9   10100.00
  TOTAL AREA(ACRES) =     49560.9

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    35527.75  Tc(MIN.) =   86.458
  EFFECTIVE AREA(ACRES) =  38218.12  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49560.9
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12601.00 =   99868.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12601.00 TO NODE  12603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    325.00  DOWNSTREAM(FEET) =    310.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1690.00   CHANNEL SLOPE =  0.0089
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.46
  CHANNEL FLOW THRU SUBAREA(CFS) =   35527.75
  FLOW VELOCITY(FEET/SEC.) =  17.34   FLOW DEPTH(FEET) =   8.46
  TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =   88.08
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12603.00 =  101558.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   88.08
  RAINFALL INTENSITY(INCH/HR) =   1.02
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   38218.12
  TOTAL STREAM AREA(ACRES) =   49560.89
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   35527.75
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   14.09   RAINFALL INTENSITY(INCH/HR) =  2.84
  EFFECTIVE AREA(ACRES) =    99.30
  TOTAL AREA(ACRES) =   171.00        PEAK FLOW RATE(CFS) =    208.20
  AREA-AVERAGED Fm(INCH/HR) =   0.17  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.58
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   14.09
  RAINFALL INTENSITY(INCH/HR) =   2.84
  AREA-AVERAGED Fm(INCH/HR) =  0.17
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.58
  EFFECTIVE STREAM AREA(ACRES) =     99.30
  TOTAL STREAM AREA(ACRES) =    171.00
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    208.20

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21375.29   18.48    2.377  0.30( 0.30) 0.99    5716.0     600.00
      1    26014.07   35.89    1.583  0.30( 0.30) 0.99   11717.3   40100.00
      1    27438.89   44.03    1.408  0.30( 0.30) 0.99   14545.3   11801.00
      1    29702.30   55.26    1.258  0.30( 0.30) 0.99   19129.7   11530.00
      1    30837.85   59.84    1.213  0.30( 0.30) 0.99   21444.2   11701.00
      1    31798.79   63.49    1.187  0.30( 0.30) 0.99   23537.4   11910.00
      1    34607.86   74.13    1.115  0.30( 0.30) 0.99   30231.6   10800.00
      1    35362.37   78.48    1.085  0.30( 0.30) 0.99   33176.9   11130.00
      1    35480.66   85.43    1.038  0.30( 0.30) 0.99   36775.3   12330.00
      1    35527.75   88.08    1.020  0.30( 0.30) 0.99   38218.1   12410.00
      1    35448.85   90.95    1.003  0.30( 0.30) 0.99   39596.8   10600.00
      1    35342.40   96.31    0.980  0.30( 0.30) 0.99   41957.2   11201.00
      1    35108.11  101.23    0.958  0.30( 0.30) 0.99   43688.9   12201.00
      1    34843.69  103.95    0.947  0.30( 0.30) 0.99   44478.1   10410.00
      1    34311.80  108.12    0.928  0.30( 0.30) 0.99   45546.1   12231.00
      1    33948.73  110.94    0.916  0.30( 0.30) 0.99   46219.4   12101.10
      1    33232.87  115.69    0.896  0.30( 0.30) 0.99   47180.4   10400.00
      1    32086.44  123.38    0.870  0.30( 0.30) 0.99   48475.5   12010.00
      1    31045.79  129.10    0.859  0.30( 0.30) 0.99   48822.4   10210.00
      1    30596.49  132.05    0.853  0.30( 0.30) 0.99   48939.7   12000.00
      1    27562.82  156.38    0.804  0.30( 0.30) 0.99   49560.9   10100.00
      2      208.20   14.09    2.839  0.30( 0.17) 0.58      99.3   12603.00
```

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20121.55	14.09	2.839	0.30(0.30)	0.98	4457.6	12603.00
2	21547.45	18.48	2.377	0.30(0.30)	0.99	5815.3	600.00
3	26124.18	35.89	1.583	0.30(0.30)	0.99	11816.6	40100.00
4	27535.29	44.03	1.408	0.30(0.30)	0.99	14644.6	11801.00
5	29787.02	55.26	1.258	0.30(0.30)	0.99	19229.0	11530.00
6	30919.00	59.84	1.213	0.30(0.30)	0.99	21543.5	11701.00
7	31877.96	63.49	1.187	0.30(0.30)	0.99	23636.7	11910.00
8	34681.38	74.13	1.115	0.30(0.30)	0.99	30330.9	10800.00
9	35433.58	78.48	1.085	0.30(0.30)	0.99	33276.2	11130.00
10	35548.18	85.43	1.038	0.30(0.30)	0.99	36874.6	12330.00
11	35593.86	88.08	1.020	0.30(0.30)	0.99	38317.4	12410.00
12	35513.62	90.95	1.003	0.30(0.30)	0.99	39696.1	10600.00
13	35405.35	96.31	0.980	0.30(0.30)	0.99	42056.5	11201.00
14	35169.39	101.23	0.958	0.30(0.30)	0.99	43788.2	12201.00
15	34904.05	103.95	0.947	0.30(0.30)	0.99	44577.4	10410.00
16	34370.76	108.12	0.928	0.30(0.30)	0.99	45645.4	12231.00
17	34006.73	110.94	0.916	0.30(0.30)	0.99	46318.7	12101.10
18	33289.26	115.69	0.896	0.30(0.30)	0.99	47279.7	10400.00
19	32140.84	123.38	0.870	0.30(0.30)	0.99	48574.8	12010.00
20	31099.30	129.10	0.859	0.30(0.30)	0.99	48921.7	10210.00
21	30649.54	132.05	0.853	0.30(0.30)	0.99	49039.0	12000.00
22	27612.07	156.38	0.804	0.30(0.30)	0.99	49660.2	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 35593.86 Tc(MIN.) = 88.08
EFFECTIVE AREA(ACRES) = 38317.42 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49731.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.45 FEET.

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 88.08
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.020
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
PUBLIC PARK	B	1.30	0.30	0.850	56
COMMERCIAL	B	1.40	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	12.40	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.911

SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 12.30
EFFECTIVE AREA(ACRES) = 38335.72 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49750.2 PEAK FLOW RATE(CFS) = 35593.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 88.08
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.020
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	26.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 26.90 SUBAREA RUNOFF(CFS) = 17.43
EFFECTIVE AREA(ACRES) = 38362.62 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49777.1 PEAK FLOW RATE(CFS) = 35593.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 88.08
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.020
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.40	0.30	1.000	72
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69
PUBLIC PARK	B	0.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.70	0.30	1.000	72

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.968
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 2.17
EFFECTIVE AREA(ACRES) = 38365.92 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49780.4 PEAK FLOW RATE(CFS) = 35593.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.70      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.10      0.30     0.900    56
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"     B        2.90      0.30     1.000    72
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.965
  SUBAREA AREA(ACRES) =   10.80      SUBAREA RUNOFF(CFS) =    7.10
  EFFECTIVE AREA(ACRES) =  38376.72   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49791.2       PEAK FLOW RATE(CFS) =   35593.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12603.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   88.08
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.020
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.60      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        9.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.60      SUBAREA RUNOFF(CFS) =    9.46
  EFFECTIVE AREA(ACRES) =  38391.32   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49805.8       PEAK FLOW RATE(CFS) =   35593.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  12603.00 TO NODE  12605.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    310.00  DOWNSTREAM(FEET) =    305.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   885.00   CHANNEL SLOPE =  0.0056
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.62
  CHANNEL FLOW THRU SUBAREA(CFS) =   35593.86
  FLOW VELOCITY(FEET/SEC.) =  14.91   FLOW DEPTH(FEET) =   9.62
  TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =   89.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12605.00 =  102443.45 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   89.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  PUBLIC PARK                B        2.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.918
  SUBAREA AREA(ACRES) =    7.80      SUBAREA RUNOFF(CFS) =    5.18
  EFFECTIVE AREA(ACRES) =  38399.12   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49813.6       PEAK FLOW RATE(CFS) =   35593.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12605.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   89.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.013
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.50      0.30     1.000    65
  PUBLIC PARK                B        6.10      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.929
  SUBAREA AREA(ACRES) =   12.80      SUBAREA RUNOFF(CFS) =    8.46
  EFFECTIVE AREA(ACRES) =  38411.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    49826.4       PEAK FLOW RATE(CFS) =   35593.86
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  12605.00 TO NODE  12606.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    305.00  DOWNSTREAM(FEET) =    286.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2159.47   CHANNEL SLOPE =  0.0088
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.49
  CHANNEL FLOW THRU SUBAREA(CFS) =   35593.86
  FLOW VELOCITY(FEET/SEC.) =  17.30   FLOW DEPTH(FEET) =   8.49
  TRAVEL TIME(MIN.) =   2.08   Tc(MIN.) =   91.15
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12606.00 =  104602.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   91.15
  RAINFALL INTENSITY(INCH/HR) =   1.00
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   38411.92
  TOTAL STREAM AREA(ACRES) =   49826.39
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   35593.86

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   16.81   RAINFALL INTENSITY(INCH/HR) =  2.53
  EFFECTIVE AREA(ACRES) =   457.00
  TOTAL AREA(ACRES) =   553.80        PEAK FLOW RATE(CFS) =    824.90
  AREA-AVERAGED Fm(INCH/HR) =   0.26  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.85
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.81
  RAINFALL INTENSITY(INCH/HR) =   2.53
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
```



```
AREA-AVERAGED Ap =  0.85
EFFECTIVE STREAM AREA(ACRES) =     457.00
TOTAL STREAM AREA(ACRES) =     553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =     824.90

** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20121.55   17.81    2.437  0.30( 0.29) 0.98    4552.1   12603.00
    1    21547.45   22.11    2.112  0.30( 0.30) 0.99    5909.8     600.00
    1    26124.18   39.29    1.492  0.30( 0.30) 0.99   11911.1   40100.00
    1    27535.29   47.37    1.354  0.30( 0.30) 0.99   14739.1   11801.00
    1    29787.02   58.52    1.226  0.30( 0.30) 0.99   19323.5   11530.00
    1    30919.00   63.06    1.190  0.30( 0.30) 0.99   21638.0   11701.00
    1    31877.96   66.68    1.166  0.30( 0.30) 0.99   23731.2   11910.00
    1    34681.38   77.23    1.094  0.30( 0.30) 0.99   30425.4   10800.00
    1    35433.58   81.56    1.064  0.30( 0.30) 0.99   33370.7   11130.00
    1    35548.18   88.50    1.017  0.30( 0.30) 0.99   36969.1   12330.00
    1    35593.86   91.15    1.002  0.30( 0.30) 0.99   38411.9   12410.00
    1    35513.62   94.03    0.990  0.30( 0.30) 0.99   39790.6   10600.00
    1    35405.35   99.39    0.966  0.30( 0.30) 0.99   42151.0   11201.00
    1    35169.39  104.31    0.945  0.30( 0.30) 0.99   43882.7   12201.00
    1    34904.05  107.04    0.933  0.30( 0.30) 0.99   44671.9   10410.00
    1    34370.76  111.22    0.915  0.30( 0.30) 0.99   45739.9   12231.00
    1    34006.73  114.06    0.903  0.30( 0.30) 0.99   46413.2   12101.10
    1    33289.26  118.83    0.882  0.30( 0.30) 0.99   47374.2   10400.00
    1    32140.84  126.55    0.864  0.30( 0.30) 0.99   48669.3   12010.00
    1    31099.30  132.32    0.852  0.30( 0.30) 0.99   49016.2   10210.00
    1    30649.54  135.27    0.846  0.30( 0.30) 0.99   49133.5   12000.00
    1    27612.07  159.72    0.798  0.30( 0.30) 0.99   49754.7   10100.00
    2      824.90   16.81    2.526  0.30( 0.26) 0.85     457.0   12606.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    20606.08   16.81    2.526  0.30( 0.29) 0.97    4753.8   12606.00
    2    20914.15   17.81    2.437  0.30( 0.29) 0.97    5009.1   12603.00
    3    22222.09   22.11    2.112  0.30( 0.29) 0.98    6366.8     600.00
    4    26573.51   39.29    1.492  0.30( 0.30) 0.98   12368.1   40100.00
    5    27934.36   47.37    1.354  0.30( 0.30) 0.99   15196.1   11801.00
    6    30139.66   58.52    1.226  0.30( 0.30) 0.99   19780.5   11530.00
    7    31258.71   63.06    1.190  0.30( 0.30) 0.99   22095.0   11701.00
    8    32208.73   66.68    1.166  0.30( 0.30) 0.99   24188.2   11910.00
    9    34986.09   77.23    1.094  0.30( 0.30) 0.99   30882.4   10800.00
   10    35727.60   81.56    1.064  0.30( 0.30) 0.99   33827.7   11130.00
   11    35825.05   88.50    1.017  0.30( 0.30) 0.99   37426.1   12330.00
   12    35865.20   91.15    1.002  0.30( 0.30) 0.99   38868.9   12410.00
   13    35780.44   94.03    0.990  0.30( 0.30) 0.99   40247.6   10600.00
   14    35663.73   99.39    0.966  0.30( 0.30) 0.99   42608.0   11201.00
   15    35420.03  104.31    0.945  0.30( 0.30) 0.99   44339.7   12201.00
   16    35150.39  107.04    0.933  0.30( 0.30) 0.99   45128.9   10410.00
   17    34610.52  111.22    0.915  0.30( 0.30) 0.99   46196.9   12231.00
   18    34242.01  114.06    0.903  0.30( 0.30) 0.99   46870.2   12101.10
   19    33517.04  118.83    0.882  0.30( 0.30) 0.99   47831.2   10400.00
   20    32362.02  126.55    0.864  0.30( 0.30) 0.99   49126.3   12010.00
```

21	31316.29	132.32	0.852	0.30(0.30)	0.99	49473.2	10210.00
22	30864.38	135.27	0.846	0.30(0.30)	0.99	49590.5	12000.00
23	27809.15	159.72	0.798	0.30(0.30)	0.99	50211.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 35865.20 Tc(MIN.) = 91.15
EFFECTIVE AREA(ACRES) = 38868.92 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50380.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104602.91 FEET.

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 91.15
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	0.60	0.30	1.000	72
COMMERCIAL	B	1.10	0.30	0.100	56
PUBLIC PARK	B	0.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.666
SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 2.53
EFFECTIVE AREA(ACRES) = 38872.42 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50383.7 PEAK FLOW RATE(CFS) = 35865.20
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 91.15
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
AGRICULTURAL POOR COVER					
"ROW CROPS,STRAIGHT ROW"	B	1.50	0.30	1.000	81
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66

NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 8.50 SUBAREA RUNOFF(CFS) = 5.37
EFFECTIVE AREA(ACRES) = 38880.92 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50392.2 PEAK FLOW RATE(CFS) = 35865.20
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 91.15
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
PUBLIC PARK	B	3.70	0.30	0.850	56
NATURAL FAIR COVER					
"CHAPARRAL,NARROWLEAF"	B	3.90	0.30	1.000	72
PUBLIC PARK	B	5.90	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	9.10	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	20.60	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969
SUBAREA AREA(ACRES) = 46.50 SUBAREA RUNOFF(CFS) = 29.77
EFFECTIVE AREA(ACRES) = 38927.42 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50438.7 PEAK FLOW RATE(CFS) = 35865.20
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
==
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 50438.7 TC(MIN.) = 91.15
EFFECTIVE AREA(ACRES) = 38927.42 AREA-AVERAGED Fm(INCH/HR)= 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
PEAK FLOW RATE(CFS) = 35865.20

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20606.08	16.81	2.526	0.30(0.29)	0.97	4812.3	12606.00
2	20914.15	17.81	2.437	0.30(0.29)	0.97	5067.6	12603.00
3	22222.09	22.11	2.112	0.30(0.29)	0.98	6425.3	600.00
4	26573.51	39.29	1.492	0.30(0.30)	0.98	12426.6	40100.00
5	27934.36	47.37	1.354	0.30(0.30)	0.99	15254.6	11801.00
6	30139.66	58.52	1.226	0.30(0.30)	0.99	19839.0	11530.00
7	31258.71	63.06	1.190	0.30(0.30)	0.99	22153.5	11701.00
8	32208.73	66.68	1.166	0.30(0.30)	0.99	24246.7	11910.00
9	34986.09	77.23	1.094	0.30(0.30)	0.99	30940.9	10800.00
10	35727.60	81.56	1.064	0.30(0.30)	0.99	33886.2	11130.00
11	35825.05	88.50	1.017	0.30(0.30)	0.99	37484.6	12330.00

12	35865.20	91.15	1.002	0.30(	0.30)	0.99	38927.4	12410.00
13	35780.44	94.03	0.990	0.30(	0.30)	0.99	40306.1	10600.00
14	35663.73	99.39	0.966	0.30(	0.30)	0.99	42666.5	11201.00
15	35420.03	104.31	0.945	0.30(	0.30)	0.99	44398.2	12201.00
16	35150.39	107.04	0.933	0.30(	0.30)	0.99	45187.4	10410.00
17	34610.52	111.22	0.915	0.30(	0.30)	0.99	46255.4	12231.00
18	34242.01	114.06	0.903	0.30(	0.30)	0.99	46928.7	12101.10
19	33517.04	118.83	0.882	0.30(	0.30)	0.99	47889.7	10400.00
20	32362.02	126.55	0.864	0.30(	0.30)	0.99	49184.8	12010.00
21	31316.29	132.32	0.852	0.30(	0.30)	0.99	49531.8	10210.00
22	30864.38	135.27	0.846	0.30(	0.30)	0.99	49649.0	12000.00
23	27809.15	159.72	0.798	0.30(	0.30)	0.99	50270.2	10100.00

END OF RATIONAL METHOD ANALYSIS

```
****************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 127 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 50-YR EV JULY 2023 ROKAMOTO                                          *
 ****************************************************************************

  FILE NAME: RU50EV27.DAT
  TIME/DATE OF STUDY: 13:11 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.469
   2)   10.00;  3.498
   3)   15.00;  2.675
   4)   20.00;  2.233
   5)   25.00;  1.929
   6)   30.00;  1.735
   7)   40.00;  1.468
   8)   50.00;  1.307
   9)   60.00;  1.204
  10)   90.00;  1.001
  11)  120.00;  0.871
  12)  180.00;  0.750
  13)  360.00;  0.557
  14) 1200.00;  0.245
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV26.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20914.15   17.81  0.30( 0.29) 0.97    5067.6   12603.00
      2    22222.09   22.11  0.30( 0.29) 0.98    6425.3     600.00
      3    26573.51   39.29  0.30( 0.30) 0.98   12426.6   40100.00
      4    27934.36   47.37  0.30( 0.30) 0.99   15254.6   11801.00
      5    30139.66   58.52  0.30( 0.30) 0.99   19839.0   11530.00
      6    31258.71   63.06  0.30( 0.30) 0.99   22153.5   11701.00
      7    32208.73   66.68  0.30( 0.30) 0.99   24246.7   11910.00
      8    34986.09   77.23  0.30( 0.30) 0.99   30940.9   10800.00
      9    35727.60   81.56  0.30( 0.30) 0.99   33886.2   11130.00
     10    35865.20   91.15  0.30( 0.30) 0.99   38927.4   12410.00
     11    35663.73   99.39  0.30( 0.30) 0.99   42666.5   11201.00
     12    35420.03  104.31  0.30( 0.30) 0.99   44398.2   12201.00
     13    35150.39  107.04  0.30( 0.30) 0.99   45187.4   10410.00
     14    34610.52  111.22  0.30( 0.30) 0.99   46255.4   12231.00
     15    34242.01  114.06  0.30( 0.30) 0.99   46928.7   12101.10
     16    33517.04  118.83  0.30( 0.30) 0.99   47889.7   10400.00
     17    32362.02  126.55  0.30( 0.30) 0.99   49184.8   12010.00
     18    31316.29  132.32  0.30( 0.30) 0.99   49531.8   10210.00
     19    30864.38  135.27  0.30( 0.30) 0.99   49649.0   12000.00
     20    27809.15  159.72  0.30( 0.30) 0.99   50270.2   10100.00
    TOTAL AREA(ACRES) =    50270.2

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12606.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    20914.15   17.81  0.30( 0.29) 0.97    5067.6   12603.00
      2    22222.09   22.11  0.30( 0.29) 0.98    6425.3     600.00
      3    26573.51   39.29  0.30( 0.30) 0.98   12426.6   40100.00
      4    27934.36   47.37  0.30( 0.30) 0.99   15254.6   11801.00
      5    30139.66   58.52  0.30( 0.30) 0.99   19839.0   11530.00
      6    31258.71   63.06  0.30( 0.30) 0.99   22153.5   11701.00
      7    32208.73   66.68  0.30( 0.30) 0.99   24246.7   11910.00
      8    34986.09   77.23  0.30( 0.30) 0.99   30940.9   10800.00
      9    35727.60   81.56  0.30( 0.30) 0.99   33886.2   11130.00
     10    35865.20   91.15  0.30( 0.30) 0.99   38927.4   12410.00
     11    35663.73   99.39  0.30( 0.30) 0.99   42666.5   11201.00
     12    35420.03  104.31  0.30( 0.30) 0.99   44398.2   12201.00
     13    35150.39  107.04  0.30( 0.30) 0.99   45187.4   10410.00
```

```
    14    34610.52  111.22  0.30( 0.30) 0.99   46255.4   12231.00
    15    34242.01  114.06  0.30( 0.30) 0.99   46928.7   12101.10
    16    33517.04  118.83  0.30( 0.30) 0.99   47889.7   10400.00
    17    32362.02  126.55  0.30( 0.30) 0.99   49184.8   12010.00
    18    31316.29  132.32  0.30( 0.30) 0.99   49531.8   10210.00
    19    30864.38  135.27  0.30( 0.30) 0.99   49649.0   12000.00
    20    27809.15  159.72  0.30( 0.30) 0.99   50270.2   10100.00
   TOTAL AREA(ACRES) =     50270.2

****************************************************************************
  FLOW PROCESS FROM NODE  12606.00 TO NODE  12701.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    286.00  DOWNSTREAM(FEET) =    276.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1260.19   CHANNEL SLOPE =  0.0079
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.991
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.70      0.30     0.500    56
  PUBLIC PARK                B        0.90      0.30     0.850    56
  COMMERCIAL                 B        3.40      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.60      0.30     1.000    65
  PUBLIC PARK                B       10.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       17.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   35877.11
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.76
  AVERAGE FLOW DEPTH(FEET) =   8.78   TRAVEL TIME(MIN.) =   1.25
  Tc(MIN.) =   92.41
  SUBAREA AREA(ACRES) =    36.10       SUBAREA RUNOFF(CFS) =   23.80
  EFFECTIVE AREA(ACRES) =  38963.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50306.3         PEAK FLOW RATE(CFS) =   35865.20
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  8.78   FLOW VELOCITY(FEET/SEC.) =  16.75
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12701.00 =  105863.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =    276.00  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   147.65   CHANNEL SLOPE =  0.0068
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.18
  CHANNEL FLOW THRU SUBAREA(CFS) =   35865.20
  FLOW VELOCITY(FEET/SEC.) =  15.88   FLOW DEPTH(FEET) =   9.18
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =   92.56
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.00 =  106010.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12701.00 TO NODE  12720.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   92.56
  RAINFALL INTENSITY(INCH/HR) =   0.99
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   38963.52
  TOTAL STREAM AREA(ACRES) =   50306.29
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   35865.20

****************************************************************************
  FLOW PROCESS FROM NODE  12710.00 TO NODE  12711.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   943.56
  ELEVATION DATA: UPSTREAM(FEET) =    940.78  DOWNSTREAM(FEET) =    657.79

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.910
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.854
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    B        6.56      0.30     1.000    69   13.91
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     15.08
  TOTAL AREA(ACRES) =      6.56   PEAK FLOW RATE(CFS) =     15.08

****************************************************************************
  FLOW PROCESS FROM NODE  12711.00 TO NODE  12712.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.79  DOWNSTREAM(FEET) =    585.63
  CHANNEL LENGTH THRU SUBAREA(FEET) =   766.00   CHANNEL SLOPE =  0.0942
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
```

```
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.72
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.563
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.94      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.59
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.41
  AVERAGE FLOW DEPTH(FEET) =   0.69   TRAVEL TIME(MIN.) =   2.36
  Tc(MIN.) =   16.27
  SUBAREA AREA(ACRES) =    26.94       SUBAREA RUNOFF(CFS) =   54.86
  EFFECTIVE AREA(ACRES) =     33.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       33.5         PEAK FLOW RATE(CFS) =      68.22
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.91   FLOW VELOCITY(FEET/SEC.) =   6.34
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12712.00 =    1709.56 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12712.00 TO NODE  12713.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.63  DOWNSTREAM(FEET) =    463.75
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1025.79   CHANNEL SLOPE =  0.1188
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.95
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.356
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       14.73      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.30
  AVERAGE FLOW DEPTH(FEET) =   0.94   TRAVEL TIME(MIN.) =   2.34
  Tc(MIN.) =   18.61
  SUBAREA AREA(ACRES) =    14.73       SUBAREA RUNOFF(CFS) =   27.25
  EFFECTIVE AREA(ACRES) =     48.23     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       48.2         PEAK FLOW RATE(CFS) =      89.24
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.99

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.99   FLOW VELOCITY(FEET/SEC.) =   7.48
```



```
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12713.00 =    2735.35 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12713.00 TO NODE  12714.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    463.75  DOWNSTREAM(FEET) =    360.30
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1148.54   CHANNEL SLOPE =  0.0901
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.181
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      105.64      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     178.75
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.52
  AVERAGE FLOW DEPTH(FEET) =   1.59   TRAVEL TIME(MIN.) =   2.25
  Tc(MIN.) =   20.86
  SUBAREA AREA(ACRES) =   105.64       SUBAREA RUNOFF(CFS) =  178.83
  EFFECTIVE AREA(ACRES) =    153.87     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      153.9         PEAK FLOW RATE(CFS) =     260.47
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.96

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.96   FLOW VELOCITY(FEET/SEC.) =   9.52
  LONGEST FLOWPATH FROM NODE  12710.00 TO NODE  12714.00 =    3883.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12714.00 TO NODE  12720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    360.30  DOWNSTREAM(FEET) =    275.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1314.99   CHANNEL SLOPE =  0.0649
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.58
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.038
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      127.13      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     359.96
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.33
```

AVERAGE FLOW DEPTH(FEET) = 2.55 TRAVEL TIME(MIN.) = 2.35
Tc(MIN.) = 23.21
SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 198.87
EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 439.57
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.84

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.84 FLOW VELOCITY(FEET/SEC.) = 9.89
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 23.21
RAINFALL INTENSITY(INCH/HR) = 2.04
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 281.00
TOTAL STREAM AREA(ACRES) = 281.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 439.57

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20914.15	19.50	2.277	0.30(0.29)	0.97	5103.7	12603.00
1	22222.09	23.77	2.004	0.30(0.29)	0.98	6461.4	600.00
1	26573.51	40.85	1.454	0.30(0.30)	0.98	12462.7	40100.00
1	27934.36	48.90	1.325	0.30(0.30)	0.99	15290.7	11801.00
1	30139.66	60.01	1.204	0.30(0.30)	0.99	19875.1	11530.00
1	31258.71	64.53	1.173	0.30(0.30)	0.99	22189.6	11701.00
1	32208.73	68.14	1.149	0.30(0.30)	0.99	24282.8	11910.00
1	34986.09	78.65	1.078	0.30(0.30)	0.99	30977.0	10800.00
1	35727.60	82.97	1.049	0.30(0.30)	0.99	33922.3	11130.00
1	35865.20	92.56	0.990	0.30(0.30)	0.99	38963.5	12410.00
1	35663.73	100.80	0.954	0.30(0.30)	0.99	42702.6	11201.00
1	35420.03	105.72	0.933	0.30(0.30)	0.99	44434.3	12201.00
1	35150.39	108.45	0.921	0.30(0.30)	0.99	45223.5	10410.00
1	34610.52	112.65	0.903	0.30(0.30)	0.99	46291.5	12231.00
1	34242.01	115.49	0.891	0.30(0.30)	0.99	46964.8	12101.10
1	33517.04	120.27	0.870	0.30(0.30)	0.99	47925.8	10400.00
1	32362.02	128.01	0.855	0.30(0.30)	0.99	49220.9	12010.00
1	31316.29	133.79	0.843	0.30(0.30)	0.99	49567.9	10210.00
1	30864.38	136.75	0.837	0.30(0.30)	0.99	49685.1	12000.00
1	27809.15	161.25	0.788	0.30(0.30)	0.99	50306.3	10100.00
2	439.57	23.21	2.038	0.30(0.30)	1.00	281.0	12710.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21334.34	19.50	2.277	0.30(0.29)	0.97	5339.8	12603.00
2	22489.73	23.21	2.038	0.30(0.29)	0.98	6564.0	12710.00
3	22653.03	23.77	2.004	0.30(0.29)	0.98	6742.4	600.00
4	26865.44	40.85	1.454	0.30(0.30)	0.98	12743.7	40100.00
5	28193.51	48.90	1.325	0.30(0.30)	0.99	15571.7	11801.00
6	30368.25	60.01	1.204	0.30(0.30)	0.99	20156.1	11530.00
7	31479.58	64.53	1.173	0.30(0.30)	0.99	22470.6	11701.00
8	32423.43	68.14	1.149	0.30(0.30)	0.99	24563.8	11910.00
9	35182.80	78.65	1.078	0.30(0.30)	0.99	31258.0	10800.00
10	35916.92	82.97	1.049	0.30(0.30)	0.99	34203.3	11130.00
11	36039.68	92.56	0.990	0.30(0.30)	0.99	39244.5	12410.00
12	35829.18	100.80	0.954	0.30(0.30)	0.99	42983.6	11201.00
13	35580.08	105.72	0.933	0.30(0.30)	0.99	44715.3	12201.00
14	35307.45	108.45	0.921	0.30(0.30)	0.99	45504.5	10410.00
15	34762.98	112.65	0.903	0.30(0.30)	0.99	46572.5	12231.00
16	34391.36	115.49	0.891	0.30(0.30)	0.99	47245.8	12101.10
17	33661.30	120.27	0.870	0.30(0.30)	0.99	48206.8	10400.00
18	32502.34	128.01	0.855	0.30(0.30)	0.99	49501.9	12010.00
19	31453.66	133.79	0.843	0.30(0.30)	0.99	49848.9	10210.00
20	31000.24	136.75	0.837	0.30(0.30)	0.99	49966.1	12000.00
21	27932.52	161.25	0.788	0.30(0.30)	0.99	50587.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36039.68 Tc(MIN.) = 92.56
EFFECTIVE AREA(ACRES) = 39244.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50587.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106010.75 FEET.

****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.37
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.978
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.30	0.30	1.000	65
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					

```
  "MEADOWS"                 B        0.50      0.30     1.000    70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   36040.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.58
  AVERAGE FLOW DEPTH(FEET) =   9.37   TRAVEL TIME(MIN.) =   2.86
  Tc(MIN.) =   95.42
  SUBAREA AREA(ACRES) =     1.70       SUBAREA RUNOFF(CFS) =    1.11
  EFFECTIVE AREA(ACRES) =  39246.22     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =    50589.0         PEAK FLOW RATE(CFS) =   36039.68
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.37

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  9.37   FLOW VELOCITY(FEET/SEC.) =  15.58
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12720.50 =  108679.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.42
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.978
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK               B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.50      0.30     1.000    66
  COMMERCIAL                B        1.40      0.30     0.100    56
  COMMERCIAL                B        2.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                   B        9.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.783
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   10.49
  EFFECTIVE AREA(ACRES) =  39261.92   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50604.7       PEAK FLOW RATE(CFS) =   36039.68
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   95.42
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.978
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "WOODLAND,GRASS"          B       11.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       11.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,NARROWLEAF"    B       11.80      0.30     1.000    72
  NATURAL FAIR COVER
  "OPEN BRUSH"              B       27.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   62.10      SUBAREA RUNOFF(CFS) =   37.87
  EFFECTIVE AREA(ACRES) =  39324.02   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =    50666.8       PEAK FLOW RATE(CFS) =   36039.68
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   95.42
  RAINFALL INTENSITY(INCH/HR) =   0.98
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.99
  EFFECTIVE STREAM AREA(ACRES) =   39324.02
  TOTAL STREAM AREA(ACRES) =   50666.79
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   36039.68

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   22.12   RAINFALL INTENSITY(INCH/HR) =  2.10
  EFFECTIVE AREA(ACRES) =   665.90
  TOTAL AREA(ACRES) =  1292.30        PEAK FLOW RATE(CFS) =   1078.00
  AREA-AVERAGED Fm(INCH/HR) =   0.13  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.43
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  12720.50 TO NODE  12720.50 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   22.12
  RAINFALL INTENSITY(INCH/HR) =   2.10
  AREA-AVERAGED Fm(INCH/HR) =  0.13
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.43
```

EFFECTIVE STREAM AREA(ACRES) = 665.90
TOTAL STREAM AREA(ACRES) = 1292.30
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1078.00

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21334.34	22.90	2.057	0.30(0.29)	0.97	5419.3	12603.00
1	22489.73	26.55	1.869	0.30(0.29)	0.98	6643.5	12710.00
1	22653.03	27.10	1.848	0.30(0.29)	0.98	6821.9	600.00
1	26865.44	44.00	1.404	0.30(0.30)	0.98	12823.2	40100.00
1	28193.51	52.00	1.286	0.30(0.30)	0.99	15651.2	11801.00
1	30368.25	63.03	1.183	0.30(0.30)	0.99	20235.6	11530.00
1	31479.58	67.52	1.153	0.30(0.30)	0.99	22550.1	11701.00
1	32423.43	71.09	1.129	0.30(0.30)	0.99	24643.3	11910.00
1	35182.80	81.52	1.058	0.30(0.30)	0.99	31337.5	10800.00
1	35916.92	85.82	1.029	0.30(0.30)	0.99	34282.8	11130.00
1	36039.68	95.42	0.978	0.30(0.30)	0.99	39324.0	12410.00
1	35829.18	103.66	0.942	0.30(0.30)	0.99	43063.1	11201.00
1	35580.08	108.59	0.920	0.30(0.30)	0.99	44794.8	12201.00
1	35307.45	111.33	0.909	0.30(0.30)	0.99	45584.0	10410.00
1	34762.98	115.54	0.890	0.30(0.30)	0.99	46652.0	12231.00
1	34391.36	118.39	0.878	0.30(0.30)	0.99	47325.3	12101.10
1	33661.30	123.19	0.865	0.30(0.30)	0.99	48286.3	10400.00
1	32502.34	130.97	0.849	0.30(0.30)	0.99	49581.4	12010.00
1	31453.66	136.77	0.837	0.30(0.30)	0.99	49928.4	10210.00
1	31000.24	139.75	0.831	0.30(0.30)	0.99	50045.6	12000.00
1	27932.52	164.36	0.782	0.30(0.30)	0.99	50666.8	10100.00
2	1078.00	22.12	2.104	0.30(0.13)	0.43	665.9	12720.50

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22239.77	22.12	2.104	0.30(0.27)	0.91	5901.2	12720.50
2	22386.54	22.90	2.057	0.30(0.27)	0.91	6085.2	12603.00
3	23439.43	26.55	1.869	0.30(0.28)	0.93	7309.4	12710.00
4	23591.03	27.10	1.848	0.30(0.28)	0.93	7487.8	600.00
5	27561.14	44.00	1.404	0.30(0.29)	0.96	13489.1	40100.00
6	28825.23	52.00	1.286	0.30(0.29)	0.96	16317.1	11801.00
7	30943.78	63.03	1.183	0.30(0.29)	0.97	20901.5	11530.00
8	32038.55	67.52	1.153	0.30(0.29)	0.97	23216.0	11701.00
9	32969.18	71.09	1.129	0.30(0.29)	0.97	25309.2	11910.00
10	35690.05	81.52	1.058	0.30(0.29)	0.98	32003.4	10800.00
11	36408.27	85.82	1.029	0.30(0.29)	0.98	34948.7	11130.00
12	36502.80	95.42	0.978	0.30(0.29)	0.98	39989.9	12410.00
13	36272.80	103.66	0.942	0.30(0.29)	0.98	43729.0	11201.00
14	36012.04	108.59	0.920	0.30(0.29)	0.98	45460.7	12201.00
15	35732.95	111.33	0.909	0.30(0.29)	0.98	46249.9	10410.00
16	35178.52	115.54	0.890	0.30(0.29)	0.98	47317.9	12231.00
17	34800.14	118.39	0.878	0.30(0.29)	0.98	47991.2	12101.10
18	34062.77	123.19	0.865	0.30(0.29)	0.98	48952.2	10400.00
19	32895.25	130.97	0.849	0.30(0.29)	0.98	50247.3	12010.00
20	31840.18	136.77	0.837	0.30(0.29)	0.98	50594.2	10210.00
21	31383.48	139.75	0.831	0.30(0.29)	0.98	50711.5	12000.00
22	28288.68	164.36	0.782	0.30(0.29)	0.98	51332.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36502.80 Tc(MIN.) = 95.42
EFFECTIVE AREA(ACRES) = 39989.92 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51959.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108679.96 FEET.

****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12722.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1269.00 CHANNEL SLOPE = 0.0024
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 12.46
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
COMMERCIAL	B	0.40	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.732
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36503.27
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.17
AVERAGE FLOW DEPTH(FEET) = 12.46 TRAVEL TIME(MIN.) = 1.89
Tc(MIN.) = 97.31
SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 0.94
EFFECTIVE AREA(ACRES) = 39991.32 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51960.5 PEAK FLOW RATE(CFS) = 36502.80
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 12.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 12.46 FLOW VELOCITY(FEET/SEC.) = 11.17
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109948.96 FEET.

****
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 97.31

```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.969
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.50      0.30     0.100    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.60      0.30     1.000    86
  COMMERCIAL                 B        0.60      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.00      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
  SUBAREA AREA(ACRES) =    4.20      SUBAREA RUNOFF(CFS) =    2.80
  EFFECTIVE AREA(ACRES) =  39995.52   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51964.7       PEAK FLOW RATE(CFS) =   36502.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12722.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   97.31
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.969
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.70      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   12.17
  EFFECTIVE AREA(ACRES) =  40015.72   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51984.9       PEAK FLOW RATE(CFS) =   36502.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12722.00 TO NODE  12740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    255.00  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =   624.00   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
```



```
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.31
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.966
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.10      0.30     1.000    81
  PUBLIC PARK                B        0.50      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.50      0.30     1.000    69
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.20      0.30     1.000    65
  COMMERCIAL                 B        1.50      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.690
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   36504.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.07
  AVERAGE FLOW DEPTH(FEET) =  10.31   TRAVEL TIME(MIN.) =   0.74
  Tc(MIN.) =   98.05
  SUBAREA AREA(ACRES) =     4.60      SUBAREA RUNOFF(CFS) =    3.14
  EFFECTIVE AREA(ACRES) =  40020.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =    51989.5         PEAK FLOW RATE(CFS) =   36502.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.31

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.31   FLOW VELOCITY(FEET/SEC.) =  14.07
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12740.00 =  110572.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.05
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.966
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        2.60      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        2.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.20      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        6.50      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.913
  SUBAREA AREA(ACRES) =   26.00      SUBAREA RUNOFF(CFS) =   16.19
```

```
  EFFECTIVE AREA(ACRES) =  40046.32   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52015.5       PEAK FLOW RATE(CFS) =   36502.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   98.05
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.966
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       12.00      0.30     1.000    66
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B       20.30      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.00      SUBAREA RUNOFF(CFS) =   23.38
  EFFECTIVE AREA(ACRES) =  40085.32   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    52054.5       PEAK FLOW RATE(CFS) =   36502.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   98.05
  RAINFALL INTENSITY(INCH/HR) =   0.97
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98
  EFFECTIVE STREAM AREA(ACRES) =   40085.32
  TOTAL STREAM AREA(ACRES) =   52054.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   36502.80

****************************************************************************
  FLOW PROCESS FROM NODE  12730.00 TO NODE  12731.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   561.54
  ELEVATION DATA: UPSTREAM(FEET) =    613.29  DOWNSTREAM(FEET) =    551.75

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.823
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.869
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.33      0.30     1.000    63   13.82
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     14.63
  TOTAL AREA(ACRES) =      6.33   PEAK FLOW RATE(CFS) =     14.63

****************************************************************************
  FLOW PROCESS FROM NODE  12731.00 TO NODE  12732.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    551.75  DOWNSTREAM(FEET) =    494.40
  CHANNEL LENGTH THRU SUBAREA(FEET) =   971.91   CHANNEL SLOPE =  0.0590
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.91
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.485
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       34.62      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      48.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.86
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   3.33
  Tc(MIN.) =   17.15
  SUBAREA AREA(ACRES) =    34.62       SUBAREA RUNOFF(CFS) =   68.07
  EFFECTIVE AREA(ACRES) =     40.95     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.9         PEAK FLOW RATE(CFS) =      80.51
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.14

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.14   FLOW VELOCITY(FEET/SEC.) =   5.74
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12732.00 =    1533.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12732.00 TO NODE  12733.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    494.40  DOWNSTREAM(FEET) =    431.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1156.41   CHANNEL SLOPE =  0.0548
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.227
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.52      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     132.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.53
  AVERAGE FLOW DEPTH(FEET) =   1.55   TRAVEL TIME(MIN.) =   2.95
  Tc(MIN.) =   20.10
  SUBAREA AREA(ACRES) =    59.52       SUBAREA RUNOFF(CFS) =  103.21
  EFFECTIVE AREA(ACRES) =    100.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      100.5         PEAK FLOW RATE(CFS) =     174.21
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.80

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.80   FLOW VELOCITY(FEET/SEC.) =   7.10
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12733.00 =    2689.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12733.00 TO NODE  12734.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    431.00  DOWNSTREAM(FEET) =    367.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1654.48   CHANNEL SLOPE =  0.0386
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.31
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.978
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       64.05      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     222.66
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.75
  AVERAGE FLOW DEPTH(FEET) =   2.27   TRAVEL TIME(MIN.) =   4.08
  Tc(MIN.) =   24.19
  SUBAREA AREA(ACRES) =    64.05       SUBAREA RUNOFF(CFS) =   96.75
  EFFECTIVE AREA(ACRES) =    164.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      164.5         PEAK FLOW RATE(CFS) =     248.50
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.41   FLOW VELOCITY(FEET/SEC.) =   6.97
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12734.00 =    4344.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12734.00 TO NODE  12740.00 IS CODE =  56
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    367.11  DOWNSTREAM(FEET) =    252.10
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1880.98   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.22
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.815
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       26.02      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     266.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.37
  AVERAGE FLOW DEPTH(FEET) =   2.21   TRAVEL TIME(MIN.) =   3.75
  Tc(MIN.) =   27.94
  SUBAREA AREA(ACRES) =    26.02       SUBAREA RUNOFF(CFS) =   35.48
  EFFECTIVE AREA(ACRES) =    190.54     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      190.5         PEAK FLOW RATE(CFS) =     259.81
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.18

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.18   FLOW VELOCITY(FEET/SEC.) =   8.31
  LONGEST FLOWPATH FROM NODE  12730.00 TO NODE  12740.00 =    6225.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12740.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   27.94
  RAINFALL INTENSITY(INCH/HR) =   1.82
  AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  1.00
  EFFECTIVE STREAM AREA(ACRES) =     190.54
  TOTAL STREAM AREA(ACRES) =     190.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     259.81

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22239.77   25.21    1.921  0.30( 0.27) 0.91    5996.6   12720.50
      1    22386.54   25.98    1.891  0.30( 0.27) 0.91    6180.6   12603.00
      1    23439.43   29.58    1.751  0.30( 0.28) 0.93    7404.8   12710.00
      1    23591.03   30.13    1.732  0.30( 0.28) 0.93    7583.2     600.00
      1    27561.14   46.88    1.357  0.30( 0.29) 0.96   13584.5   40100.00
```

1	28825.23	54.84	1.257	0.30(0.29)	0.96	16412.5	11801.00
1	30943.78	65.81	1.165	0.30(0.29)	0.97	20996.9	11530.00
1	32038.55	70.26	1.135	0.30(0.29)	0.97	23311.4	11701.00
1	32969.18	73.81	1.111	0.30(0.29)	0.97	25404.6	11910.00
1	35690.05	84.17	1.040	0.30(0.29)	0.98	32098.8	10800.00
1	36408.27	88.46	1.011	0.30(0.29)	0.98	35044.1	11130.00
1	36502.80	98.05	0.966	0.30(0.29)	0.98	40085.3	12410.00
1	36272.80	106.30	0.930	0.30(0.29)	0.98	43824.4	11201.00
1	36012.04	111.24	0.909	0.30(0.29)	0.98	45556.1	12201.00
1	35732.95	113.98	0.897	0.30(0.29)	0.98	46345.3	10410.00
1	35178.52	118.20	0.879	0.30(0.29)	0.98	47413.3	12231.00
1	34800.14	121.06	0.869	0.30(0.29)	0.98	48086.6	12101.10
1	34062.77	125.88	0.859	0.30(0.29)	0.98	49047.6	10400.00
1	32895.25	133.69	0.843	0.30(0.29)	0.98	50342.7	12010.00
1	31840.18	139.52	0.832	0.30(0.29)	0.98	50689.6	10210.00
1	31383.48	142.52	0.826	0.30(0.29)	0.98	50806.9	12000.00
1	28288.68	167.21	0.776	0.30(0.29)	0.98	51428.1	10100.00
2	259.81	27.94	1.815	0.30(0.30)	1.00	190.5	12730.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22490.59	25.21	1.921	0.30(0.27)	0.91	6168.5	12720.50
2	22640.26	25.98	1.891	0.30(0.27)	0.92	6357.8	12603.00
3	23218.40	27.94	1.815	0.30(0.28)	0.92	7036.2	12730.00
4	23688.30	29.58	1.751	0.30(0.28)	0.93	7595.3	12710.00
5	23836.54	30.13	1.732	0.30(0.28)	0.93	7773.8	600.00
6	27742.46	46.88	1.357	0.30(0.29)	0.96	13775.1	40100.00
7	28989.37	54.84	1.257	0.30(0.29)	0.96	16603.0	11801.00
8	31092.06	65.81	1.165	0.30(0.29)	0.97	21187.4	11530.00
9	32181.67	70.26	1.135	0.30(0.29)	0.97	23501.9	11701.00
10	33108.18	73.81	1.111	0.30(0.29)	0.97	25595.1	11910.00
11	35817.02	84.17	1.040	0.30(0.29)	0.98	32289.3	10800.00
12	36530.27	88.46	1.011	0.30(0.29)	0.98	35234.7	11130.00
13	36617.03	98.05	0.966	0.30(0.29)	0.98	40275.9	12410.00
14	36380.90	106.30	0.930	0.30(0.29)	0.98	44015.0	11201.00
15	36116.48	111.24	0.909	0.30(0.29)	0.98	45746.7	12201.00
16	35835.34	113.98	0.897	0.30(0.29)	0.98	46535.8	10410.00
17	35277.78	118.20	0.879	0.30(0.29)	0.98	47603.8	12231.00
18	34897.70	121.06	0.869	0.30(0.29)	0.98	48277.1	12101.10
19	34158.65	125.88	0.859	0.30(0.29)	0.98	49238.1	10400.00
20	32988.43	133.69	0.843	0.30(0.29)	0.98	50533.2	12010.00
21	31931.35	139.52	0.832	0.30(0.29)	0.98	50880.2	10210.00
22	31473.61	142.52	0.826	0.30(0.29)	0.98	50997.4	12000.00
23	28370.27	167.21	0.776	0.30(0.29)	0.98	51618.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 36617.03 Tc(MIN.) = 98.05
EFFECTIVE AREA(ACRES) = 40275.86 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52245.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110572.96 FEET.

****
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 240.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1220.00 CHANNEL SLOPE = 0.0099
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.34
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.961
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,STRAIGHT ROW"	B	0.30	0.30	1.000	81
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
COMMERCIAL	B	0.40	0.30	0.100	56
COMMERCIAL	B	0.60	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.30	1.000	66
PUBLIC PARK	B	3.20	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.784
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36619.12
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 18.18
AVERAGE FLOW DEPTH(FEET) = 8.34 TRAVEL TIME(MIN.) = 1.12
Tc(MIN.) = 99.17
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 4.18
EFFECTIVE AREA(ACRES) = 40282.26 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52251.4 PEAK FLOW RATE(CFS) = 36617.03
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 8.34 FLOW VELOCITY(FEET/SEC.) = 18.18
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111792.96 FEET.

****
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 99.17
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.961
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	3.90	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	8.70	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	10.30	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 22.90 SUBAREA RUNOFF(CFS) = 13.63
EFFECTIVE AREA(ACRES) = 40305.16 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52274.3 PEAK FLOW RATE(CFS) = 36617.03
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 52274.3 TC(MIN.) = 99.17
EFFECTIVE AREA(ACRES) = 40305.16 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.982
PEAK FLOW RATE(CFS) = 36617.03

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22490.59	26.53	1.870	0.30(0.27)	0.91	6197.8	12720.50
2	22640.26	27.30	1.840	0.30(0.27)	0.92	6387.1	12603.00
3	23218.40	29.24	1.764	0.30(0.28)	0.92	7065.5	12730.00
4	23688.30	30.88	1.712	0.30(0.28)	0.93	7624.6	12710.00
5	23836.54	31.42	1.697	0.30(0.28)	0.93	7803.1	600.00
6	27742.46	48.10	1.338	0.30(0.29)	0.96	13804.4	40100.00
7	28989.37	56.05	1.245	0.30(0.29)	0.96	16632.3	11801.00
8	31092.06	66.99	1.157	0.30(0.29)	0.97	21216.7	11530.00
9	32181.67	71.43	1.127	0.30(0.29)	0.97	23531.2	11701.00
10	33108.18	74.97	1.103	0.30(0.29)	0.97	25624.4	11910.00
11	35817.02	85.30	1.033	0.30(0.29)	0.98	32318.6	10800.00
12	36530.27	89.58	1.004	0.30(0.29)	0.98	35264.0	11130.00
13	36617.03	99.17	0.961	0.30(0.29)	0.98	40305.2	12410.00
14	36380.90	107.42	0.926	0.30(0.29)	0.98	44044.3	11201.00
15	36116.48	112.36	0.904	0.30(0.29)	0.98	45776.0	12201.00
16	35835.34	115.10	0.892	0.30(0.29)	0.98	46565.1	10410.00
17	35277.78	119.33	0.874	0.30(0.29)	0.98	47633.1	12231.00
18	34897.70	122.20	0.867	0.30(0.29)	0.98	48306.4	12101.10
19	34158.65	127.03	0.857	0.30(0.29)	0.98	49267.4	10400.00
20	32988.43	134.85	0.841	0.30(0.29)	0.98	50562.5	12010.00
21	31931.35	140.69	0.829	0.30(0.29)	0.98	50909.5	10210.00
22	31473.61	143.69	0.823	0.30(0.29)	0.98	51026.7	12000.00
23	28370.27	168.43	0.773	0.30(0.29)	0.98	51647.9	10100.00

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                        Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 128 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 50-YR EV JULY 2023 ROKAMOTO                                          *
 ***********************************************************************

  FILE NAME: RU50EV28.DAT
  TIME/DATE OF STUDY: 13:11 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.469
   2)   10.00;  3.498
   3)   15.00;  2.675
   4)   20.00;  2.233
   5)   25.00;  1.929
   6)   30.00;  1.735
   7)   40.00;  1.468
   8)   50.00;  1.307
   9)   60.00;  1.204
  10)   90.00;  1.001
  11)  120.00;  0.871
  12)  180.00;  0.750
  13)  360.00;  0.557
  14) 1200.00;  0.245
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV27.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1    23218.40   29.24  0.30( 0.28) 0.92    7065.5   12730.00
      2    23836.54   31.42  0.30( 0.28) 0.93    7803.1     600.00
      3    27742.46   48.10  0.30( 0.29) 0.96   13804.4   40100.00
      4    28989.37   56.05  0.30( 0.29) 0.96   16632.3   11801.00
      5    31092.06   66.99  0.30( 0.29) 0.97   21216.7   11530.00
      6    32181.67   71.43  0.30( 0.29) 0.97   23531.2   11701.00
      7    33108.18   74.97  0.30( 0.29) 0.97   25624.4   11910.00
      8    35817.02   85.30  0.30( 0.29) 0.98   32318.6   10800.00
      9    36530.27   89.58  0.30( 0.29) 0.98   35264.0   11130.00
     10    36617.03   99.17  0.30( 0.29) 0.98   40305.2   12410.00
     11    36380.90  107.42  0.30( 0.29) 0.98   44044.3   11201.00
     12    36116.48  112.36  0.30( 0.29) 0.98   45776.0   12201.00
     13    35835.34  115.10  0.30( 0.29) 0.98   46565.1   10410.00
     14    35277.78  119.33  0.30( 0.29) 0.98   47633.1   12231.00
     15    34897.70  122.20  0.30( 0.29) 0.98   48306.4   12101.10
     16    34158.65  127.03  0.30( 0.29) 0.98   49267.4   10400.00
     17    32988.43  134.85  0.30( 0.29) 0.98   50562.5   12010.00
     18    31931.35  140.69  0.30( 0.29) 0.98   50909.5   10210.00
     19    31473.61  143.69  0.30( 0.29) 0.98   51026.7   12000.00
     20    28370.27  168.43  0.30( 0.29) 0.98   51647.9   10100.00
    TOTAL AREA(ACRES) =    51647.9

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P501XX50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      374.01   13.28  0.30( 0.25) 0.84     174.4   50110.00
      2      396.68   17.73  0.30( 0.26) 0.85     223.2   50100.00
    TOTAL AREA(ACRES) =      223.2

******************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
```

```
     1      374.01   13.28  0.30( 0.25) 0.84     174.4   50110.00
     2      396.68   17.73  0.30( 0.26) 0.85     223.2   50100.00
   TOTAL AREA(ACRES) =       223.2

****************************************************************************
  FLOW PROCESS FROM NODE  12740.00 TO NODE  12800.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      374.01   13.28    2.958  0.30( 0.25) 0.84     174.4   50110.00
      2      396.68   17.73    2.434  0.30( 0.26) 0.85     223.2   50100.00
  LONGEST FLOWPATH FROM NODE  50100.00 TO NODE  12800.00 =    4170.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23218.40   29.24    1.764  0.30( 0.28) 0.92    7065.5   12730.00
      2    23836.54   31.42    1.697  0.30( 0.28) 0.93    7803.1     600.00
      3    27742.46   48.10    1.338  0.30( 0.29) 0.96   13804.4   40100.00
      4    28989.37   56.05    1.245  0.30( 0.29) 0.96   16632.3   11801.00
      5    31092.06   66.99    1.157  0.30( 0.29) 0.97   21216.7   11530.00
      6    32181.67   71.43    1.127  0.30( 0.29) 0.97   23531.2   11701.00
      7    33108.18   74.97    1.103  0.30( 0.29) 0.97   25624.4   11910.00
      8    35817.02   85.30    1.033  0.30( 0.29) 0.98   32318.6   10800.00
      9    36530.27   89.58    1.004  0.30( 0.29) 0.98   35264.0   11130.00
     10    36617.03   99.17    0.961  0.30( 0.29) 0.98   40305.2   12410.00
     11    36380.90  107.42    0.926  0.30( 0.29) 0.98   44044.3   11201.00
     12    36116.48  112.36    0.904  0.30( 0.29) 0.98   45776.0   12201.00
     13    35835.34  115.10    0.892  0.30( 0.29) 0.98   46565.1   10410.00
     14    35277.78  119.33    0.874  0.30( 0.29) 0.98   47633.1   12231.00
     15    34897.70  122.20    0.867  0.30( 0.29) 0.98   48306.4   12101.10
     16    34158.65  127.03    0.857  0.30( 0.29) 0.98   49267.4   10400.00
     17    32988.43  134.85    0.841  0.30( 0.29) 0.98   50562.5   12010.00
     18    31931.35  140.69    0.829  0.30( 0.29) 0.98   50909.5   10210.00
     19    31473.61  143.69    0.823  0.30( 0.29) 0.98   51026.7   12000.00
     20    28370.27  168.43    0.773  0.30( 0.29) 0.98   51647.9   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19378.67   13.28    2.958  0.30( 0.28) 0.92    3383.3   50110.00
      2    20806.74   17.73    2.434  0.30( 0.28) 0.92    4506.9   50100.00
      3    23493.21   29.24    1.764  0.30( 0.28) 0.92    7288.8   12730.00
      4    24099.08   31.42    1.697  0.30( 0.28) 0.93    8026.3     600.00
      5    27939.54   48.10    1.338  0.30( 0.29) 0.96   14027.6   40100.00
      6    29169.56   56.05    1.245  0.30( 0.29) 0.96   16855.5   11801.00
      7    31256.21   66.99    1.157  0.30( 0.29) 0.97   21439.9   11530.00
      8    32340.36   71.43    1.127  0.30( 0.29) 0.97   23754.4   11701.00
      9    33262.50   74.97    1.103  0.30( 0.29) 0.97   25847.6   11910.00
     10    35958.62   85.30    1.033  0.30( 0.29) 0.98   32541.8   10800.00
     11    36666.60   89.58    1.004  0.30( 0.29) 0.98   35487.2   11130.00
     12    36745.61   99.17    0.961  0.30( 0.29) 0.98   40528.4   12410.00
     13    36502.96  107.42    0.926  0.30( 0.29) 0.98   44267.5   11201.00
```



```
     14    36234.64  112.36    0.904  0.30( 0.29) 0.98   45999.2   12201.00
     15    35951.34  115.10    0.892  0.30( 0.29) 0.98   46788.3   10410.00
     16    35390.44  119.33    0.874  0.30( 0.29) 0.98   47856.3   12231.00
     17    35009.02  122.20    0.867  0.30( 0.29) 0.98   48529.6   12101.10
     18    34268.21  127.03    0.857  0.30( 0.29) 0.98   49490.6   10400.00
     19    33095.12  134.85    0.841  0.30( 0.29) 0.98   50785.7   12010.00
     20    32035.89  140.69    0.829  0.30( 0.29) 0.98   51132.7   10210.00
     21    31577.05  143.69    0.823  0.30( 0.29) 0.98   51249.9   12000.00
     22    28464.62  168.43    0.773  0.30( 0.29) 0.98   51871.1   10100.00
   TOTAL AREA(ACRES) =     51871.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    36745.61  Tc(MIN.) =   99.168
  EFFECTIVE AREA(ACRES) =  40528.36  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51871.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12800.00 =  111792.96 FEET.
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =    51871.1  TC(MIN.) =     99.17
  EFFECTIVE AREA(ACRES) =  40528.36  AREA-AVERAGED Fm(INCH/HR)=  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.981
  PEAK FLOW RATE(CFS)   =   36745.61

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19378.67   13.28    2.958  0.30( 0.28) 0.92    3383.3   50110.00
      2    20806.74   17.73    2.434  0.30( 0.28) 0.92    4506.9   50100.00
      3    23493.21   29.24    1.764  0.30( 0.28) 0.92    7288.8   12730.00
      4    24099.08   31.42    1.697  0.30( 0.28) 0.93    8026.3     600.00
      5    27939.54   48.10    1.338  0.30( 0.29) 0.96   14027.6   40100.00
      6    29169.56   56.05    1.245  0.30( 0.29) 0.96   16855.5   11801.00
      7    31256.21   66.99    1.157  0.30( 0.29) 0.97   21439.9   11530.00
      8    32340.36   71.43    1.127  0.30( 0.29) 0.97   23754.4   11701.00
      9    33262.50   74.97    1.103  0.30( 0.29) 0.97   25847.6   11910.00
     10    35958.62   85.30    1.033  0.30( 0.29) 0.98   32541.8   10800.00
     11    36666.60   89.58    1.004  0.30( 0.29) 0.98   35487.2   11130.00
     12    36745.61   99.17    0.961  0.30( 0.29) 0.98   40528.4   12410.00
     13    36502.96  107.42    0.926  0.30( 0.29) 0.98   44267.5   11201.00
     14    36234.64  112.36    0.904  0.30( 0.29) 0.98   45999.2   12201.00
     15    35951.34  115.10    0.892  0.30( 0.29) 0.98   46788.3   10410.00
     16    35390.44  119.33    0.874  0.30( 0.29) 0.98   47856.3   12231.00
     17    35009.02  122.20    0.867  0.30( 0.29) 0.98   48529.6   12101.10
     18    34268.21  127.03    0.857  0.30( 0.29) 0.98   49490.6   10400.00
     19    33095.12  134.85    0.841  0.30( 0.29) 0.98   50785.7   12010.00
     20    32035.89  140.69    0.829  0.30( 0.29) 0.98   51132.7   10210.00
     21    31577.05  143.69    0.823  0.30( 0.29) 0.98   51249.9   12000.00
     22    28464.62  168.43    0.773  0.30( 0.29) 0.98   51871.1   10100.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 129 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 50-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU50EV29.DAT
  TIME/DATE OF STUDY: 13:11 07/05/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.436
   2)   10.00;  3.482
   3)   15.00;  2.666
   4)   20.00;  2.226
   5)   25.00;  1.924
   6)   30.00;  1.731
   7)   40.00;  1.465
   8)   50.00;  1.303
   9)   60.00;  1.200
  10)   90.00;  0.997
  11)  120.00;  0.867
  12)  180.00;  0.745
  13)  360.00;  0.552
  14) 1200.00;  0.242
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV28.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    19378.67   13.28  0.30( 0.28) 0.92    3383.3   50110.00
      2    20806.74   17.73  0.30( 0.28) 0.92    4506.9   50100.00
      3    24099.08   31.42  0.30( 0.28) 0.93    8026.3     600.00
      4    27939.54   48.10  0.30( 0.29) 0.96   14027.6   40100.00
      5    29169.56   56.05  0.30( 0.29) 0.96   16855.5   11801.00
      6    31256.21   66.99  0.30( 0.29) 0.97   21439.9   11530.00
      7    32340.36   71.43  0.30( 0.29) 0.97   23754.4   11701.00
      8    33262.50   74.97  0.30( 0.29) 0.97   25847.6   11910.00
      9    35958.62   85.30  0.30( 0.29) 0.98   32541.8   10800.00
     10    36666.60   89.58  0.30( 0.29) 0.98   35487.2   11130.00
     11    36745.61   99.17  0.30( 0.29) 0.98   40528.4   12410.00
     12    36502.96  107.42  0.30( 0.29) 0.98   44267.5   11201.00
     13    36234.64  112.36  0.30( 0.29) 0.98   45999.2   12201.00
     14    35390.44  119.33  0.30( 0.29) 0.98   47856.3   12231.00
     15    35009.02  122.20  0.30( 0.29) 0.98   48529.6   12101.10
     16    34268.21  127.03  0.30( 0.29) 0.98   49490.6   10400.00
     17    33095.12  134.85  0.30( 0.29) 0.98   50785.7   12010.00
     18    32035.89  140.69  0.30( 0.29) 0.98   51132.7   10210.00
     19    31577.05  143.69  0.30( 0.29) 0.98   51249.9   12000.00
     20    28464.62  168.43  0.30( 0.29) 0.98   51871.1   10100.00
   TOTAL AREA(ACRES) =    51871.1

************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    19378.67   13.28  0.30( 0.28) 0.92    3383.3   50110.00
      2    20806.74   17.73  0.30( 0.28) 0.92    4506.9   50100.00
      3    24099.08   31.42  0.30( 0.28) 0.93    8026.3     600.00
      4    27939.54   48.10  0.30( 0.29) 0.96   14027.6   40100.00
      5    29169.56   56.05  0.30( 0.29) 0.96   16855.5   11801.00
      6    31256.21   66.99  0.30( 0.29) 0.97   21439.9   11530.00
      7    32340.36   71.43  0.30( 0.29) 0.97   23754.4   11701.00
      8    33262.50   74.97  0.30( 0.29) 0.97   25847.6   11910.00
      9    35958.62   85.30  0.30( 0.29) 0.98   32541.8   10800.00
     10    36666.60   89.58  0.30( 0.29) 0.98   35487.2   11130.00
     11    36745.61   99.17  0.30( 0.29) 0.98   40528.4   12410.00
     12    36502.96  107.42  0.30( 0.29) 0.98   44267.5   11201.00
     13    36234.64  112.36  0.30( 0.29) 0.98   45999.2   12201.00
```

```
     14    35390.44  119.33  0.30( 0.29) 0.98   47856.3   12231.00
     15    35009.02  122.20  0.30( 0.29) 0.98   48529.6   12101.10
     16    34268.21  127.03  0.30( 0.29) 0.98   49490.6   10400.00
     17    33095.12  134.85  0.30( 0.29) 0.98   50785.7   12010.00
     18    32035.89  140.69  0.30( 0.29) 0.98   51132.7   10210.00
     19    31577.05  143.69  0.30( 0.29) 0.98   51249.9   12000.00
     20    28464.62  168.43  0.30( 0.29) 0.98   51871.1   10100.00
    TOTAL AREA(ACRES) =     51871.1

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12800.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12800.00 TO NODE  12901.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.00  DOWNSTREAM(FEET) =    216.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3120.28   CHANNEL SLOPE =  0.0077
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.98
  CHANNEL FLOW THRU SUBAREA(CFS) =   36745.61
  FLOW VELOCITY(FEET/SEC.) =  16.70   FLOW DEPTH(FEET) =   8.98
  TRAVEL TIME(MIN.) =   3.11   Tc(MIN.) =  102.28
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12901.00 =  114913.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.944
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B       14.30      0.30     0.100    56
  PUBLIC PARK                B        9.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =   23.70      SUBAREA RUNOFF(CFS) =   17.59
  EFFECTIVE AREA(ACRES) =  40552.05   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51894.8       PEAK FLOW RATE(CFS) =   36745.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.944
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.40      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.50      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.60      0.30     1.000    65
  COMMERCIAL                 B        0.70      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.70      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.635
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.10
  EFFECTIVE AREA(ACRES) =  40555.16   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51897.9       PEAK FLOW RATE(CFS) =   36745.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.944
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.70      0.30     0.850    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.40      0.30     1.000    66
  NATURAL FAIR COVER
  "GRASS"                    B        1.50      0.30     1.000    69
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    9.20      SUBAREA RUNOFF(CFS) =    5.77
  EFFECTIVE AREA(ACRES) =  40564.36   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51907.1       PEAK FLOW RATE(CFS) =   36745.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.944
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.60      0.30     1.000    65
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        3.70      0.30     0.500    56
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"      B        4.10      0.30     0.500    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        5.40      0.30     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        6.70      0.30     1.000    66
  NATURAL POOR COVER
  "BARREN"                  B       12.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.875
  SUBAREA AREA(ACRES) =   35.50      SUBAREA RUNOFF(CFS) =   21.77
  EFFECTIVE AREA(ACRES) =  40599.86   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51942.6       PEAK FLOW RATE(CFS) =   36745.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12901.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  102.28
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.944
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B       12.90      0.30     1.000    69
  PUBLIC PARK               B       38.60      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.888
  SUBAREA AREA(ACRES) =   51.50      SUBAREA RUNOFF(CFS) =   31.40
  EFFECTIVE AREA(ACRES) =  40651.36   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =    51994.1       PEAK FLOW RATE(CFS) =   36745.61
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  12901.00 TO NODE  12902.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    216.00  DOWNSTREAM(FEET) =    215.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   122.04   CHANNEL SLOPE =  0.0082
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.82
  CHANNEL FLOW THRU SUBAREA(CFS) =   36745.61
  FLOW VELOCITY(FEET/SEC.) =  17.06   FLOW DEPTH(FEET) =   8.82
  TRAVEL TIME(MIN.) =   0.12   Tc(MIN.) =  102.40
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P503XX50.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     1768.30   18.70  0.30( 0.22) 0.74    1033.3   50320.00
      2     1770.28   19.45  0.30( 0.22) 0.74    1064.8   50240.00
      3     1774.79   20.47  0.30( 0.22) 0.74    1104.7   50330.00
      4     1782.58   23.35  0.30( 0.22) 0.74    1202.5   50280.00
      5     1764.12   24.56  0.30( 0.22) 0.74    1233.6   50300.00
      6     1740.24   25.78  0.30( 0.22) 0.74    1255.7   50220.00
      7     1627.11   29.66  0.30( 0.22) 0.74    1291.5   50260.00
      8     1541.67   32.85  0.30( 0.22) 0.74    1298.6   50200.00
    TOTAL AREA(ACRES) =     1298.6

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19378.67   17.29    2.465  0.30( 0.27) 0.91    3506.3   50110.00
      2    20806.74   21.64    2.127  0.30( 0.27) 0.91    4629.9   50100.00
      3    24099.08   35.14    1.594  0.30( 0.28) 0.93    8149.3     600.00
      4    27939.54   51.64    1.286  0.30( 0.29) 0.95   14150.6   40100.00
      5    29169.56   59.54    1.205  0.30( 0.29) 0.96   16978.5   11801.00
      6    31256.21   70.40    1.130  0.30( 0.29) 0.97   21562.9   11530.00
      7    32340.36   74.80    1.100  0.30( 0.29) 0.97   23877.4   11701.00
      8    33262.50   78.31    1.076  0.30( 0.29) 0.97   25970.6   11910.00
      9    35958.62   88.56    1.007  0.30( 0.29) 0.98   32664.8   10800.00
     10    36666.60   92.81    0.985  0.30( 0.29) 0.98   35610.2   11130.00
     11    36745.61  102.40    0.943  0.30( 0.29) 0.98   40651.4   12410.00
     12    36502.96  110.66    0.907  0.30( 0.29) 0.98   44390.5   11201.00
     13    36234.64  115.61    0.886  0.30( 0.29) 0.98   46122.2   12201.00
     14    35390.44  122.60    0.862  0.30( 0.29) 0.98   47979.3   12231.00
     15    35009.02  125.48    0.856  0.30( 0.29) 0.98   48652.6   12101.10
     16    34268.21  130.34    0.846  0.30( 0.29) 0.98   49613.6   10400.00
     17    33095.12  138.19    0.830  0.30( 0.29) 0.98   50908.7   12010.00
     18    32035.89  144.08    0.818  0.30( 0.29) 0.98   51255.7   10210.00
     19    31577.05  147.09    0.812  0.30( 0.29) 0.98   51372.9   12000.00
     20    28464.62  171.95    0.761  0.30( 0.29) 0.98   51994.1   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1768.30   18.70    2.340  0.30( 0.22) 0.74    1033.3   50320.00
      2     1770.28   19.45    2.274  0.30( 0.22) 0.74    1064.8   50240.00
      3     1774.79   20.47    2.197  0.30( 0.22) 0.74    1104.7   50330.00
      4     1782.58   23.35    2.024  0.30( 0.22) 0.74    1202.5   50280.00
      5     1764.12   24.56    1.950  0.30( 0.22) 0.74    1233.6   50300.00
```

```
     6     1740.24   25.78    1.894  0.30( 0.22) 0.74    1255.7   50220.00
     7     1627.11   29.66    1.744  0.30( 0.22) 0.74    1291.5   50260.00
     8     1541.67   32.85    1.655  0.30( 0.22) 0.74    1298.6   50200.00
  LONGEST FLOWPATH FROM NODE  50220.00 TO NODE  12902.00 =   17597.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21109.29   17.29    2.465  0.30( 0.26) 0.88    4461.5   50110.00
      2    21610.65   18.70    2.340  0.30( 0.26) 0.88    4904.4   50320.00
      3    21859.55   19.45    2.274  0.30( 0.26) 0.88    5130.3   50240.00
      4    22198.39   20.47    2.197  0.30( 0.26) 0.88    5433.2   50330.00
      5    22584.70   21.64    2.127  0.30( 0.26) 0.88    5774.4   50100.00
      6    23005.10   23.35    2.024  0.30( 0.26) 0.88    6276.9   50280.00
      7    23282.99   24.56    1.950  0.30( 0.27) 0.88    6624.8   50300.00
      8    23555.06   25.78    1.894  0.30( 0.27) 0.89    6963.2   50220.00
      9    24389.82   29.66    1.744  0.30( 0.27) 0.89    8012.3   50260.00
     10    25082.15   32.85    1.655  0.30( 0.27) 0.90    8850.8   50200.00
     11    25575.19   35.14    1.594  0.30( 0.27) 0.90    9447.9     600.00
     12    29084.06   51.64    1.286  0.30( 0.28) 0.94   15449.2   40100.00
     13    30226.59   59.54    1.205  0.30( 0.28) 0.94   18277.1   11801.00
     14    32232.37   70.40    1.130  0.30( 0.29) 0.95   22861.5   11530.00
     15    33284.49   74.80    1.100  0.30( 0.29) 0.96   25176.0   11701.00
     16    34181.07   78.31    1.076  0.30( 0.29) 0.96   27269.2   11910.00
     17    36802.57   88.56    1.007  0.30( 0.29) 0.97   33963.4   10800.00
     18    37486.93   92.81    0.985  0.30( 0.29) 0.97   36908.8   11130.00
     19    37521.22  102.40    0.943  0.30( 0.29) 0.97   41950.0   12410.00
     20    37240.07  110.66    0.907  0.30( 0.29) 0.97   45689.1   11201.00
     21    36948.68  115.61    0.886  0.30( 0.29) 0.97   47420.8   12201.00
     22    36078.29  122.60    0.862  0.30( 0.29) 0.97   49277.9   12231.00
     23    35690.57  125.48    0.856  0.30( 0.29) 0.97   49951.2   12101.10
     24    34939.14  130.34    0.846  0.30( 0.29) 0.97   50912.2   10400.00
     25    33748.86  138.19    0.830  0.30( 0.29) 0.98   52207.3   12010.00
     26    32676.76  144.08    0.818  0.30( 0.29) 0.98   52554.3   10210.00
     27    32211.32  147.09    0.812  0.30( 0.29) 0.98   52671.5   12000.00
     28    29044.50  171.95    0.761  0.30( 0.29) 0.98   53292.7   10100.00
    TOTAL AREA(ACRES) =     53292.7

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    37521.22  Tc(MIN.) =  102.401
  EFFECTIVE AREA(ACRES) =  41949.96  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    53292.7
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12902.00 =  115035.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12902.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  12902.00 TO NODE  12903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    215.00  DOWNSTREAM(FEET) =    214.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   895.53   CHANNEL SLOPE =  0.0011
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  15.54
  CHANNEL FLOW THRU SUBAREA(CFS) =   37521.22
  FLOW VELOCITY(FEET/SEC.) =   8.70   FLOW DEPTH(FEET) =  15.54
  TRAVEL TIME(MIN.) =   1.72   Tc(MIN.) =  104.12
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  12903.00 =  115930.81 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P504XX50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      145.17   13.27  0.30( 0.28) 0.94      70.7   50400.00
    TOTAL AREA(ACRES) =       70.7

****************************************************************************
  FLOW PROCESS FROM NODE  12903.00 TO NODE  12903.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21109.29   19.34    2.284  0.30( 0.26) 0.88    4461.5   50110.00
      2    21610.65   20.74    2.181  0.30( 0.26) 0.88    4904.4   50320.00
      3    21859.55   21.48    2.136  0.30( 0.26) 0.88    5130.3   50240.00
      4    22198.39   22.49    2.075  0.30( 0.26) 0.88    5433.2   50330.00
      5    22584.70   23.65    2.005  0.30( 0.26) 0.88    5774.4   50100.00
      6    23005.10   25.34    1.911  0.30( 0.26) 0.88    6276.9   50280.00
      7    23282.99   26.55    1.864  0.30( 0.27) 0.88    6624.8   50300.00
      8    23555.06   27.76    1.818  0.30( 0.27) 0.89    6963.2   50220.00
      9    24389.82   31.62    1.688  0.30( 0.27) 0.89    8012.3   50260.00
     10    25082.15   34.80    1.603  0.30( 0.27) 0.90    8850.8   50200.00
     11    25575.19   37.07    1.543  0.30( 0.27) 0.90    9447.9     600.00
     12    29084.06   53.50    1.267  0.30( 0.28) 0.94   15449.2   40100.00
     13    30226.59   61.37    1.191  0.30( 0.28) 0.94   18277.1   11801.00
     14    32232.37   72.20    1.117  0.30( 0.29) 0.95   22861.5   11530.00
     15    33284.49   76.58    1.088  0.30( 0.29) 0.96   25176.0   11701.00
     16    34181.07   80.07    1.064  0.30( 0.29) 0.96   27269.2   11910.00
     17    36802.57   90.28    0.996  0.30( 0.29) 0.97   33963.4   10800.00
     18    37486.93   94.53    0.977  0.30( 0.29) 0.97   36908.8   11130.00
     19    37521.22  104.12    0.936  0.30( 0.29) 0.97   41950.0   12410.00
     20    37240.07  112.38    0.900  0.30( 0.29) 0.97   45689.1   11201.00
     21    36948.68  117.33    0.879  0.30( 0.29) 0.97   47420.8   12201.00
     22    36078.29  124.34    0.858  0.30( 0.29) 0.97   49277.9   12231.00
     23    35690.57  127.23    0.852  0.30( 0.29) 0.97   49951.2   12101.10
     24    34939.14  132.09    0.842  0.30( 0.29) 0.97   50912.2   10400.00
     25    33748.86  139.96    0.826  0.30( 0.29) 0.98   52207.3   12010.00
     26    32676.76  145.87    0.814  0.30( 0.29) 0.98   52554.3   10210.00
     27    32211.32  148.89    0.808  0.30( 0.29) 0.98   52671.5   12000.00
     28    29044.50  173.81    0.758  0.30( 0.29) 0.98   53292.7   10100.00
```

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	145.17	13.27	2.948	0.30(0.28)	0.94	70.7	50400.00

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19389.55	13.27	2.948	0.30(0.26)	0.88	3132.4	50400.00
2	21218.32	19.34	2.284	0.30(0.26)	0.88	4532.2	50110.00
3	21714.10	20.74	2.181	0.30(0.26)	0.88	4975.1	50320.00
4	21960.54	21.48	2.136	0.30(0.26)	0.88	5201.0	50240.00
5	22296.06	22.49	2.075	0.30(0.26)	0.88	5503.9	50330.00
6	22678.56	23.65	2.005	0.30(0.26)	0.88	5845.1	50100.00
7	23093.80	25.34	1.911	0.30(0.26)	0.88	6347.6	50280.00
8	23369.16	26.55	1.864	0.30(0.27)	0.88	6695.5	50300.00
9	23638.70	27.76	1.818	0.30(0.27)	0.89	7033.9	50220.00
10	24466.39	31.62	1.688	0.30(0.27)	0.89	8083.0	50260.00
11	25154.12	34.80	1.603	0.30(0.27)	0.90	8921.5	50200.00
12	25643.87	37.07	1.543	0.30(0.27)	0.90	9518.6	600.00
13	29137.72	53.50	1.267	0.30(0.28)	0.94	15519.9	40100.00
14	30276.10	61.37	1.191	0.30(0.28)	0.94	18347.8	11801.00
15	32277.89	72.20	1.117	0.30(0.29)	0.95	22932.2	11530.00
16	33328.39	76.58	1.088	0.30(0.29)	0.96	25246.7	11701.00
17	34223.69	80.07	1.064	0.30(0.29)	0.96	27339.9	11910.00
18	36841.47	90.28	0.996	0.30(0.29)	0.97	34034.1	10800.00
19	37524.82	94.53	0.977	0.30(0.29)	0.97	36979.5	11130.00
20	37556.85	104.12	0.936	0.30(0.29)	0.97	42020.7	12410.00
21	37273.75	112.38	0.900	0.30(0.29)	0.97	45759.8	11201.00
22	36981.20	117.33	0.879	0.30(0.29)	0.97	47491.5	12201.00
23	36109.70	124.34	0.858	0.30(0.29)	0.97	49348.6	12231.00
24	35721.66	127.23	0.852	0.30(0.29)	0.97	50021.9	12101.10
25	34969.69	132.09	0.842	0.30(0.29)	0.97	50982.9	10400.00
26	33778.54	139.96	0.826	0.30(0.29)	0.98	52278.0	12010.00
27	32705.78	145.87	0.814	0.30(0.29)	0.98	52625.0	10210.00
28	32240.01	148.89	0.808	0.30(0.29)	0.98	52742.2	12000.00
29	29070.43	173.81	0.758	0.30(0.29)	0.98	53363.4	10100.00

TOTAL AREA(ACRES) = 53363.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37556.85 Tc(MIN.) = 104.117
EFFECTIVE AREA(ACRES) = 42020.66 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53363.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115930.81 FEET.

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==

****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.91
CHANNEL FLOW THRU SUBAREA(CFS) = 37556.85
FLOW VELOCITY(FEET/SEC.) = 9.17 FLOW DEPTH(FEET) = 14.91
TRAVEL TIME(MIN.) = 1.39 Tc(MIN.) = 105.51
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 105.51
RAINFALL INTENSITY(INCH/HR) = 0.93
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 42020.66
TOTAL STREAM AREA(ACRES) = 53363.43
PEAK FLOW RATE(CFS) AT CONFLUENCE = 37556.85

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7

>>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
==
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 19.50 RAINFALL INTENSITY(INCH/HR) = 2.27
EFFECTIVE AREA(ACRES) = 38.60
TOTAL AREA(ACRES) = 213.70 PEAK FLOW RATE(CFS) = 67.40
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 19.50
RAINFALL INTENSITY(INCH/HR) = 2.27
AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.43
EFFECTIVE STREAM AREA(ACRES) = 38.60
TOTAL STREAM AREA(ACRES) = 213.70

PEAK FLOW RATE(CFS) AT CONFLUENCE = 67.40

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19389.55	14.99	2.668	0.30(0.26)	0.88	3132.4	50400.00
1	21218.32	21.01	2.165	0.30(0.26)	0.88	4532.2	50110.00
1	21714.10	22.39	2.081	0.30(0.26)	0.88	4975.1	50320.00
1	21960.54	23.13	2.037	0.30(0.26)	0.88	5201.0	50240.00
1	22296.06	24.13	1.976	0.30(0.26)	0.88	5503.9	50330.00
1	22678.56	25.28	1.913	0.30(0.26)	0.88	5845.1	50100.00
1	23093.80	26.97	1.848	0.30(0.26)	0.88	6347.6	50280.00
1	23369.16	28.17	1.802	0.30(0.27)	0.88	6695.5	50300.00
1	23638.70	29.37	1.755	0.30(0.27)	0.89	7033.9	50220.00
1	24466.39	33.22	1.645	0.30(0.27)	0.89	8083.0	50260.00
1	25154.12	36.37	1.561	0.30(0.27)	0.90	8921.5	50200.00
1	25643.87	38.64	1.501	0.30(0.27)	0.90	9518.6	600.00
1	29137.72	55.01	1.251	0.30(0.28)	0.94	15519.9	40100.00
1	30276.10	62.86	1.181	0.30(0.28)	0.94	18347.8	11801.00
1	32277.89	73.66	1.108	0.30(0.29)	0.95	22932.2	11530.00
1	33328.39	78.03	1.078	0.30(0.29)	0.96	25246.7	11701.00
1	34223.69	81.51	1.054	0.30(0.29)	0.96	27339.9	11910.00
1	36841.47	91.68	0.990	0.30(0.29)	0.97	34034.1	10800.00
1	37524.82	95.92	0.971	0.30(0.29)	0.97	36979.5	11130.00
1	37556.85	105.51	0.930	0.30(0.29)	0.97	42020.7	12410.00
1	37273.75	113.78	0.894	0.30(0.29)	0.97	45759.8	11201.00
1	36981.20	118.73	0.873	0.30(0.29)	0.97	47491.5	12201.00
1	36109.70	125.75	0.855	0.30(0.29)	0.97	49348.6	12231.00
1	35721.66	128.64	0.849	0.30(0.29)	0.97	50021.9	12101.10
1	34969.69	133.52	0.840	0.30(0.29)	0.97	50982.9	10400.00
1	33778.54	141.40	0.823	0.30(0.29)	0.98	52278.0	12010.00
1	32705.78	147.32	0.811	0.30(0.29)	0.98	52625.0	10210.00
1	32240.01	150.35	0.805	0.30(0.29)	0.98	52742.2	12000.00
1	29070.43	175.31	0.755	0.30(0.29)	0.98	53363.4	10100.00
2	67.40	19.50	2.270	0.30(0.13)	0.43	38.6	12904.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19450.99	14.99	2.668	0.30(0.26)	0.87	3162.1	50400.00
2	20827.74	19.50	2.270	0.30(0.26)	0.87	4220.2	12904.00
3	21282.42	21.01	2.165	0.30(0.26)	0.87	4570.8	50110.00
4	21775.56	22.39	2.081	0.30(0.26)	0.87	5013.7	50320.00
5	22020.60	23.13	2.037	0.30(0.26)	0.88	5239.6	50240.00
6	22354.21	24.13	1.976	0.30(0.26)	0.88	5542.5	50330.00
7	22734.73	25.28	1.913	0.30(0.26)	0.88	5883.7	50100.00
8	23147.92	26.97	1.848	0.30(0.26)	0.88	6386.2	50280.00
9	23421.82	28.17	1.802	0.30(0.26)	0.88	6734.1	50300.00
10	23689.89	29.37	1.755	0.30(0.27)	0.88	7072.5	50220.00
11	24514.13	33.22	1.645	0.30(0.27)	0.89	8121.6	50260.00
12	25199.22	36.37	1.561	0.30(0.27)	0.90	8960.1	50200.00
13	25687.06	38.64	1.501	0.30(0.27)	0.90	9557.2	600.00
14	29173.06	55.01	1.251	0.30(0.28)	0.93	15558.5	40100.00
15	30309.21	62.86	1.181	0.30(0.28)	0.94	18386.4	11801.00
16	32308.70	73.66	1.108	0.30(0.29)	0.95	22970.8	11530.00

17	33358.27	78.03	1.078	0.30(0.29)	0.96	25285.3	11701.00
18	34252.82	81.51	1.054	0.30(0.29)	0.96	27378.5	11910.00
19	36868.57	91.68	0.990	0.30(0.29)	0.97	34072.7	10800.00
20	37551.34	95.92	0.971	0.30(0.29)	0.97	37018.1	11130.00
21	37582.06	105.51	0.930	0.30(0.29)	0.97	42059.3	12410.00
22	37297.83	113.78	0.894	0.30(0.29)	0.97	45798.4	11201.00
23	37004.60	118.73	0.873	0.30(0.29)	0.97	47530.1	12201.00
24	36132.56	125.75	0.855	0.30(0.29)	0.97	49387.2	12231.00
25	35744.34	128.64	0.849	0.30(0.29)	0.97	50060.5	12101.10
26	34992.05	133.52	0.840	0.30(0.29)	0.97	51021.5	10400.00
27	33800.40	141.40	0.823	0.30(0.29)	0.98	52316.6	12010.00
28	32727.27	147.32	0.811	0.30(0.29)	0.98	52663.6	10210.00
29	32261.30	150.35	0.805	0.30(0.29)	0.98	52780.8	12000.00
30	29090.12	175.31	0.755	0.30(0.29)	0.98	53402.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 37582.06 Tc(MIN.) = 105.51
EFFECTIVE AREA(ACRES) = 42059.26 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53577.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116698.38 FEET.

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 105.51
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.930
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.80	0.30	1.000	65
COMMERCIAL	B	1.20	0.30	0.100	56
COMMERCIAL	B	1.50	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	3.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.641
SUBAREA AREA(ACRES) = 6.80 SUBAREA RUNOFF(CFS) = 4.51
EFFECTIVE AREA(ACRES) = 42066.06 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53583.9 PEAK FLOW RATE(CFS) = 37582.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 105.51
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.930
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	3.60	0.30	1.000	69
PUBLIC PARK	B	15.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	20.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.941
SUBAREA AREA(ACRES) = 38.70 SUBAREA RUNOFF(CFS) = 22.55
EFFECTIVE AREA(ACRES) = 42104.76 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53622.6 PEAK FLOW RATE(CFS) = 37582.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 53622.6 TC(MIN.) = 105.51
EFFECTIVE AREA(ACRES) = 42104.76 AREA-AVERAGED Fm(INCH/HR)= 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.972
PEAK FLOW RATE(CFS) = 37582.06

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19450.99	14.99	2.668	0.30(0.26)	0.87	3207.6	50400.00
2	20827.74	19.50	2.270	0.30(0.26)	0.87	4265.7	12904.00
3	21282.42	21.01	2.165	0.30(0.26)	0.87	4616.3	50110.00
4	21775.56	22.39	2.081	0.30(0.26)	0.87	5059.2	50320.00
5	22020.60	23.13	2.037	0.30(0.26)	0.88	5285.1	50240.00
6	22354.21	24.13	1.976	0.30(0.26)	0.88	5588.0	50330.00
7	22734.73	25.28	1.913	0.30(0.26)	0.88	5929.2	50100.00
8	23147.92	26.97	1.848	0.30(0.26)	0.88	6431.7	50280.00
9	23421.82	28.17	1.802	0.30(0.26)	0.88	6779.6	50300.00
10	23689.89	29.37	1.755	0.30(0.27)	0.88	7118.0	50220.00
11	24514.13	33.22	1.645	0.30(0.27)	0.89	8167.1	50260.00
12	25199.22	36.37	1.561	0.30(0.27)	0.90	9005.6	50200.00
13	25687.06	38.64	1.501	0.30(0.27)	0.90	9602.7	600.00
14	29173.06	55.01	1.251	0.30(0.28)	0.93	15604.0	40100.00
15	30309.21	62.86	1.181	0.30(0.28)	0.94	18431.9	11801.00
16	32308.70	73.66	1.108	0.30(0.29)	0.95	23016.3	11530.00
17	33358.27	78.03	1.078	0.30(0.29)	0.96	25330.8	11701.00
18	34252.82	81.51	1.054	0.30(0.29)	0.96	27424.0	11910.00
19	36868.57	91.68	0.990	0.30(0.29)	0.97	34118.2	10800.00
20	37551.34	95.92	0.971	0.30(0.29)	0.97	37063.6	11130.00
21	37582.06	105.51	0.930	0.30(0.29)	0.97	42104.8	12410.00
22	37297.83	113.78	0.894	0.30(0.29)	0.97	45843.9	11201.00
23	37004.60	118.73	0.873	0.30(0.29)	0.97	47575.6	12201.00
24	36132.56	125.75	0.855	0.30(0.29)	0.97	49432.7	12231.00
25	35744.34	128.64	0.849	0.30(0.29)	0.97	50106.0	12101.10
26	34992.05	133.52	0.840	0.30(0.29)	0.97	51067.0	10400.00
27	33800.40	141.40	0.823	0.30(0.29)	0.97	52362.1	12010.00
28	32727.27	147.32	0.811	0.30(0.29)	0.98	52709.1	10210.00
29	32261.30	150.35	0.805	0.30(0.29)	0.98	52826.3	12000.00
30	29090.12	175.31	0.755	0.30(0.29)	0.98	53447.5	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 133C COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 50-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU50EV33.DAT
  TIME/DATE OF STUDY: 13:11 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.328
   2)   10.00;  3.431
   3)   15.00;  2.636
   4)   20.00;  2.205
   5)   25.00;  1.909
   6)   30.00;  1.717
   7)   40.00;  1.454
   8)   50.00;  1.293
   9)   60.00;  1.185
  10)   90.00;  0.982
  11)  120.00;  0.852
  12)  180.00;  0.728
  13)  360.00;  0.537
  14) 1200.00;  0.235
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

****************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13222.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
============================================================================
  USER-SPECIFIED VALUES ARE AS FOLLOWS:
  TC(MIN.) =   61.54   RAINFALL INTENSITY(INCH/HR) =  1.17
  EFFECTIVE AREA(ACRES) =  3144.20
  TOTAL AREA(ACRES) =  4924.40        PEAK FLOW RATE(CFS) =   2281.80
  AREA-AVERAGED Fm(INCH/HR) =   0.25  AREA-AVERAGED Fp(INCH/HR) =   0.30
  AREA-AVERAGED Ap =  0.82
  NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
        CONFLUENCE ANALYSES.

****************************************************************************
  FLOW PROCESS FROM NODE  13222.00 TO NODE  13301.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    427.51  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2533.33   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.63
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.60      0.30     1.000    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.30     0.600    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  COMMERCIAL                 B       22.60      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.521
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2301.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.42
  AVERAGE FLOW DEPTH(FEET) =   3.63   TRAVEL TIME(MIN.) =   4.05
  Tc(MIN.) =   65.59
  SUBAREA AREA(ACRES) =    45.20       SUBAREA RUNOFF(CFS) =   40.31
  EFFECTIVE AREA(ACRES) =   3189.40     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.82
  TOTAL AREA(ACRES) =     4969.6         PEAK FLOW RATE(CFS) =    2590.38
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.88
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.88   FLOW VELOCITY(FEET/SEC.) =  10.83
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.00      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        0.50      0.30     1.000    86
  COMMERCIAL                 B        7.40      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.90      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.596
  SUBAREA AREA(ACRES) =   16.50      SUBAREA RUNOFF(CFS) =   14.38
  EFFECTIVE AREA(ACRES) =   3205.90   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =     4986.1       PEAK FLOW RATE(CFS) =    2604.76

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.30      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.977
  SUBAREA AREA(ACRES) =    7.90      SUBAREA RUNOFF(CFS) =    6.07
  EFFECTIVE AREA(ACRES) =   3213.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     4994.0       PEAK FLOW RATE(CFS) =    2610.83
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        4.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.10      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        7.90      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.00      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.00      SUBAREA RUNOFF(CFS) =   16.77
  EFFECTIVE AREA(ACRES) =   3235.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5016.0       PEAK FLOW RATE(CFS) =    2627.61

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   65.59
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.40      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       14.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.00      SUBAREA RUNOFF(CFS) =   11.44
  EFFECTIVE AREA(ACRES) =   3250.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =     5031.0       PEAK FLOW RATE(CFS) =    2639.04

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  31100.00 TO NODE  31101.00 IS CODE =  21
```

```
--------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
================================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   317.00
  ELEVATION DATA: UPSTREAM(FEET) =    801.00  DOWNSTREAM(FEET) =    685.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.641
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.947
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66    8.64
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      3.61
  TOTAL AREA(ACRES) =      1.10   PEAK FLOW RATE(CFS) =      3.61

********************************************************************************
  FLOW PROCESS FROM NODE  31101.00 TO NODE  31102.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    685.00  DOWNSTREAM(FEET) =    655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   135.00   CHANNEL SLOPE =  0.2222
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.823
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.90
  AVERAGE FLOW DEPTH(FEET) =   0.52   TRAVEL TIME(MIN.) =   0.33
  Tc(MIN.) =    8.97
  SUBAREA AREA(ACRES) =     1.30       SUBAREA RUNOFF(CFS) =    4.12
  EFFECTIVE AREA(ACRES) =      2.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        2.4         PEAK FLOW RATE(CFS) =       7.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOW VELOCITY(FEET/SEC.) =   7.42
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31102.00 =     452.00 FEET.
```



```
********************************************************************************
  FLOW PROCESS FROM NODE  31102.00 TO NODE  31103.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    655.00  DOWNSTREAM(FEET) =    630.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   203.00   CHANNEL SLOPE =  0.1232
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.665
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.09
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.13
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   0.42
  Tc(MIN.) =    9.38
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    6.97
  EFFECTIVE AREA(ACRES) =      4.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        4.7         PEAK FLOW RATE(CFS) =      14.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.74   FLOW VELOCITY(FEET/SEC.) =   8.60
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31103.00 =     655.00 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  31103.00 TO NODE  31104.00 IS CODE =  51
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    630.00  DOWNSTREAM(FEET) =    605.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   321.00   CHANNEL SLOPE =  0.0779
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.395
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.36
```

```
  AVERAGE FLOW DEPTH(FEET) =   1.00   TRAVEL TIME(MIN.) =   0.84
  Tc(MIN.) =   10.22
  SUBAREA AREA(ACRES) =     3.60       SUBAREA RUNOFF(CFS) =   10.03
  EFFECTIVE AREA(ACRES) =      8.30     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        8.3         PEAK FLOW RATE(CFS) =      23.12

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.08   FLOW VELOCITY(FEET/SEC.) =   6.63
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31104.00 =     976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31104.00 TO NODE  31105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    605.00  DOWNSTREAM(FEET) =    585.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   288.00   CHANNEL SLOPE =  0.0694
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.284
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.00      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      31.72
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.87
  AVERAGE FLOW DEPTH(FEET) =   1.24   TRAVEL TIME(MIN.) =   0.70
  Tc(MIN.) =   10.92
  SUBAREA AREA(ACRES) =     6.40       SUBAREA RUNOFF(CFS) =   17.19
  EFFECTIVE AREA(ACRES) =     14.70     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       14.7         PEAK FLOW RATE(CFS) =      39.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.35   FLOW VELOCITY(FEET/SEC.) =   7.27
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31105.00 =    1264.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31105.00 TO NODE  31106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    585.00  DOWNSTREAM(FEET) =    560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   344.00   CHANNEL SLOPE =  0.0727
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.170
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        2.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.60      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.10      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      53.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.00
  AVERAGE FLOW DEPTH(FEET) =   1.49   TRAVEL TIME(MIN.) =   0.72
  Tc(MIN.) =   11.64
  SUBAREA AREA(ACRES) =    10.80       SUBAREA RUNOFF(CFS) =   27.90
  EFFECTIVE AREA(ACRES) =     25.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       25.5         PEAK FLOW RATE(CFS) =      65.87

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.62   FLOW VELOCITY(FEET/SEC.) =   8.36
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31106.00 =    1608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31106.00 TO NODE  31107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    560.00  DOWNSTREAM(FEET) =    530.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   619.00   CHANNEL SLOPE =  0.0485
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.956
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.80      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.20      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.70      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      83.92
```

```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.67
  AVERAGE FLOW DEPTH(FEET) =   1.91   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =   12.99
  SUBAREA AREA(ACRES) =    15.10       SUBAREA RUNOFF(CFS) =   36.10
  EFFECTIVE AREA(ACRES) =     40.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       40.6         PEAK FLOW RATE(CFS) =      97.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.02   FLOW VELOCITY(FEET/SEC.) =   7.94
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31107.00 =    2227.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31107.00 TO NODE  31108.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    530.00  DOWNSTREAM(FEET) =    515.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   377.00   CHANNEL SLOPE =  0.0398
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.827
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        6.50      0.30     1.000    63
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.30      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.10      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.50      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.40      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     117.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.74
  AVERAGE FLOW DEPTH(FEET) =   2.25   TRAVEL TIME(MIN.) =   0.81
  Tc(MIN.) =   13.80
  SUBAREA AREA(ACRES) =    18.30       SUBAREA RUNOFF(CFS) =   41.62
  EFFECTIVE AREA(ACRES) =     58.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       58.9         PEAK FLOW RATE(CFS) =     133.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.36   FLOW VELOCITY(FEET/SEC.) =   8.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31108.00 =    2604.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31108.00 TO NODE  31109.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    515.00  DOWNSTREAM(FEET) =    490.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   520.00   CHANNEL SLOPE =  0.0481
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.671
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.70      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        2.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        7.40      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        0.30      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.82
  AVERAGE FLOW DEPTH(FEET) =   2.38   TRAVEL TIME(MIN.) =   0.98
  Tc(MIN.) =   14.78
  SUBAREA AREA(ACRES) =    14.60       SUBAREA RUNOFF(CFS) =   31.15
  EFFECTIVE AREA(ACRES) =     73.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       73.5         PEAK FLOW RATE(CFS) =     156.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.42   FLOW VELOCITY(FEET/SEC.) =   8.92
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31109.00 =    3124.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.671
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       11.40      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        8.90      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.90      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.40      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
```

```
  SUBAREA AREA(ACRES) =   32.80      SUBAREA RUNOFF(CFS) =   69.99
  EFFECTIVE AREA(ACRES) =    106.30   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      106.3       PEAK FLOW RATE(CFS) =     226.83

****************************************************************************
  FLOW PROCESS FROM NODE  31109.00 TO NODE  31110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1420.00   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.435
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.30      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.00      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        1.50      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     234.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.29
  AVERAGE FLOW DEPTH(FEET) =   2.90   TRAVEL TIME(MIN.) =   2.55
  Tc(MIN.) =   17.33
  SUBAREA AREA(ACRES) =     8.30       SUBAREA RUNOFF(CFS) =   15.95
  EFFECTIVE AREA(ACRES) =    114.60     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      114.6         PEAK FLOW RATE(CFS) =     226.83
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.87   FLOW VELOCITY(FEET/SEC.) =   9.21
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  31110.00 =    4544.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  31110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.435
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
```



```
  "GRASS"                    B        0.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        9.60      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        6.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.90      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.40      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.998
  SUBAREA AREA(ACRES) =   21.80      SUBAREA RUNOFF(CFS) =   41.91
  EFFECTIVE AREA(ACRES) =    136.40   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      136.4       PEAK FLOW RATE(CFS) =     262.16

****************************************************************************
  FLOW PROCESS FROM NODE  31110.00 TO NODE  13301.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    382.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1847.00   CHANNEL SLOPE =  0.0271
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =  10.00
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.144
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        4.90      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.50      0.30     1.000    79
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.50      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.30      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.30      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.997
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     277.19
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.30
  AVERAGE FLOW DEPTH(FEET) =   3.34   TRAVEL TIME(MIN.) =   3.71
  Tc(MIN.) =   21.04
  SUBAREA AREA(ACRES) =    18.10       SUBAREA RUNOFF(CFS) =   30.05
  EFFECTIVE AREA(ACRES) =    154.50     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      154.5         PEAK FLOW RATE(CFS) =     262.16
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.27   FLOW VELOCITY(FEET/SEC.) =   8.18
```

```
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      262.16   21.04    2.144  0.30( 0.30) 1.00     154.5   31100.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2639.04   65.59    1.147  0.30( 0.25) 0.82    3250.8   13222.00
  LONGEST FLOWPATH FROM NODE  13222.00 TO NODE  13301.00 =    2533.33 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2043.56   21.04    2.144  0.30( 0.25) 0.84    1197.1   31100.00
      2     2759.52   65.59    1.147  0.30( 0.25) 0.83    3405.3   13222.00
    TOTAL AREA(ACRES) =      5185.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2759.52  Tc(MIN.) =   65.592
  EFFECTIVE AREA(ACRES) =   3405.30  AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5185.5
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13301.00 =    6391.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13301.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13301.00 TO NODE  13302.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    382.00  DOWNSTREAM(FEET) =    375.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1141.09   CHANNEL SLOPE =  0.0061
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.44
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B        1.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
```



```
  "ROW CROPS,STRAIGHT ROW"   B        0.60      0.30     1.000    81
  NATURAL POOR COVER
  "BARREN"                   B        0.90      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2763.04
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.66
  AVERAGE FLOW DEPTH(FEET) =   5.44   TRAVEL TIME(MIN.) =   2.48
  Tc(MIN.) =   68.07
  SUBAREA AREA(ACRES) =     9.40       SUBAREA RUNOFF(CFS) =    7.02
  EFFECTIVE AREA(ACRES) =   3414.70     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.83
  TOTAL AREA(ACRES) =     5194.9         PEAK FLOW RATE(CFS) =    2759.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.43

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.43   FLOW VELOCITY(FEET/SEC.) =   7.66
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13302.00 =    7532.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   68.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                  B       13.80      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                  B        2.60      0.30     1.000    86
  COMMERCIAL                B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"        B        3.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"     B        6.90      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                  B        0.20      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.952
  SUBAREA AREA(ACRES) =   28.10      SUBAREA RUNOFF(CFS) =   21.36
  EFFECTIVE AREA(ACRES) =   3442.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5223.0       PEAK FLOW RATE(CFS) =    2759.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
----------------------------------------------------------------------------
```

```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   68.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.10      0.30     1.000    79
  COMMERCIAL                 B        0.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.40      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.50      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.894
  SUBAREA AREA(ACRES) =    3.10      SUBAREA RUNOFF(CFS) =    2.41
  EFFECTIVE AREA(ACRES) =   3445.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5226.1       PEAK FLOW RATE(CFS) =    2759.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   68.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.10      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.20      0.30     1.000    63
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.80      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.20      SUBAREA RUNOFF(CFS) =   15.10
  EFFECTIVE AREA(ACRES) =   3466.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5246.3       PEAK FLOW RATE(CFS) =    2759.52
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   68.07
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       34.60      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.40      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       22.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       11.60      0.30     1.000    79
  APARTMENTS                 B        0.40      0.30     0.200    56
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.80      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   76.40      SUBAREA RUNOFF(CFS) =   57.18
  EFFECTIVE AREA(ACRES) =   3542.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =     5322.7       PEAK FLOW RATE(CFS) =    2808.48

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13302.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   68.07
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.130
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B        1.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       46.40      0.30     1.000    66
  RESIDENTIAL
  "11+ DWELLINGS/ACRE"       B        0.10      0.30     0.200    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B       60.70      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        5.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.999
  SUBAREA AREA(ACRES) =  114.60      SUBAREA RUNOFF(CFS) =   85.67
  EFFECTIVE AREA(ACRES) =   3657.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5437.3       PEAK FLOW RATE(CFS) =    2894.14

********************************************************************************
  FLOW PROCESS FROM NODE  13302.00 TO NODE  13303.00 IS CODE =  56
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    375.00  DOWNSTREAM(FEET) =    355.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2193.96   CHANNEL SLOPE =  0.0091
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.00
CHANNEL FLOW THRU SUBAREA(CFS) = 2894.14
FLOW VELOCITY(FEET/SEC.) = 8.90 FLOW DEPTH(FEET) = 5.00
TRAVEL TIME(MIN.) = 4.11 Tc(MIN.) = 72.18
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 5.83
EFFECTIVE AREA(ACRES) = 3664.70 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.20	0.30	1.000	63
COMMERCIAL	B	3.60	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 11.57
EFFECTIVE AREA(ACRES) = 3679.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	14.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	6.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 17.77
EFFECTIVE AREA(ACRES) = 3704.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.80	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.60	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	31.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 25.59
EFFECTIVE AREA(ACRES) = 3739.40 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6 PEAK FLOW RATE(CFS) = 2894.14

```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   72.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.103
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        1.70      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.50      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.20      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.830
  SUBAREA AREA(ACRES) =   10.50      SUBAREA RUNOFF(CFS) =    8.07
  EFFECTIVE AREA(ACRES) =   3749.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5530.1       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   72.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.103
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.30      0.30     0.900    56
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        3.00      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   11.60      SUBAREA RUNOFF(CFS) =    8.64
  EFFECTIVE AREA(ACRES) =   3761.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5541.7       PEAK FLOW RATE(CFS) =    2894.14
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13303.00 TO NODE  13304.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    355.00  DOWNSTREAM(FEET) =    350.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.40   CHANNEL SLOPE =  0.0054
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.50      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.50      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2896.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.44
  AVERAGE FLOW DEPTH(FEET) =   5.78   TRAVEL TIME(MIN.) =   2.07
  Tc(MIN.) =   74.25
  SUBAREA AREA(ACRES) =     6.70       SUBAREA RUNOFF(CFS) =    4.75
  EFFECTIVE AREA(ACRES) =   3768.20     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5548.4         PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.78

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.78   FLOW VELOCITY(FEET/SEC.) =   7.44
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13304.00 =   10651.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.25
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.40      0.30     1.000    81
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.80      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        0.90      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    7.10      SUBAREA RUNOFF(CFS) =    5.04
  EFFECTIVE AREA(ACRES) =   3775.30   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5555.5       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.25
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        7.80      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.70      0.30     1.000    79
  NATURAL POOR COVER
  "BARREN"                   B        9.40      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.20      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.10      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.60      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.80      SUBAREA RUNOFF(CFS) =   16.18
  EFFECTIVE AREA(ACRES) =   3798.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5578.3       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   74.25
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.089
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.30      0.30     1.000    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.20      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        2.70      0.30     1.000    79
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.994
  SUBAREA AREA(ACRES) =    3.40      SUBAREA RUNOFF(CFS) =    2.42
  EFFECTIVE AREA(ACRES) =   3801.50   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5581.7       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13304.00 TO NODE  13305.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    350.00  DOWNSTREAM(FEET) =    315.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2966.27   CHANNEL SLOPE =  0.0118
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.65
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        1.70      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.60      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.40      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.20      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        4.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2897.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.74
  AVERAGE FLOW DEPTH(FEET) =   4.65   TRAVEL TIME(MIN.) =   5.08
  Tc(MIN.) =   79.33
  SUBAREA AREA(ACRES) =     9.20      SUBAREA RUNOFF(CFS) =    6.24
  EFFECTIVE AREA(ACRES) =   3810.70     AREA-AVERAGED Fm(INCH/HR) =   0.25
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.84
  TOTAL AREA(ACRES) =     5590.9         PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.65

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.65   FLOW VELOCITY(FEET/SEC.) =   9.73
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.
```

```
**************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   79.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        8.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        2.30      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                    B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.70      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.20      SUBAREA RUNOFF(CFS) =   12.35
  EFFECTIVE AREA(ACRES) =   3828.90   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5609.1       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   79.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       18.40      0.30     1.000    86
  NATURAL FAIR COVER
  "MEADOWS"                  B        1.20      0.30     1.000    70
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       26.60      0.30     1.000    86
  COMMERCIAL                 B        3.90      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.00      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.934
  SUBAREA AREA(ACRES) =   53.20      SUBAREA RUNOFF(CFS) =   37.06
  EFFECTIVE AREA(ACRES) =   3882.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5662.3       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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



```
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   79.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        1.10      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B       14.00      0.30     1.000    86
  COMMERCIAL                 B        4.30      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        5.30      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        2.70      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.860
  SUBAREA AREA(ACRES) =   27.60      SUBAREA RUNOFF(CFS) =   19.78
  EFFECTIVE AREA(ACRES) =   3909.70   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5689.9       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
--------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========================================================================
  MAINLINE Tc(MIN.) =   79.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "MEADOWS"                  B        3.20      0.30     1.000    70
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        7.50      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.40      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.60      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        1.90      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.971
  SUBAREA AREA(ACRES) =   25.70      SUBAREA RUNOFF(CFS) =   17.65
  EFFECTIVE AREA(ACRES) =   3935.40   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5715.6       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   79.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        2.00      0.30     0.100    56
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        3.70      0.30     1.000    86
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.10      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.60      0.30     0.900    56
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        0.20      0.30     1.000    79
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  SUBAREA AREA(ACRES) =   10.70      SUBAREA RUNOFF(CFS) =    7.82
  EFFECTIVE AREA(ACRES) =   3946.10   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5726.3       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   79.33
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.054
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.50      0.30     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        8.20      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.906
  SUBAREA AREA(ACRES) =    8.70      SUBAREA RUNOFF(CFS) =    6.13
  EFFECTIVE AREA(ACRES) =   3954.80   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =     5735.0       PEAK FLOW RATE(CFS) =    2894.14
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 3A50EVRL.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
```



```
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1087.20   13.49  0.30( 0.13) 0.43     436.1     120.00
      2     1086.73   13.53  0.30( 0.13) 0.43     436.7     110.00
      3      930.63   20.54  0.30( 0.13) 0.43     504.3     100.00
      4      870.49   23.19  0.30( 0.13) 0.43     510.2     150.00
    TOTAL AREA(ACRES) =      510.2

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2245.75   35.96    1.560  0.30( 0.26) 0.88    1746.6   31100.00
      2     2894.14   79.33    1.054  0.30( 0.25) 0.84    3954.8   13222.00
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1087.20   13.49    2.876  0.30( 0.13) 0.43     436.1     120.00
      2     1086.73   13.53    2.870  0.30( 0.13) 0.43     436.7     110.00
      3      930.63   20.54    2.173  0.30( 0.13) 0.43     504.3     100.00
      4      870.49   23.19    2.016  0.30( 0.13) 0.43     510.2     150.00
  LONGEST FLOWPATH FROM NODE    150.00 TO NODE  13305.00 =    9867.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2784.69   13.49    2.876  0.30( 0.21) 0.70    1091.4     120.00
      2     2785.05   13.53    2.870  0.30( 0.21) 0.70    1093.8     110.00
      3     2819.69   20.54    2.173  0.30( 0.22) 0.73    1502.0     100.00
      4     2827.93   23.19    2.016  0.30( 0.22) 0.74    1636.5     150.00
      5     2905.80   35.96    1.560  0.30( 0.23) 0.78    2256.8   31100.00
      6     3320.67   79.33    1.054  0.30( 0.24) 0.80    4465.0   13222.00
    TOTAL AREA(ACRES) =      6245.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     3320.67  Tc(MIN.) =   79.328
  EFFECTIVE AREA(ACRES) =   4465.00  AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.70
  TOTAL AREA(ACRES) =     6245.2
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13305.00 =   13617.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13305.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13305.00 TO NODE  13306.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    315.00  DOWNSTREAM(FEET) =    245.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  4408.41   CHANNEL SLOPE =  0.0158
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.64
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B        0.40      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        9.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.30      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        2.40      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        4.10      0.30     1.000    63
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    3326.54
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.23
  AVERAGE FLOW DEPTH(FEET) =   4.64   TRAVEL TIME(MIN.) =   6.54
  Tc(MIN.) =   85.87
  SUBAREA AREA(ACRES) =    18.40       SUBAREA RUNOFF(CFS) =   11.76
  EFFECTIVE AREA(ACRES) =   4483.40     AREA-AVERAGED Fm(INCH/HR) =   0.24
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.80
  TOTAL AREA(ACRES) =     6263.6         PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.63

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.63   FLOW VELOCITY(FEET/SEC.) =  11.23
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13306.00 =   18026.13 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                    B       19.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       20.90      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        4.10      0.30     1.000    65
```



```
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      B        0.50      0.30     1.000    63
  NATURAL FAIR COVER
  "GRASS"                    B        4.30      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.60      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   49.60      SUBAREA RUNOFF(CFS) =   31.69
  EFFECTIVE AREA(ACRES) =   4533.00   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6313.2       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.80      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.51
  EFFECTIVE AREA(ACRES) =   4533.80   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6314.0       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  PUBLIC PARK                B        0.10      0.30     0.850    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.10      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.10      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        0.20      0.30     1.000    86
  PUBLIC PARK                B        0.40      0.30     0.850    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.40      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    1.30      SUBAREA RUNOFF(CFS) =    0.85
  EFFECTIVE AREA(ACRES) =   4535.10   AREA-AVERAGED Fm(INCH/HR) =  0.24
```

```
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6315.3       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.30     0.900    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.80      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.10      0.30     1.000    65
  COMMERCIAL                 B        1.10      0.30     0.100    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.80      0.30     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.822
  SUBAREA AREA(ACRES) =    7.60      SUBAREA RUNOFF(CFS) =    5.22
  EFFECTIVE AREA(ACRES) =   4542.70   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6322.9       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        3.50      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        5.00      0.30     1.000    69
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        6.70      0.30     0.900    56
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        7.80      0.30     1.000    65
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       10.80      0.30     1.000    66
  COMMERCIAL                 B       13.80      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   47.60      SUBAREA RUNOFF(CFS) =   34.80
  EFFECTIVE AREA(ACRES) =   4590.30   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
```



```
  TOTAL AREA(ACRES) =     6370.5       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   85.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.010
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL POOR COVER
  "BARREN"                   B       21.54      0.30     1.000    86
  NATURAL POOR COVER
  "BARREN"                   B       36.64      0.30     1.000    86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   58.18      SUBAREA RUNOFF(CFS) =   37.17
  EFFECTIVE AREA(ACRES) =   4648.48   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6428.7       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13306.00 TO NODE  13307.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    245.50  DOWNSTREAM(FEET) =    220.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1543.21   CHANNEL SLOPE =  0.0165
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.57
  CHANNEL FLOW THRU SUBAREA(CFS) =    3320.67
  FLOW VELOCITY(FEET/SEC.) =  11.40   FLOW DEPTH(FEET) =   4.57
  TRAVEL TIME(MIN.) =   2.26   Tc(MIN.) =   88.13
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13307.00 =   19569.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.13
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.995
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 B        0.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                    B        0.10      0.30     1.000    69
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        0.20      0.30     1.000    65
  NATURAL POOR COVER
  "BARREN"                   B        3.70      0.30     1.000    86
```

```
  COMMERCIAL                  B        0.30      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        3.20      0.30     1.000    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.942
  SUBAREA AREA(ACRES) =    7.70      SUBAREA RUNOFF(CFS) =    4.94
  EFFECTIVE AREA(ACRES) =   4656.18   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6436.4       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   88.13
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.995
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        3.60      0.30     1.000    65
  NATURAL FAIR COVER
  "GRASS"                     B        1.90      0.30     1.000    69
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        0.60      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.10      SUBAREA RUNOFF(CFS) =    3.81
  EFFECTIVE AREA(ACRES) =   4662.28   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6442.5       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13307.00 TO NODE  13308.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    220.00  DOWNSTREAM(FEET) =    212.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   925.62   CHANNEL SLOPE =  0.0086
  GIVEN CHANNEL BASE(FEET) =   50.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.48
  CHANNEL FLOW THRU SUBAREA(CFS) =    3320.67
  FLOW VELOCITY(FEET/SEC.) =   9.13   FLOW DEPTH(FEET) =   5.48
  TRAVEL TIME(MIN.) =   1.69   Tc(MIN.) =   89.82
  LONGEST FLOWPATH FROM NODE  31100.00 TO NODE  13308.00 =   20494.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.82
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.20      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"            B        5.00      0.30     1.000    65
  COMMERCIAL                  B        3.20      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        0.10      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        0.90      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.697
  SUBAREA AREA(ACRES) =    9.50      SUBAREA RUNOFF(CFS) =    6.62
  EFFECTIVE AREA(ACRES) =   4671.78   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6452.0       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.82
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  APARTMENTS                  B        0.30      0.30     0.200    56
  NATURAL POOR COVER
  "BARREN"                    B        0.20      0.30     1.000    86
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"       B        1.00      0.30     1.000    63
  COMMERCIAL                  B       41.90      0.30     0.100    56
  NATURAL FAIR COVER
  "GRASS"                     B        7.20      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       25.00      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.498
  SUBAREA AREA(ACRES) =   75.60      SUBAREA RUNOFF(CFS) =   56.73
  EFFECTIVE AREA(ACRES) =   4747.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =     6527.6       PEAK FLOW RATE(CFS) =    3320.67
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   89.82
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK               B        0.10      0.30     0.850    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"     B        0.90      0.30     1.000    79
 SCHOOL                    B        0.30      0.30     0.600    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B       13.20      0.30     1.000    65
 APARTMENTS                B        0.50      0.30     0.200    56
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF"     B        0.60      0.30     1.000    63
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.966
 SUBAREA AREA(ACRES) =   15.60      SUBAREA RUNOFF(CFS) =    9.74
 EFFECTIVE AREA(ACRES) =   4762.98   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.80
 TOTAL AREA(ACRES) =     6543.2       PEAK FLOW RATE(CFS) =    3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   89.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                B       33.90      0.30     0.100    56
 NATURAL FAIR COVER
 "GRASS"                   B       17.60      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B       16.80      0.30     1.000    66
 RESIDENTIAL
 "11+ DWELLINGS/ACRE"      B        0.60      0.30     0.200    56
 RESIDENTIAL
 "8-10 DWELLINGS/ACRE"     B        1.50      0.30     0.400    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,CONTOURED"     B       10.00      0.30     1.000    79
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.603
 SUBAREA AREA(ACRES) =   80.40      SUBAREA RUNOFF(CFS) =   58.05
 EFFECTIVE AREA(ACRES) =   4843.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     6623.6       PEAK FLOW RATE(CFS) =    3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   89.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
 SCHOOL                    B        0.30      0.30     0.600    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.70      0.30     1.000    65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
 SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    0.65
 EFFECTIVE AREA(ACRES) =   4844.38   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     6624.6       PEAK FLOW RATE(CFS) =    3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   89.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                   B        0.30      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.80      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        0.50      0.30     1.000    69
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        0.20      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        0.30      0.30     1.000    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    2.10      SUBAREA RUNOFF(CFS) =    1.29
 EFFECTIVE AREA(ACRES) =   4846.48   AREA-AVERAGED Fm(INCH/HR) =  0.24
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.79
 TOTAL AREA(ACRES) =     6626.7       PEAK FLOW RATE(CFS) =    3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   89.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.983
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "GRASS"                   B        1.20      0.30     1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"              B        0.50      0.30     1.000    66
 PUBLIC PARK               B        1.70      0.30     0.850    56
 NATURAL FAIR COVER
 "WOODLAND,GRASS"          B        7.20      0.30     1.000    65
 NATURAL FAIR COVER
 "GRASS"                   B        1.00      0.30     1.000    69
```

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978
SUBAREA AREA(ACRES) = 11.60 SUBAREA RUNOFF(CFS) = 7.20
EFFECTIVE AREA(ACRES) = 4858.08 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79
TOTAL AREA(ACRES) = 6638.3 PEAK FLOW RATE(CFS) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==========

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: RU50EV29.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19450.99	14.99	0.30(0.26)	0.87	3207.6	50400.00
2	21282.42	21.01	0.30(0.26)	0.87	4616.3	50110.00
3	22734.73	25.28	0.30(0.26)	0.88	5929.2	50100.00
4	23689.89	29.37	0.30(0.27)	0.88	7118.0	50220.00
5	24514.13	33.22	0.30(0.27)	0.89	8167.1	50260.00
6	25687.06	38.64	0.30(0.27)	0.90	9602.7	600.00
7	29173.06	55.01	0.30(0.28)	0.93	15604.0	40100.00
8	30309.21	62.86	0.30(0.28)	0.94	18431.9	11801.00
9	32308.70	73.66	0.30(0.29)	0.95	23016.3	11530.00
10	34252.82	81.51	0.30(0.29)	0.96	27424.0	11910.00
11	36868.57	91.68	0.30(0.29)	0.97	34118.2	10800.00
12	37551.34	95.92	0.30(0.29)	0.97	37063.6	11130.00
13	37582.06	105.51	0.30(0.29)	0.97	42104.8	12410.00
14	37297.83	113.78	0.30(0.29)	0.97	45843.9	11201.00
15	37004.60	118.73	0.30(0.29)	0.97	47575.6	12201.00
16	36132.56	125.75	0.30(0.29)	0.97	49432.7	12231.00
17	34992.05	133.52	0.30(0.29)	0.97	51067.0	10400.00
18	33800.40	141.40	0.30(0.29)	0.97	52362.1	12010.00
19	32727.27	147.32	0.30(0.29)	0.98	52709.1	10210.00
20	29090.12	175.31	0.30(0.29)	0.98	53447.5	10100.00

TOTAL AREA(ACRES) = 53447.5

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19450.99	14.99	0.30(0.26)	0.87	3207.6	50400.00
2	21282.42	21.01	0.30(0.26)	0.87	4616.3	50110.00
3	22734.73	25.28	0.30(0.26)	0.88	5929.2	50100.00
4	23689.89	29.37	0.30(0.27)	0.88	7118.0	50220.00

5	24514.13	33.22	0.30(0.27)	0.89	8167.1	50260.00
6	25687.06	38.64	0.30(0.27)	0.90	9602.7	600.00
7	29173.06	55.01	0.30(0.28)	0.93	15604.0	40100.00
8	30309.21	62.86	0.30(0.28)	0.94	18431.9	11801.00
9	32308.70	73.66	0.30(0.29)	0.95	23016.3	11530.00
10	34252.82	81.51	0.30(0.29)	0.96	27424.0	11910.00
11	36868.57	91.68	0.30(0.29)	0.97	34118.2	10800.00
12	37551.34	95.92	0.30(0.29)	0.97	37063.6	11130.00
13	37582.06	105.51	0.30(0.29)	0.97	42104.8	12410.00
14	37297.83	113.78	0.30(0.29)	0.97	45843.9	11201.00
15	37004.60	118.73	0.30(0.29)	0.97	47575.6	12201.00
16	36132.56	125.75	0.30(0.29)	0.97	49432.7	12231.00
17	34992.05	133.52	0.30(0.29)	0.97	51067.0	10400.00
18	33800.40	141.40	0.30(0.29)	0.97	52362.1	12010.00
19	32727.27	147.32	0.30(0.29)	0.98	52709.1	10210.00
20	29090.12	175.31	0.30(0.29)	0.98	53447.5	10100.00

TOTAL AREA(ACRES) = 53447.5

****
FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 17.51
CHANNEL FLOW THRU SUBAREA(CFS) = 37582.06
FLOW VELOCITY(FEET/SEC.) = 7.46 FLOW DEPTH(FEET) = 17.51
TRAVEL TIME(MIN.) = 3.10 Tc(MIN.) = 108.62
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

****
FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19450.99	18.79	2.310	0.30(0.26)	0.87	3207.6	50400.00
2	21282.42	24.70	1.927	0.30(0.26)	0.87	4616.3	50110.00
3	22734.73	28.90	1.759	0.30(0.26)	0.88	5929.2	50100.00
4	23689.89	32.94	1.640	0.30(0.27)	0.88	7118.0	50220.00
5	24514.13	36.75	1.539	0.30(0.27)	0.89	8167.1	50260.00
6	25687.06	42.13	1.420	0.30(0.27)	0.90	9602.7	600.00
7	29173.06	58.36	1.203	0.30(0.28)	0.93	15604.0	40100.00
8	30309.21	66.17	1.143	0.30(0.28)	0.94	18431.9	11801.00
9	32308.70	76.91	1.071	0.30(0.29)	0.95	23016.3	11530.00
10	34252.82	84.70	1.018	0.30(0.29)	0.96	27424.0	11910.00
11	36868.57	94.81	0.961	0.30(0.29)	0.97	34118.2	10800.00
12	37551.34	99.03	0.943	0.30(0.29)	0.97	37063.6	11130.00
13	37582.06	108.62	0.901	0.30(0.29)	0.97	42104.8	12410.00
14	37297.83	116.89	0.865	0.30(0.29)	0.97	45843.9	11201.00
15	37004.60	121.85	0.848	0.30(0.29)	0.97	47575.6	12201.00

16	36132.56	128.89	0.834	0.30(0.29)	0.97	49432.7	12231.00
17	34992.05	136.69	0.818	0.30(0.29)	0.97	51067.0	10400.00
18	33800.40	144.61	0.801	0.30(0.29)	0.97	52362.1	12010.00
19	32727.27	150.56	0.789	0.30(0.29)	0.98	52709.1	10210.00
20	29090.12	178.67	0.731	0.30(0.29)	0.98	53447.5	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2784.69	24.57	1.934	0.30(0.22)	0.72	1484.4	120.00
2	2785.05	24.62	1.932	0.30(0.22)	0.72	1486.9	110.00
3	2819.69	31.59	1.675	0.30(0.22)	0.74	1895.1	100.00
4	2827.93	34.22	1.606	0.30(0.22)	0.75	2029.6	150.00
5	2905.80	46.91	1.343	0.30(0.23)	0.78	2649.9	31100.00
6	3320.67	89.82	0.983	0.30(0.24)	0.79	4858.1	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22044.75	18.79	2.310	0.30(0.25)	0.83	4342.4	50400.00
2	24028.31	24.57	1.934	0.30(0.25)	0.84	6070.9	120.00
3	24041.24	24.62	1.932	0.30(0.25)	0.84	6083.0	110.00
4	24067.89	24.70	1.927	0.30(0.25)	0.84	6108.1	50110.00
5	25541.05	28.90	1.759	0.30(0.25)	0.84	7666.9	50100.00
6	26190.71	31.59	1.675	0.30(0.25)	0.85	8616.3	100.00
7	26513.81	32.94	1.640	0.30(0.26)	0.85	9082.1	50220.00
8	26794.93	34.22	1.606	0.30(0.26)	0.86	9500.3	150.00
9	27357.59	36.75	1.539	0.30(0.26)	0.86	10320.3	50260.00
10	28563.53	42.13	1.420	0.30(0.26)	0.87	12018.9	600.00
11	29619.25	46.91	1.343	0.30(0.27)	0.88	14019.5	31100.00
12	32189.55	58.36	1.203	0.30(0.27)	0.91	18843.0	40100.00
13	33401.26	66.17	1.143	0.30(0.28)	0.92	22073.2	11801.00
14	35504.54	76.91	1.071	0.30(0.28)	0.93	27210.0	11530.00
15	37524.01	84.70	1.018	0.30(0.28)	0.94	32018.8	11910.00
16	38898.20	89.82	0.983	0.30(0.28)	0.94	35672.3	13222.00
17	40090.89	94.81	0.961	0.30(0.28)	0.95	38976.3	10800.00
18	40692.09	99.03	0.943	0.30(0.28)	0.95	41921.6	11130.00
19	40537.57	108.62	0.901	0.30(0.29)	0.95	46962.8	12410.00
20	40093.50	116.89	0.865	0.30(0.29)	0.96	50702.0	11201.00
21	39723.10	121.85	0.848	0.30(0.29)	0.96	52433.7	12201.00
22	38786.15	128.89	0.834	0.30(0.29)	0.96	54290.8	12231.00
23	37573.82	136.69	0.818	0.30(0.29)	0.96	55925.1	10400.00
24	36309.16	144.61	0.801	0.30(0.29)	0.96	57220.2	12010.00
25	35181.23	150.56	0.789	0.30(0.29)	0.96	57567.2	10210.00
26	31285.03	178.67	0.731	0.30(0.29)	0.96	58305.6	10100.00

TOTAL AREA(ACRES) = 60085.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40692.09 Tc(MIN.) = 99.028
EFFECTIVE AREA(ACRES) = 41921.64 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 60085.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118087.91 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 60085.8 TC(MIN.) = 99.03

EFFECTIVE AREA(ACRES) = 41921.64 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.949
PEAK FLOW RATE(CFS) = 40692.09

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22044.75	18.79	2.310	0.30(0.25)	0.83	4342.4	50400.00
2	24028.31	24.57	1.934	0.30(0.25)	0.84	6070.9	120.00
3	24041.24	24.62	1.932	0.30(0.25)	0.84	6083.0	110.00
4	24067.89	24.70	1.927	0.30(0.25)	0.84	6108.1	50110.00
5	25541.05	28.90	1.759	0.30(0.25)	0.84	7666.9	50100.00
6	26190.71	31.59	1.675	0.30(0.25)	0.85	8616.3	100.00
7	26513.81	32.94	1.640	0.30(0.26)	0.85	9082.1	50220.00
8	26794.93	34.22	1.606	0.30(0.26)	0.86	9500.3	150.00
9	27357.59	36.75	1.539	0.30(0.26)	0.86	10320.3	50260.00
10	28563.53	42.13	1.420	0.30(0.26)	0.87	12018.9	600.00
11	29619.25	46.91	1.343	0.30(0.27)	0.88	14019.5	31100.00
12	32189.55	58.36	1.203	0.30(0.27)	0.91	18843.0	40100.00
13	33401.26	66.17	1.143	0.30(0.28)	0.92	22073.2	11801.00
14	35504.54	76.91	1.071	0.30(0.28)	0.93	27210.0	11530.00
15	37524.01	84.70	1.018	0.30(0.28)	0.94	32018.8	11910.00
16	38898.20	89.82	0.983	0.30(0.28)	0.94	35672.3	13222.00
17	40090.89	94.81	0.961	0.30(0.28)	0.95	38976.3	10800.00
18	40692.09	99.03	0.943	0.30(0.28)	0.95	41921.6	11130.00
19	40537.57	108.62	0.901	0.30(0.29)	0.95	46962.8	12410.00
20	40093.50	116.89	0.865	0.30(0.29)	0.96	50702.0	11201.00
21	39723.10	121.85	0.848	0.30(0.29)	0.96	52433.7	12201.00
22	38786.15	128.89	0.834	0.30(0.29)	0.96	54290.8	12231.00
23	37573.82	136.69	0.818	0.30(0.29)	0.96	55925.1	10400.00
24	36309.16	144.61	0.801	0.30(0.29)	0.96	57220.2	12010.00
25	35181.23	150.56	0.789	0.30(0.29)	0.96	57567.2	10210.00
26	31285.03	178.67	0.731	0.30(0.29)	0.96	58305.6	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2010 Advanced Engineering Software (aes)
             Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                         Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* RMV PA-3 BODR 2022 - NODE 134 COMPLEX                                  *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                               *
* 50-YR EV JULY 2023 ROKAMOTO                                            *
 **************************************************************************

  FILE NAME: RU50EV34.DAT
  TIME/DATE OF STUDY: 13:11 07/05/2023
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.304
   2)   10.00;  3.420
   3)   15.00;  2.629
   4)   20.00;  2.200
   5)   25.00;  1.906
   6)   30.00;  1.714
   7)   40.00;  1.452
   8)   50.00;  1.290
   9)   60.00;  1.181
  10)   90.00;  0.979
  11)  120.00;  0.849
  12)  180.00;  0.725
  13)  360.00;  0.534
  14) 1200.00;  0.233
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 15.1
--------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
==========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV33.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22044.75   18.79  0.30( 0.25) 0.83    4342.4   50400.00
      2    25541.05   28.90  0.30( 0.25) 0.84    7666.9   50100.00
      3    27357.59   36.75  0.30( 0.26) 0.86   10320.3   50260.00
      4    28563.53   42.13  0.30( 0.26) 0.87   12018.9     600.00
      5    29619.25   46.91  0.30( 0.27) 0.88   14019.5   31100.00
      6    32189.55   58.36  0.30( 0.27) 0.91   18843.0   40100.00
      7    33401.26   66.17  0.30( 0.28) 0.92   22073.2   11801.00
      8    35504.54   76.91  0.30( 0.28) 0.93   27210.0   11530.00
      9    37524.01   84.70  0.30( 0.28) 0.94   32018.8   11910.00
     10    38898.20   89.82  0.30( 0.28) 0.94   35672.3   13222.00
     11    40090.89   94.81  0.30( 0.28) 0.95   38976.3   10800.00
     12    40692.09   99.03  0.30( 0.28) 0.95   41921.6   11130.00
     13    40537.57  108.62  0.30( 0.29) 0.95   46962.8   12410.00
     14    40093.50  116.89  0.30( 0.29) 0.96   50702.0   11201.00
     15    39723.10  121.85  0.30( 0.29) 0.96   52433.7   12201.00
     16    38786.15  128.89  0.30( 0.29) 0.96   54290.8   12231.00
     17    37573.82  136.69  0.30( 0.29) 0.96   55925.1   10400.00
     18    36309.16  144.61  0.30( 0.29) 0.96   57220.2   12010.00
     19    35181.23  150.56  0.30( 0.29) 0.96   57567.2   10210.00
     20    31285.03  178.67  0.30( 0.29) 0.96   58305.6   10100.00
    TOTAL AREA(ACRES) =    58305.6

**************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13308.00 IS CODE = 14.0
--------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22044.75   18.79  0.30( 0.25) 0.83    4342.4   50400.00
      2    25541.05   28.90  0.30( 0.25) 0.84    7666.9   50100.00
      3    27357.59   36.75  0.30( 0.26) 0.86   10320.3   50260.00
      4    28563.53   42.13  0.30( 0.26) 0.87   12018.9     600.00
      5    29619.25   46.91  0.30( 0.27) 0.88   14019.5   31100.00
      6    32189.55   58.36  0.30( 0.27) 0.91   18843.0   40100.00
      7    33401.26   66.17  0.30( 0.28) 0.92   22073.2   11801.00
      8    35504.54   76.91  0.30( 0.28) 0.93   27210.0   11530.00
      9    37524.01   84.70  0.30( 0.28) 0.94   32018.8   11910.00
     10    38898.20   89.82  0.30( 0.28) 0.94   35672.3   13222.00
     11    40090.89   94.81  0.30( 0.28) 0.95   38976.3   10800.00
     12    40692.09   99.03  0.30( 0.28) 0.95   41921.6   11130.00
     13    40537.57  108.62  0.30( 0.29) 0.95   46962.8   12410.00
```

```
     14    40093.50  116.89  0.30( 0.29) 0.96   50702.0   11201.00
     15    39723.10  121.85  0.30( 0.29) 0.96   52433.7   12201.00
     16    38786.15  128.89  0.30( 0.29) 0.96   54290.8   12231.00
     17    37573.82  136.69  0.30( 0.29) 0.96   55925.1   10400.00
     18    36309.16  144.61  0.30( 0.29) 0.96   57220.2   12010.00
     19    35181.23  150.56  0.30( 0.29) 0.96   57567.2   10210.00
     20    31285.03  178.67  0.30( 0.29) 0.96   58305.6   10100.00
    TOTAL AREA(ACRES) =     58305.6

****************************************************************************
  FLOW PROCESS FROM NODE  13308.00 TO NODE  13402.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    212.00  DOWNSTREAM(FEET) =    209.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.02   CHANNEL SLOPE =  0.0048
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.85
  CHANNEL FLOW THRU SUBAREA(CFS) =   40692.09
  FLOW VELOCITY(FEET/SEC.) =  14.74   FLOW DEPTH(FEET) =  10.85
  TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =   99.73
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: P505XX50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      255.49   17.27  0.30( 0.29) 0.96     146.4   50500.00
    TOTAL AREA(ACRES) =      146.4

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22044.75   19.65    2.230  0.30( 0.25) 0.83    4342.4   50400.00
      2    25541.05   29.72    1.725  0.30( 0.25) 0.84    7666.9   50100.00
      3    27357.59   37.55    1.516  0.30( 0.26) 0.86   10320.3   50260.00
      4    28563.53   42.92    1.405  0.30( 0.26) 0.87   12018.9     600.00
      5    29619.25   47.69    1.327  0.30( 0.27) 0.88   14019.5   31100.00
      6    32189.55   59.12    1.191  0.30( 0.27) 0.91   18843.0   40100.00
      7    33401.26   66.92    1.134  0.30( 0.28) 0.92   22073.2   11801.00
      8    35504.54   77.64    1.062  0.30( 0.28) 0.93   27210.0   11530.00
      9    37524.01   85.42    1.010  0.30( 0.28) 0.94   32018.8   11910.00
     10    38898.20   90.53    0.977  0.30( 0.28) 0.94   35672.3   13222.00
     11    40090.89   95.51    0.955  0.30( 0.28) 0.95   38976.3   10800.00
     12    40692.09   99.73    0.937  0.30( 0.28) 0.95   41921.6   11130.00
```



```
     13    40537.57  109.32    0.895  0.30( 0.29) 0.95   46962.8   12410.00
     14    40093.50  117.60    0.859  0.30( 0.29) 0.96   50702.0   11201.00
     15    39723.10  122.56    0.844  0.30( 0.29) 0.96   52433.7   12201.00
     16    38786.15  129.61    0.829  0.30( 0.29) 0.96   54290.8   12231.00
     17    37573.82  137.41    0.813  0.30( 0.29) 0.96   55925.1   10400.00
     18    36309.16  145.34    0.797  0.30( 0.29) 0.96   57220.2   12010.00
     19    35181.23  151.29    0.784  0.30( 0.29) 0.96   57567.2   10210.00
     20    31285.03  179.43    0.726  0.30( 0.29) 0.96   58305.6   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      255.49   17.27    2.434  0.30( 0.29) 0.96     146.4   50500.00
  LONGEST FLOWPATH FROM NODE  50500.00 TO NODE  13402.00 =    5416.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21628.42   17.27    2.434  0.30( 0.25) 0.84    3963.3   50500.00
      2    22275.96   19.65    2.230  0.30( 0.25) 0.84    4488.8   50400.00
      3    25712.10   29.72    1.725  0.30( 0.25) 0.85    7813.3   50100.00
      4    27503.81   37.55    1.516  0.30( 0.26) 0.86   10466.7   50260.00
      5    28696.49   42.92    1.405  0.30( 0.26) 0.87   12165.3     600.00
      6    29743.02   47.69    1.327  0.30( 0.27) 0.88   14165.9   31100.00
      7    32297.04   59.12    1.191  0.30( 0.27) 0.91   18989.4   40100.00
      8    33502.05   66.92    1.134  0.30( 0.28) 0.92   22219.6   11801.00
      9    35596.73   77.64    1.062  0.30( 0.28) 0.93   27356.4   11530.00
     10    37609.97   85.42    1.010  0.30( 0.28) 0.94   32165.2   11910.00
     11    38980.21   90.53    0.977  0.30( 0.28) 0.94   35818.7   13222.00
     12    40170.34   95.51    0.955  0.30( 0.28) 0.95   39122.7   10800.00
     13    40769.36   99.73    0.937  0.30( 0.28) 0.95   42068.0   11130.00
     14    40609.91  109.32    0.895  0.30( 0.29) 0.95   47109.2   12410.00
     15    40161.57  117.60    0.859  0.30( 0.29) 0.96   50848.4   11201.00
     16    39789.30  122.56    0.844  0.30( 0.29) 0.96   52580.1   12201.00
     17    38850.61  129.61    0.829  0.30( 0.29) 0.96   54437.2   12231.00
     18    37636.37  137.41    0.813  0.30( 0.29) 0.96   56071.5   10400.00
     19    36369.75  145.34    0.797  0.30( 0.29) 0.96   57366.6   12010.00
     20    35240.36  151.29    0.784  0.30( 0.29) 0.96   57713.6   10210.00
     21    31337.24  179.43    0.726  0.30( 0.29) 0.96   58452.0   10100.00
    TOTAL AREA(ACRES) =     58452.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    40769.36  Tc(MIN.) =   99.732
  EFFECTIVE AREA(ACRES) =  42068.04  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58452.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13402.00 =  118710.93 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13402.00 TO NODE  13404.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    209.00  DOWNSTREAM(FEET) =    207.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   395.35   CHANNEL SLOPE =  0.0051
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
```

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 10.72
CHANNEL FLOW THRU SUBAREA(CFS) = 40769.36
FLOW VELOCITY(FEET/SEC.) = 15.00 FLOW DEPTH(FEET) = 10.72
TRAVEL TIME(MIN.) = 0.44 Tc(MIN.) = 100.17
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

****
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: P506XX50.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	83.84	18.04	0.30(0.29)	0.97	49.5	50600.00

TOTAL AREA(ACRES) = 49.5

****
FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21628.42	17.81	2.388	0.30(0.25)	0.84	3963.3	50500.00
2	22275.96	20.18	2.189	0.30(0.25)	0.84	4488.8	50400.00
3	25712.10	30.23	1.708	0.30(0.25)	0.85	7813.3	50100.00
4	27503.81	38.05	1.503	0.30(0.26)	0.86	10466.7	50260.00
5	28696.49	43.41	1.397	0.30(0.26)	0.87	12165.3	600.00
6	29743.02	48.17	1.320	0.30(0.27)	0.88	14165.9	31100.00
7	32297.04	59.59	1.185	0.30(0.27)	0.91	18989.4	40100.00
8	33502.05	67.39	1.131	0.30(0.28)	0.92	22219.6	11801.00
9	35596.73	78.10	1.059	0.30(0.28)	0.93	27356.4	11530.00
10	37609.97	85.87	1.007	0.30(0.28)	0.94	32165.2	11910.00
11	38980.21	90.98	0.975	0.30(0.28)	0.94	35818.7	13222.00
12	40170.34	95.96	0.953	0.30(0.28)	0.95	39122.7	10800.00
13	40769.36	100.17	0.935	0.30(0.28)	0.95	42068.0	11130.00
14	40609.91	109.76	0.893	0.30(0.29)	0.95	47109.2	12410.00
15	40161.57	118.04	0.858	0.30(0.29)	0.96	50848.4	11201.00
16	39789.30	123.00	0.843	0.30(0.29)	0.96	52580.1	12201.00
17	38850.61	130.05	0.828	0.30(0.29)	0.96	54437.2	12231.00
18	37636.37	137.86	0.812	0.30(0.29)	0.96	56071.5	10400.00
19	36369.75	145.80	0.796	0.30(0.29)	0.96	57366.6	12010.00
20	35240.36	151.75	0.783	0.30(0.29)	0.96	57713.6	10210.00
21	31337.24	179.91	0.725	0.30(0.29)	0.96	58452.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	83.84	18.04	2.369	0.30(0.29)	0.97	49.5	50600.00

LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21711.98	17.81	2.388	0.30(0.25)	0.84	4012.1	50500.00
2	21773.75	18.04	2.369	0.30(0.25)	0.84	4062.7	50600.00
3	22352.56	20.18	2.189	0.30(0.25)	0.84	4538.3	50400.00
4	25769.30	30.23	1.708	0.30(0.25)	0.85	7862.8	50100.00
5	27552.75	38.05	1.503	0.30(0.26)	0.86	10516.2	50260.00
6	28741.14	43.41	1.397	0.30(0.26)	0.87	12214.8	600.00
7	29784.55	48.17	1.320	0.30(0.27)	0.89	14215.4	31100.00
8	32333.17	59.59	1.185	0.30(0.27)	0.91	19038.9	40100.00
9	33535.99	67.39	1.131	0.30(0.28)	0.92	22269.1	11801.00
10	35627.77	78.10	1.059	0.30(0.28)	0.93	27405.9	11530.00
11	37638.89	85.87	1.007	0.30(0.28)	0.94	32214.7	11910.00
12	39007.85	90.98	0.975	0.30(0.28)	0.94	35868.2	13222.00
13	40197.10	95.96	0.953	0.30(0.28)	0.95	39172.2	10800.00
14	40795.39	100.17	0.935	0.30(0.28)	0.95	42117.5	11130.00
15	40634.25	109.76	0.893	0.30(0.29)	0.95	47158.7	12410.00
16	40184.47	118.04	0.858	0.30(0.29)	0.96	50897.9	11201.00
17	39811.61	123.00	0.843	0.30(0.29)	0.96	52629.6	12201.00
18	38872.34	130.05	0.828	0.30(0.29)	0.96	54486.7	12231.00
19	37657.44	137.86	0.812	0.30(0.29)	0.96	56121.0	10400.00
20	36390.16	145.80	0.796	0.30(0.29)	0.96	57416.1	12010.00
21	35260.27	151.75	0.783	0.30(0.29)	0.96	57763.1	10210.00
22	31354.80	179.91	0.725	0.30(0.29)	0.96	58501.5	10100.00

TOTAL AREA(ACRES) = 58501.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40795.39 Tc(MIN.) = 100.172
EFFECTIVE AREA(ACRES) = 42117.54 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 58501.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119106.28 FEET.

****
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.60
CHANNEL FLOW THRU SUBAREA(CFS) = 40795.39
FLOW VELOCITY(FEET/SEC.) = 17.13 FLOW DEPTH(FEET) = 9.60
TRAVEL TIME(MIN.) = 1.56 Tc(MIN.) = 101.73
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120708.25 FEET.

****
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==========
MAINLINE Tc(MIN.) = 101.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.928
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

```
      LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "GRASS"                   B        0.20      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        4.00      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                   B        2.00      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        9.70      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        2.60      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        1.60      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.10      SUBAREA RUNOFF(CFS) =   11.36
  EFFECTIVE AREA(ACRES) =  42137.64   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58521.6       PEAK FLOW RATE(CFS) =   40795.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13406.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =  101.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.928
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"  B        2.00      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B       12.50      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        5.80      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        0.10      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   20.40      SUBAREA RUNOFF(CFS) =   11.53
  EFFECTIVE AREA(ACRES) =  42158.04   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =    58542.0       PEAK FLOW RATE(CFS) =   40795.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13406.00 TO NODE  13408.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    195.00  DOWNSTREAM(FEET) =    182.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2458.36   CHANNEL SLOPE =  0.0053
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.59
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.917
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)   (INCH/HR)   (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        7.00      0.30     1.000    66
  NATURAL FAIR COVER
  "WOODLAND,GRASS"          B        3.30      0.30     1.000    65
  COMMERCIAL                B        0.40      0.30     0.100    56
  NATURAL FAIR COVER
  "OPEN BRUSH"              B        1.40      0.30     1.000    66
  COMMERCIAL                B        0.30      0.30     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.949
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   40798.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  15.24
  AVERAGE FLOW DEPTH(FEET) =  10.59   TRAVEL TIME(MIN.) =   2.69
  Tc(MIN.) =  104.42
  SUBAREA AREA(ACRES) =    12.40       SUBAREA RUNOFF(CFS) =    7.05
  EFFECTIVE AREA(ACRES) =  42170.43     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =    58554.4         PEAK FLOW RATE(CFS) =   40795.39
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  10.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 10.59   FLOW VELOCITY(FEET/SEC.) =  15.23
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P50EVBB.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)   (INCH/HR)           (ACRES)    NODE
      1      748.33    9.86  0.30( 0.11) 0.38      244.2     429.00
      2      793.01   11.37  0.30( 0.11) 0.38      281.3     425.00
      3      804.73   11.79  0.30( 0.11) 0.38      291.7     400.00
      4      836.36   13.23  0.30( 0.11) 0.38      327.6     300.00
      5      892.30   18.33  0.30( 0.11) 0.38      440.3     210.00
      6      879.40   20.37  0.30( 0.11) 0.38      466.7     410.00
      7      872.79   21.37  0.30( 0.11) 0.38      479.4     200.00
      8      870.12   21.98  0.30( 0.11) 0.38      486.6     230.00
      9      849.67   23.09  0.30( 0.11) 0.37      491.2     220.50
    TOTAL AREA(ACRES) =      491.2

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

```
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    21711.98   23.04    2.021  0.30( 0.25) 0.84    4065.0   50500.00
     2    21773.75   23.27    2.008  0.30( 0.25) 0.84    4115.6   50600.00
     3    22352.56   25.36    1.892  0.30( 0.25) 0.84    4591.2   50400.00
     4    25769.30   35.17    1.579  0.30( 0.25) 0.85    7915.7   50100.00
     5    27552.75   42.88    1.405  0.30( 0.26) 0.86   10569.1   50260.00
     6    28741.14   48.17    1.320  0.30( 0.26) 0.87   12267.7     600.00
     7    29784.55   52.88    1.259  0.30( 0.27) 0.89   14268.3   31100.00
     8    32333.17   64.17    1.153  0.30( 0.27) 0.91   19091.8   40100.00
     9    33535.99   71.92    1.101  0.30( 0.28) 0.92   22322.0   11801.00
    10    35627.77   82.54    1.029  0.30( 0.28) 0.93   27458.8   11530.00
    11    37638.89   90.23    0.978  0.30( 0.28) 0.94   32267.6   11910.00
    12    39007.85   95.29    0.956  0.30( 0.28) 0.94   35921.1   13222.00
    13    40197.10  100.22    0.935  0.30( 0.28) 0.95   39225.1   10800.00
    14    40795.39  104.42    0.917  0.30( 0.28) 0.95   42170.4   11130.00
    15    40634.25  114.01    0.875  0.30( 0.29) 0.95   47211.6   12410.00
    16    40184.47  122.31    0.844  0.30( 0.29) 0.96   50950.8   11201.00
    17    39811.61  127.28    0.834  0.30( 0.29) 0.96   52682.4   12201.00
    18    38872.34  134.37    0.819  0.30( 0.29) 0.96   54539.6   12231.00
    19    37657.44  142.22    0.803  0.30( 0.29) 0.96   56173.9   10400.00
    20    36390.16  150.20    0.787  0.30( 0.29) 0.96   57469.0   12010.00
    21    35260.27  156.21    0.774  0.30( 0.29) 0.96   57816.0   10210.00
    22    31354.80  184.54    0.720  0.30( 0.29) 0.96   58554.4   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      748.33    9.86    3.472  0.30( 0.11) 0.38     244.2     429.00
     2      793.01   11.37    3.204  0.30( 0.11) 0.38     281.3     425.00
     3      804.73   11.79    3.137  0.30( 0.11) 0.38     291.7     400.00
     4      836.36   13.23    2.909  0.30( 0.11) 0.38     327.6     300.00
     5      892.30   18.33    2.343  0.30( 0.11) 0.38     440.3     210.00
     6      879.40   20.37    2.178  0.30( 0.11) 0.38     466.7     410.00
     7      872.79   21.37    2.119  0.30( 0.11) 0.38     479.4     200.00
     8      870.12   21.98    2.083  0.30( 0.11) 0.38     486.6     230.00
     9      849.67   23.09    2.018  0.30( 0.11) 0.37     491.2     220.50
 LONGEST FLOWPATH FROM NODE    230.00 TO NODE  13408.00 =   11903.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    17663.17    9.86    3.472  0.30( 0.24) 0.78    1983.8     429.00
     2    18665.31   11.37    3.204  0.30( 0.24) 0.78    2286.7     425.00
     3    18920.04   11.79    3.137  0.30( 0.24) 0.78    2371.2     400.00
     4    19560.57   13.23    2.909  0.30( 0.24) 0.78    2661.8     300.00
     5    21310.18   18.33    2.343  0.30( 0.24) 0.79    3674.3     210.00
     6    21778.93   20.37    2.178  0.30( 0.24) 0.79    4060.5     410.00
     7    22128.28   21.37    2.119  0.30( 0.24) 0.79    4249.3     200.00
     8    22313.46   21.98    2.083  0.30( 0.24) 0.79    4364.8     230.00
     9    22562.48   23.04    2.021  0.30( 0.24) 0.79    4556.1   50500.00
```



```
    10    22574.09   23.09    2.018  0.30( 0.24) 0.79    4566.4     220.50
    11    22618.76   23.27    2.008  0.30( 0.24) 0.79    4606.8   50600.00
    12    23145.87   25.36    1.892  0.30( 0.24) 0.80    5082.4   50400.00
    13    26422.86   35.17    1.579  0.30( 0.25) 0.82    8406.9   50100.00
    14    28129.10   42.88    1.405  0.30( 0.25) 0.84   11060.3   50260.00
    15    29279.27   48.17    1.320  0.30( 0.26) 0.85   12758.9     600.00
    16    30295.50   52.88    1.259  0.30( 0.26) 0.87   14759.5   31100.00
    17    32797.00   64.17    1.153  0.30( 0.27) 0.90   19583.0   40100.00
    18    33976.57   71.92    1.101  0.30( 0.27) 0.91   22813.2   11801.00
    19    36036.46   82.54    1.029  0.30( 0.28) 0.92   27950.0   11530.00
    20    38024.75   90.23    0.978  0.30( 0.28) 0.93   32758.8   11910.00
    21    39383.93   95.29    0.956  0.30( 0.28) 0.93   36412.3   13222.00
    22    40563.66  100.22    0.935  0.30( 0.28) 0.94   39716.3   10800.00
    23    41153.84  104.42    0.917  0.30( 0.28) 0.94   42661.6   11130.00
    24    40974.17  114.01    0.875  0.30( 0.28) 0.95   47702.8   12410.00
    25    40510.70  122.31    0.844  0.30( 0.29) 0.95   51441.9   11201.00
    26    40133.25  127.28    0.834  0.30( 0.29) 0.95   53173.6   12201.00
    27    39187.45  134.37    0.819  0.30( 0.29) 0.95   55030.8   12231.00
    28    37965.32  142.22    0.803  0.30( 0.29) 0.95   56665.1   10400.00
    29    36690.69  150.20    0.787  0.30( 0.29) 0.95   57960.2   12010.00
    30    35555.26  156.21    0.774  0.30( 0.29) 0.95   58307.2   10210.00
    31    31625.73  184.54    0.720  0.30( 0.29) 0.96   59045.6   10100.00
  TOTAL AREA(ACRES) =     59045.6

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =    41153.84  Tc(MIN.) =  104.419
 EFFECTIVE AREA(ACRES) =  42661.63  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
 TOTAL AREA(ACRES) =    59045.6
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13408.00 =  123166.61 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P507XX50.DNA
 MEMORY BANK #  2 DEFINED AS FOLLOWS:
  STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      337.32   22.37  0.30( 0.30) 0.99     231.4   50700.00
  TOTAL AREA(ACRES) =      231.4

****************************************************************************
 FLOW PROCESS FROM NODE  13408.00 TO NODE  13408.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	17663.17	9.86	3.472	0.30(0.24)	0.78	1983.8	429.00
2	18665.31	11.37	3.204	0.30(0.24)	0.78	2286.7	425.00
3	18920.04	11.79	3.137	0.30(0.24)	0.78	2371.2	400.00
4	19560.57	13.23	2.909	0.30(0.24)	0.78	2661.8	300.00
5	21310.18	18.33	2.343	0.30(0.24)	0.79	3674.3	210.00
6	21778.93	20.37	2.178	0.30(0.24)	0.79	4060.5	410.00
7	22128.28	21.37	2.119	0.30(0.24)	0.79	4249.3	200.00
8	22313.46	21.98	2.083	0.30(0.24)	0.79	4364.8	230.00
9	22562.48	23.04	2.021	0.30(0.24)	0.79	4556.1	50500.00
10	22574.09	23.09	2.018	0.30(0.24)	0.79	4566.4	220.50
11	22618.76	23.27	2.008	0.30(0.24)	0.79	4606.8	50600.00
12	23145.87	25.36	1.892	0.30(0.24)	0.80	5082.4	50400.00
13	26422.86	35.17	1.579	0.30(0.25)	0.82	8406.9	50100.00
14	28129.10	42.88	1.405	0.30(0.25)	0.84	11060.3	50260.00
15	29279.27	48.17	1.320	0.30(0.26)	0.85	12758.9	600.00
16	30295.50	52.88	1.259	0.30(0.26)	0.87	14759.5	31100.00
17	32797.00	64.17	1.153	0.30(0.27)	0.90	19583.0	40100.00
18	33976.57	71.92	1.101	0.30(0.27)	0.91	22813.2	11801.00
19	36036.46	82.54	1.029	0.30(0.28)	0.92	27950.0	11530.00
20	38024.75	90.23	0.978	0.30(0.28)	0.93	32758.8	11910.00
21	39383.93	95.29	0.956	0.30(0.28)	0.93	36412.3	13222.00
22	40563.66	100.22	0.935	0.30(0.28)	0.94	39716.3	10800.00
23	41153.84	104.42	0.917	0.30(0.28)	0.94	42661.6	11130.00
24	40974.17	114.01	0.875	0.30(0.28)	0.95	47702.8	12410.00
25	40510.70	122.31	0.844	0.30(0.29)	0.95	51441.9	11201.00
26	40133.25	127.28	0.834	0.30(0.29)	0.95	53173.6	12201.00
27	39187.45	134.37	0.819	0.30(0.29)	0.95	55030.8	12231.00
28	37965.32	142.22	0.803	0.30(0.29)	0.95	56665.1	10400.00
29	36690.69	150.20	0.787	0.30(0.29)	0.95	57960.2	12010.00
30	35555.26	156.21	0.774	0.30(0.29)	0.95	58307.2	10210.00
31	31625.73	184.54	0.720	0.30(0.29)	0.96	59045.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	337.32	22.37	2.061	0.30(0.30)	0.99	231.4	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7683.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17930.84	9.86	3.472	0.30(0.24)	0.79	2085.8	429.00
2	18947.77	11.37	3.204	0.30(0.24)	0.79	2404.3	425.00
3	19206.24	11.79	3.137	0.30(0.24)	0.79	2493.1	400.00
4	19856.00	13.23	2.909	0.30(0.24)	0.79	2798.7	300.00
5	21630.86	18.33	2.343	0.30(0.24)	0.80	3863.9	210.00
6	22106.56	20.37	2.178	0.30(0.24)	0.80	4271.2	410.00
7	22461.25	21.37	2.119	0.30(0.24)	0.80	4470.4	200.00
8	22649.21	21.98	2.083	0.30(0.24)	0.80	4592.2	230.00
9	22742.14	22.37	2.061	0.30(0.24)	0.80	4666.4	50700.00
10	22892.26	23.04	2.021	0.30(0.24)	0.80	4787.5	50500.00
11	22903.37	23.09	2.018	0.30(0.24)	0.80	4797.8	220.50
12	22946.04	23.27	2.008	0.30(0.24)	0.80	4838.2	50600.00
13	23450.96	25.36	1.892	0.30(0.24)	0.80	5313.8	50400.00
14	26668.02	35.17	1.579	0.30(0.25)	0.83	8638.3	50100.00
15	28341.14	42.88	1.405	0.30(0.25)	0.85	11291.7	50260.00
16	29474.92	48.17	1.320	0.30(0.26)	0.86	12990.3	600.00

17	30479.48	52.88	1.259	0.30(0.26)	0.87	14990.9	31100.00
18	32960.78	64.17	1.153	0.30(0.27)	0.90	19814.4	40100.00
19	34130.38	71.92	1.101	0.30(0.27)	0.91	23044.6	11801.00
20	36176.58	82.54	1.029	0.30(0.28)	0.92	28181.4	11530.00
21	38155.07	90.23	0.978	0.30(0.28)	0.93	32990.2	11910.00
22	39510.07	95.29	0.956	0.30(0.28)	0.93	36643.7	13222.00
23	40685.70	100.22	0.935	0.30(0.28)	0.94	39947.7	10800.00
24	41272.41	104.42	0.917	0.30(0.28)	0.94	42893.0	11130.00
25	41084.79	114.01	0.875	0.30(0.28)	0.95	47934.2	12410.00
26	40615.45	122.31	0.844	0.30(0.29)	0.95	51673.3	11201.00
27	40236.03	127.28	0.834	0.30(0.29)	0.95	53405.0	12201.00
28	39287.43	134.37	0.819	0.30(0.29)	0.95	55262.2	12231.00
29	38062.20	142.22	0.803	0.30(0.29)	0.95	56896.5	10400.00
30	36784.41	150.20	0.787	0.30(0.29)	0.95	58191.6	12010.00
31	35646.61	156.21	0.774	0.30(0.29)	0.96	58538.6	10210.00
32	31706.76	184.54	0.720	0.30(0.29)	0.96	59277.0	10100.00

TOTAL AREA(ACRES) = 59277.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 41272.41 Tc(MIN.) = 104.419
EFFECTIVE AREA(ACRES) = 42893.03 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59277.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123166.61 FEET.

****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 12.01
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.911
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	2.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41273.31
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.21
AVERAGE FLOW DEPTH(FEET) = 12.01 TRAVEL TIME(MIN.) = 1.20
Tc(MIN.) = 105.62
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 1.82
EFFECTIVE AREA(ACRES) = 42896.33 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59280.3 PEAK FLOW RATE(CFS) = 41272.41
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 12.01

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.01   FLOW VELOCITY(FEET/SEC.) =  13.21
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV36.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1     2426.61   27.79  0.30( 0.27) 0.90    1478.1     110.00
      2     2523.08   30.18  0.30( 0.27) 0.90    1650.5     100.00
      3     2535.23   31.37  0.30( 0.27) 0.90    1727.1     100.00
      4     2565.50   34.38  0.30( 0.27) 0.91    1904.1     130.00
      5     2700.64   47.40  0.30( 0.28) 0.93    2638.7   20100.00
      6     2620.76   52.90  0.30( 0.28) 0.93    2824.4   13600.00
      7     2498.72   87.84  0.30( 0.28) 0.93    3795.6   13510.00
      8     2354.93   96.73  0.30( 0.28) 0.93    3859.7   13500.00
    TOTAL AREA(ACRES) =     3859.7

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13410.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    17930.84   11.44    3.192  0.30( 0.24) 0.79    2089.1     429.00
      2    18947.77   12.92    2.959  0.30( 0.24) 0.79    2407.6     425.00
      3    19206.24   13.33    2.893  0.30( 0.24) 0.79    2496.4     400.00
      4    19856.00   14.76    2.668  0.30( 0.24) 0.79    2802.0     300.00
      5    21630.86   19.81    2.216  0.30( 0.24) 0.80    3867.2     210.00
      6    22106.56   21.84    2.092  0.30( 0.24) 0.80    4274.5     410.00
      7    22461.25   22.83    2.033  0.30( 0.24) 0.80    4473.7     200.00
      8    22649.21   23.44    1.998  0.30( 0.24) 0.80    4595.5     230.00
      9    22742.14   23.83    1.975  0.30( 0.24) 0.80    4669.7   50700.00
     10    22892.26   24.50    1.936  0.30( 0.24) 0.80    4790.8   50500.00
     11    22903.37   24.54    1.933  0.30( 0.24) 0.80    4801.1     220.50
     12    22946.04   24.72    1.923  0.30( 0.24) 0.80    4841.5   50600.00
     13    23450.96   26.81    1.837  0.30( 0.24) 0.80    5317.1   50400.00
     14    26668.02   36.55    1.542  0.30( 0.25) 0.83    8641.6   50100.00
     15    28341.14   44.24    1.383  0.30( 0.25) 0.85   11295.0   50260.00
     16    29474.92   49.51    1.298  0.30( 0.26) 0.86   12993.6     600.00
     17    30479.48   54.21    1.244  0.30( 0.26) 0.87   14994.2   31100.00
     18    32960.78   65.46    1.144  0.30( 0.27) 0.90   19817.7   40100.00
     19    34130.38   73.19    1.092  0.30( 0.27) 0.91   23047.9   11801.00
```



```
     20    36176.58   83.79    1.021  0.30( 0.28) 0.92   28184.7   11530.00
     21    38155.07   91.47    0.973  0.30( 0.28) 0.93   32993.5   11910.00
     22    39510.07   96.51    0.951  0.30( 0.28) 0.93   36647.0   13222.00
     23    40685.70  101.43    0.929  0.30( 0.28) 0.94   39951.0   10800.00
     24    41272.41  105.62    0.911  0.30( 0.28) 0.94   42896.3   11130.00
     25    41084.79  115.22    0.870  0.30( 0.28) 0.95   47937.5   12410.00
     26    40615.45  123.51    0.842  0.30( 0.29) 0.95   51676.6   11201.00
     27    40236.03  128.49    0.831  0.30( 0.29) 0.95   53408.3   12201.00
     28    39287.43  135.59    0.817  0.30( 0.29) 0.95   55265.5   12231.00
     29    38062.20  143.45    0.801  0.30( 0.29) 0.95   56899.8   10400.00
     30    36784.41  151.45    0.784  0.30( 0.29) 0.95   58194.9   12010.00
     31    35646.61  157.47    0.772  0.30( 0.29) 0.96   58541.9   10210.00
     32    31706.76  185.85    0.719  0.30( 0.29) 0.96   59280.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1     2426.61   27.79    1.799  0.30( 0.27) 0.90    1478.1     110.00
    2     2523.08   30.18    1.709  0.30( 0.27) 0.90    1650.5     100.00
    3     2535.23   31.37    1.678  0.30( 0.27) 0.90    1727.1     100.00
    4     2565.50   34.38    1.599  0.30( 0.27) 0.91    1904.1     130.00
    5     2700.64   47.40    1.332  0.30( 0.28) 0.93    2638.7   20100.00
    6     2620.76   52.90    1.258  0.30( 0.28) 0.93    2824.4   13600.00
    7     2498.72   87.84    0.994  0.30( 0.28) 0.93    3795.6   13510.00
    8     2354.93   96.73    0.950  0.30( 0.28) 0.93    3859.7   13500.00
LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    19840.52   11.44    3.192  0.30( 0.25) 0.82    2697.6     429.00
    2    20931.58   12.92    2.959  0.30( 0.25) 0.82    3094.6     425.00
    3    21203.71   13.33    2.893  0.30( 0.25) 0.82    3205.4     400.00
    4    21876.97   14.76    2.668  0.30( 0.25) 0.82    3586.9     300.00
    5    23833.22   19.81    2.216  0.30( 0.25) 0.82    4921.0     210.00
    6    24379.28   21.84    2.092  0.30( 0.25) 0.82    5436.3     410.00
    7    24761.04   22.83    2.033  0.30( 0.25) 0.82    5688.1     200.00
    8    24962.39   23.44    1.998  0.30( 0.25) 0.82    5842.4     230.00
    9    25062.51   23.83    1.975  0.30( 0.25) 0.82    5937.1   50700.00
   10    25222.68   24.50    1.936  0.30( 0.25) 0.82    6093.7   50500.00
   11    25234.35   24.54    1.933  0.30( 0.25) 0.82    6106.4     220.50
   12    25279.13   24.72    1.923  0.30( 0.25) 0.82    6156.2   50600.00
   13    25849.54   26.81    1.837  0.30( 0.25) 0.82    6742.9   50400.00
   14    26202.24   27.79    1.799  0.30( 0.25) 0.83    7130.7     110.00
   15    27086.89   30.18    1.709  0.30( 0.25) 0.83    8117.6     100.00
   16    27491.41   31.37    1.678  0.30( 0.25) 0.83    8599.6     100.00
   17    28515.81   34.38    1.599  0.30( 0.25) 0.84    9804.0     130.00
   18    29256.08   36.55    1.542  0.30( 0.25) 0.84   10668.3   50100.00
   19    31008.93   44.24    1.383  0.30( 0.26) 0.86   13755.1   50260.00
   20    31722.16   47.40    1.332  0.30( 0.26) 0.87   14953.0   20100.00
   21    32144.90   49.51    1.298  0.30( 0.26) 0.87   15703.5     600.00
   22    32820.80   52.90    1.258  0.30( 0.26) 0.88   17262.1   13600.00
   23    33095.68   54.21    1.244  0.30( 0.26) 0.88   17854.9   31100.00
   24    35537.66   65.46    1.144  0.30( 0.27) 0.90   22991.3   40100.00
   25    36680.25   73.19    1.092  0.30( 0.27) 0.91   26436.4   11801.00
   26    38689.43   83.79    1.021  0.30( 0.28) 0.92   31867.8   11530.00
   27    39718.46   87.84    0.994  0.30( 0.28) 0.93   34515.7   13510.00
```

```
     28    40595.14   91.47    0.973  0.30( 0.28) 0.93   36815.2   11910.00
     29    41868.65   96.51    0.951  0.30( 0.28) 0.93   40505.0   13222.00
     30    41918.90   96.73    0.950  0.30( 0.28) 0.93   40658.1   13500.00
     31    42969.05  101.43    0.929  0.30( 0.28) 0.94   43810.7   10800.00
     32    43491.92  105.62    0.911  0.30( 0.28) 0.94   46756.0   11130.00
     33    43158.11  115.22    0.870  0.30( 0.28) 0.95   51797.2   12410.00
     34    42590.36  123.51    0.842  0.30( 0.28) 0.95   55536.3   11201.00
     35    42174.75  128.49    0.831  0.30( 0.29) 0.95   57268.0   12201.00
     36    41174.59  135.59    0.817  0.30( 0.29) 0.95   59125.2   12231.00
     37    39892.23  143.45    0.801  0.30( 0.29) 0.95   60759.5   10400.00
     38    38556.32  151.45    0.784  0.30( 0.29) 0.95   62054.6   12010.00
     39    37374.80  157.47    0.772  0.30( 0.29) 0.95   62401.5   10210.00
     40    33249.40  185.85    0.719  0.30( 0.29) 0.95   63140.0   10100.00
    TOTAL AREA(ACRES) =     63140.0

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    43491.92  Tc(MIN.) =  105.621
  EFFECTIVE AREA(ACRES) =  46756.02  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    63140.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13410.00 =  124119.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13410.00 TO NODE  13412.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    178.72  DOWNSTREAM(FEET) =    176.93
  CHANNEL LENGTH THRU SUBAREA(FEET) =   169.78   CHANNEL SLOPE =  0.0105
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   9.04
  CHANNEL FLOW THRU SUBAREA(CFS) =   43491.92
  FLOW VELOCITY(FEET/SEC.) =  19.63   FLOW DEPTH(FEET) =   9.04
  TRAVEL TIME(MIN.) =   0.14   Tc(MIN.) =  105.77
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506101C.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      570.78   37.58  0.30( 0.30) 0.98     591.0   10100.00
    TOTAL AREA(ACRES) =      591.0

****************************************************************************
  FLOW PROCESS FROM NODE  13412.00 TO NODE  13412.00 IS CODE =  11
```



```
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    19840.52   11.63    3.163  0.30( 0.25) 0.82    2697.6     429.00
      2    20931.58   13.10    2.929  0.30( 0.25) 0.82    3094.6     425.00
      3    21203.71   13.51    2.864  0.30( 0.25) 0.82    3205.4     400.00
      4    21876.97   14.94    2.639  0.30( 0.25) 0.82    3586.9     300.00
      5    23833.22   19.99    2.201  0.30( 0.25) 0.82    4921.0     210.00
      6    24379.28   22.02    2.081  0.30( 0.25) 0.82    5436.3     410.00
      7    24761.04   23.01    2.023  0.30( 0.25) 0.82    5688.1     200.00
      8    24962.39   23.62    1.987  0.30( 0.25) 0.82    5842.4     230.00
      9    25062.51   24.00    1.965  0.30( 0.25) 0.82    5937.1   50700.00
     10    25222.68   24.67    1.925  0.30( 0.25) 0.82    6093.7   50500.00
     11    25234.35   24.71    1.923  0.30( 0.25) 0.82    6106.4     220.50
     12    25279.13   24.89    1.912  0.30( 0.25) 0.82    6156.2   50600.00
     13    25849.54   26.98    1.830  0.30( 0.25) 0.82    6742.9   50400.00
     14    26202.24   27.96    1.792  0.30( 0.25) 0.83    7130.7     110.00
     15    27086.89   30.35    1.705  0.30( 0.25) 0.83    8117.6     100.00
     16    27491.41   31.54    1.674  0.30( 0.25) 0.83    8599.6     100.00
     17    28515.81   34.55    1.595  0.30( 0.25) 0.84    9804.0     130.00
     18    29256.08   36.72    1.538  0.30( 0.25) 0.84   10668.3   50100.00
     19    31008.93   44.40    1.381  0.30( 0.26) 0.86   13755.1   50260.00
     20    31722.16   47.56    1.329  0.30( 0.26) 0.87   14953.0   20100.00
     21    32144.90   49.67    1.295  0.30( 0.26) 0.87   15703.5     600.00
     22    32820.80   53.06    1.257  0.30( 0.26) 0.88   17262.1   13600.00
     23    33095.68   54.36    1.242  0.30( 0.26) 0.88   17854.9   31100.00
     24    35537.66   65.62    1.143  0.30( 0.27) 0.90   22991.3   40100.00
     25    36680.25   73.35    1.091  0.30( 0.27) 0.91   26436.4   11801.00
     26    38689.43   83.94    1.020  0.30( 0.28) 0.92   31867.8   11530.00
     27    39718.46   87.99    0.993  0.30( 0.28) 0.93   34515.7   13510.00
     28    40595.14   91.61    0.972  0.30( 0.28) 0.93   36815.2   11910.00
     29    41868.65   96.65    0.950  0.30( 0.28) 0.93   40505.0   13222.00
     30    41918.90   96.88    0.949  0.30( 0.28) 0.93   40658.1   13500.00
     31    42969.05  101.58    0.929  0.30( 0.28) 0.94   43810.7   10800.00
     32    43491.92  105.77    0.911  0.30( 0.28) 0.94   46756.0   11130.00
     33    43158.11  115.36    0.869  0.30( 0.28) 0.95   51797.2   12410.00
     34    42590.36  123.66    0.841  0.30( 0.28) 0.95   55536.3   11201.00
     35    42174.75  128.64    0.831  0.30( 0.29) 0.95   57268.0   12201.00
     36    41174.59  135.74    0.816  0.30( 0.29) 0.95   59125.2   12231.00
     37    39892.23  143.60    0.800  0.30( 0.29) 0.95   60759.5   10400.00
     38    38556.32  151.60    0.784  0.30( 0.29) 0.95   62054.6   12010.00
     39    37374.80  157.62    0.771  0.30( 0.29) 0.95   62401.5   10210.00
     40    33249.40  186.01    0.719  0.30( 0.29) 0.95   63140.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =  124289.12 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      570.78   37.58    1.515  0.30( 0.30) 0.98     591.0   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13412.00 =   14677.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
```

1	20255.47	11.63	3.163	0.30(0.25)	0.83	2880.4	429.00
2	21361.12	13.10	2.929	0.30(0.25)	0.83	3300.6	425.00
3	21635.80	13.51	2.864	0.30(0.25)	0.83	3417.9	400.00
4	22312.72	14.94	2.639	0.30(0.25)	0.83	3821.8	300.00
5	24307.37	19.99	2.201	0.30(0.25)	0.83	5235.4	210.00
6	24868.79	22.02	2.081	0.30(0.25)	0.83	5782.6	410.00
7	25255.88	23.01	2.023	0.30(0.25)	0.83	6050.0	200.00
8	25459.81	23.62	1.987	0.30(0.25)	0.83	6213.8	230.00
9	25561.28	24.00	1.965	0.30(0.25)	0.83	6314.6	50700.00
10	25723.27	24.67	1.925	0.30(0.25)	0.83	6481.7	50500.00
11	25735.03	24.71	1.923	0.30(0.25)	0.83	6495.1	220.50
12	25780.18	24.89	1.912	0.30(0.25)	0.83	6547.6	50600.00
13	26364.94	26.98	1.830	0.30(0.25)	0.83	7167.1	50400.00
14	26723.29	27.96	1.792	0.30(0.25)	0.84	7570.4	110.00
15	27619.40	30.35	1.705	0.30(0.25)	0.84	8594.9	100.00
16	28032.54	31.54	1.674	0.30(0.25)	0.84	9095.6	100.00
17	29074.69	34.55	1.595	0.30(0.25)	0.85	10347.3	130.00
18	29824.09	36.72	1.538	0.30(0.25)	0.85	11245.8	50100.00
19	30023.18	37.58	1.515	0.30(0.26)	0.85	11605.1	10100.00
20	31516.71	44.40	1.381	0.30(0.26)	0.86	14346.1	50260.00
21	32205.97	47.56	1.329	0.30(0.26)	0.87	15544.0	20100.00
22	32612.73	49.67	1.295	0.30(0.26)	0.87	16294.5	600.00
23	33270.55	53.06	1.257	0.30(0.26)	0.88	17853.1	13600.00
24	33538.77	54.36	1.242	0.30(0.26)	0.88	18445.9	31100.00
25	35934.34	65.62	1.143	0.30(0.27)	0.90	23582.3	40100.00
26	37052.59	73.35	1.091	0.30(0.27)	0.91	27027.4	11801.00
27	39028.39	83.94	1.020	0.30(0.28)	0.92	32458.8	11530.00
28	40044.69	87.99	0.993	0.30(0.28)	0.93	35106.7	13510.00
29	40911.76	91.61	0.972	0.30(0.28)	0.93	37406.2	11910.00
30	42175.06	96.65	0.950	0.30(0.28)	0.93	41096.0	13222.00
31	42224.85	96.88	0.949	0.30(0.28)	0.93	41249.1	13500.00
32	43265.48	101.58	0.929	0.30(0.28)	0.94	44401.7	10800.00
33	43779.86	105.77	0.911	0.30(0.28)	0.94	47347.0	11130.00
34	43426.60	115.36	0.869	0.30(0.28)	0.95	52388.2	12410.00
35	42845.91	123.66	0.841	0.30(0.28)	0.95	56127.3	11201.00
36	42425.50	128.64	0.831	0.30(0.29)	0.95	57859.0	12201.00
37	41418.47	135.74	0.816	0.30(0.29)	0.95	59716.2	12231.00
38	40128.51	143.60	0.800	0.30(0.29)	0.95	61350.5	10400.00
39	38784.87	151.60	0.784	0.30(0.29)	0.95	62645.6	12010.00
40	37597.54	157.62	0.771	0.30(0.29)	0.95	62992.5	10210.00
41	33447.52	186.01	0.719	0.30(0.29)	0.95	63731.0	10100.00

TOTAL AREA(ACRES) = 63731.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 43779.86 Tc(MIN.) = 105.765
EFFECTIVE AREA(ACRES) = 47347.02 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63731.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124289.12 FEET.

****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 176.93 DOWNSTREAM(FEET) = 173.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.10 CHANNEL SLOPE = 0.0151

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.19
CHANNEL FLOW THRU SUBAREA(CFS) = 43779.86
FLOW VELOCITY(FEET/SEC.) = 22.19 FLOW DEPTH(FEET) = 8.19
TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 105.96
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 2 <<<<<
==

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 2 <<<<<
==
PEAK FLOWRATE TABLE FILE NAME: P508XX50.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	192.92	22.10	0.30(0.30)	0.99	131.3	50800.00

TOTAL AREA(ACRES) = 131.3

****
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
==

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20255.47	11.88	3.122	0.30(0.25)	0.83	2880.4	429.00
2	21361.12	13.35	2.890	0.30(0.25)	0.83	3300.6	425.00
3	21635.80	13.76	2.825	0.30(0.25)	0.83	3417.9	400.00
4	22312.72	15.18	2.613	0.30(0.25)	0.83	3821.8	300.00
5	24307.37	20.23	2.187	0.30(0.25)	0.83	5235.4	210.00
6	24868.79	22.25	2.067	0.30(0.25)	0.83	5782.6	410.00
7	25255.88	23.24	2.009	0.30(0.25)	0.83	6050.0	200.00
8	25459.81	23.85	1.974	0.30(0.25)	0.83	6213.8	230.00
9	25561.28	24.24	1.951	0.30(0.25)	0.83	6314.6	50700.00
10	25723.27	24.90	1.912	0.30(0.25)	0.83	6481.7	50500.00
11	25735.03	24.95	1.909	0.30(0.25)	0.83	6495.1	220.50
12	25780.18	25.12	1.901	0.30(0.25)	0.83	6547.6	50600.00
13	26364.94	27.21	1.821	0.30(0.25)	0.83	7167.1	50400.00
14	26723.29	28.19	1.783	0.30(0.25)	0.84	7570.4	110.00
15	27619.40	30.58	1.699	0.30(0.25)	0.84	8594.9	100.00
16	28032.54	31.76	1.668	0.30(0.25)	0.84	9095.6	100.00
17	29074.69	34.77	1.589	0.30(0.25)	0.85	10347.3	130.00
18	29824.09	36.94	1.532	0.30(0.25)	0.85	11245.8	50100.00
19	30023.18	37.80	1.510	0.30(0.26)	0.85	11605.1	10100.00
20	31516.71	44.62	1.377	0.30(0.26)	0.86	14346.1	50260.00
21	32205.97	47.78	1.326	0.30(0.26)	0.87	15544.0	20100.00
22	32612.73	49.89	1.292	0.30(0.26)	0.87	16294.5	600.00
23	33270.55	53.27	1.254	0.30(0.26)	0.88	17853.1	13600.00

24	33538.77	54.58	1.240	0.30(0.26)	0.88	18445.9	31100.00
25	35934.34	65.82	1.142	0.30(0.27)	0.90	23582.3	40100.00
26	37052.59	73.55	1.090	0.30(0.27)	0.91	27027.4	11801.00
27	39028.39	84.15	1.018	0.30(0.28)	0.92	32458.8	11530.00
28	40044.69	88.19	0.991	0.30(0.28)	0.93	35106.7	13510.00
29	40911.76	91.81	0.971	0.30(0.28)	0.93	37406.2	11910.00
30	42175.06	96.85	0.949	0.30(0.28)	0.93	41096.0	13222.00
31	42224.85	97.08	0.948	0.30(0.28)	0.93	41249.1	13500.00
32	43265.48	101.77	0.928	0.30(0.28)	0.94	44401.7	10800.00
33	43779.86	105.96	0.910	0.30(0.28)	0.94	47347.0	11130.00
34	43426.60	115.56	0.868	0.30(0.28)	0.95	52388.2	12410.00
35	42845.91	123.86	0.841	0.30(0.28)	0.95	56127.3	11201.00
36	42425.50	128.84	0.831	0.30(0.29)	0.95	57859.0	12201.00
37	41418.47	135.94	0.816	0.30(0.29)	0.95	59716.2	12231.00
38	40128.51	143.80	0.800	0.30(0.29)	0.95	61350.5	10400.00
39	38784.87	151.80	0.783	0.30(0.29)	0.95	62645.6	12010.00
40	37597.54	157.82	0.771	0.30(0.29)	0.95	62992.5	10210.00
41	33447.52	186.22	0.718	0.30(0.29)	0.95	63731.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	192.92	22.10	2.076	0.30(0.30)	0.99	131.3	50800.00

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20420.13	11.88	3.122	0.30(0.25)	0.83	2951.0	429.00
2	21530.91	13.35	2.890	0.30(0.25)	0.83	3380.0	425.00
3	21806.44	13.76	2.825	0.30(0.25)	0.83	3499.7	400.00
4	22485.22	15.18	2.613	0.30(0.25)	0.83	3912.0	300.00
5	24494.87	20.23	2.187	0.30(0.25)	0.83	5355.6	210.00
6	25019.72	22.10	2.076	0.30(0.25)	0.83	5873.0	50800.00
7	25060.75	22.25	2.067	0.30(0.25)	0.83	5913.9	410.00
8	25441.54	23.24	2.009	0.30(0.25)	0.83	6181.3	200.00
9	25641.59	23.85	1.974	0.30(0.25)	0.83	6345.1	230.00
10	25740.60	24.24	1.951	0.30(0.25)	0.83	6445.9	50700.00
11	25898.34	24.90	1.912	0.30(0.25)	0.84	6613.0	50500.00
12	25909.82	24.95	1.909	0.30(0.25)	0.84	6626.4	220.50
13	25954.12	25.12	1.901	0.30(0.25)	0.84	6678.9	50600.00
14	26530.20	27.21	1.821	0.30(0.25)	0.84	7298.4	50400.00
15	26884.46	28.19	1.783	0.30(0.25)	0.84	7701.7	110.00
16	27771.41	30.58	1.699	0.30(0.25)	0.84	8726.2	100.00
17	28181.19	31.76	1.668	0.30(0.25)	0.84	9226.9	100.00
18	29214.79	34.77	1.589	0.30(0.25)	0.85	10478.6	130.00
19	29958.03	36.94	1.532	0.30(0.26)	0.85	11377.1	50100.00
20	30154.68	37.80	1.510	0.30(0.26)	0.85	11736.4	10100.00
21	31633.86	44.62	1.377	0.30(0.26)	0.87	14477.4	50260.00
22	32317.56	47.78	1.326	0.30(0.26)	0.87	15675.3	20100.00
23	32720.62	49.89	1.292	0.30(0.26)	0.87	16425.8	600.00
24	33374.38	53.27	1.254	0.30(0.26)	0.88	17984.4	13600.00
25	33641.06	54.58	1.240	0.30(0.27)	0.88	18577.2	31100.00
26	36025.97	65.82	1.142	0.30(0.27)	0.90	23713.6	40100.00
27	37138.57	73.55	1.090	0.30(0.27)	0.91	27158.7	11801.00
28	39106.64	84.15	1.018	0.30(0.28)	0.92	32590.1	11530.00
29	40119.99	88.19	0.991	0.30(0.28)	0.93	35238.0	13510.00

30	40984.89	91.81	0.971	0.30(0.28)	0.93	37537.5	11910.00
31	42245.82	96.85	0.949	0.30(0.28)	0.93	41227.3	13222.00
32	42295.51	97.08	0.948	0.30(0.28)	0.93	41380.4	13500.00
33	43333.94	101.77	0.928	0.30(0.28)	0.94	44533.0	10800.00
34	43846.34	105.96	0.910	0.30(0.28)	0.94	47478.3	11130.00
35	43488.58	115.56	0.868	0.30(0.28)	0.95	52519.5	12410.00
36	42904.94	123.86	0.841	0.30(0.28)	0.95	56258.6	11201.00
37	42483.41	128.84	0.831	0.30(0.29)	0.95	57990.3	12201.00
38	41474.79	135.94	0.816	0.30(0.29)	0.95	59847.5	12231.00
39	40183.07	143.80	0.800	0.30(0.29)	0.95	61481.8	10400.00
40	38837.64	151.80	0.783	0.30(0.29)	0.95	62776.9	12010.00
41	37648.96	157.82	0.771	0.30(0.29)	0.95	63123.8	10210.00
42	33493.25	186.22	0.718	0.30(0.29)	0.95	63862.3	10100.00

TOTAL AREA(ACRES) = 63862.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 43846.34 Tc(MIN.) = 105.961
EFFECTIVE AREA(ACRES) = 47478.32 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63862.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124549.22 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 63862.3 TC(MIN.) = 105.96
EFFECTIVE AREA(ACRES) = 47478.32 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.943
PEAK FLOW RATE(CFS) = 43846.34

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20420.13	11.88	3.122	0.30(0.25)	0.83	2951.0	429.00
2	21530.91	13.35	2.890	0.30(0.25)	0.83	3380.0	425.00
3	21806.44	13.76	2.825	0.30(0.25)	0.83	3499.7	400.00
4	22485.22	15.18	2.613	0.30(0.25)	0.83	3912.0	300.00
5	24494.87	20.23	2.187	0.30(0.25)	0.83	5355.6	210.00
6	25019.72	22.10	2.076	0.30(0.25)	0.83	5873.0	50800.00
7	25060.75	22.25	2.067	0.30(0.25)	0.83	5913.9	410.00
8	25441.54	23.24	2.009	0.30(0.25)	0.83	6181.3	200.00
9	25641.59	23.85	1.974	0.30(0.25)	0.83	6345.1	230.00
10	25740.60	24.24	1.951	0.30(0.25)	0.83	6445.9	50700.00
11	25898.34	24.90	1.912	0.30(0.25)	0.84	6613.0	50500.00
12	25909.82	24.95	1.909	0.30(0.25)	0.84	6626.4	220.50
13	25954.12	25.12	1.901	0.30(0.25)	0.84	6678.9	50600.00
14	26530.20	27.21	1.821	0.30(0.25)	0.84	7298.4	50400.00
15	26884.46	28.19	1.783	0.30(0.25)	0.84	7701.7	110.00
16	27771.41	30.58	1.699	0.30(0.25)	0.84	8726.2	100.00
17	28181.19	31.76	1.668	0.30(0.25)	0.84	9226.9	100.00
18	29214.79	34.77	1.589	0.30(0.25)	0.85	10478.6	130.00
19	29958.03	36.94	1.532	0.30(0.26)	0.85	11377.1	50100.00
20	30154.68	37.80	1.510	0.30(0.26)	0.85	11736.4	10100.00
21	31633.86	44.62	1.377	0.30(0.26)	0.87	14477.4	50260.00
22	32317.56	47.78	1.326	0.30(0.26)	0.87	15675.3	20100.00
23	32720.62	49.89	1.292	0.30(0.26)	0.87	16425.8	600.00
24	33374.38	53.27	1.254	0.30(0.26)	0.88	17984.4	13600.00
25	33641.06	54.58	1.240	0.30(0.27)	0.88	18577.2	31100.00
26	36025.97	65.82	1.142	0.30(0.27)	0.90	23713.6	40100.00
27	37138.57	73.55	1.090	0.30(0.27)	0.91	27158.7	11801.00

28	39106.64	84.15	1.018	0.30(0.28)	0.92	32590.1	11530.00
29	40119.99	88.19	0.991	0.30(0.28)	0.93	35238.0	13510.00
30	40984.89	91.81	0.971	0.30(0.28)	0.93	37537.5	11910.00
31	42245.82	96.85	0.949	0.30(0.28)	0.93	41227.3	13222.00
32	42295.51	97.08	0.948	0.30(0.28)	0.93	41380.4	13500.00
33	43333.94	101.77	0.928	0.30(0.28)	0.94	44533.0	10800.00
34	43846.34	105.96	0.910	0.30(0.28)	0.94	47478.3	11130.00
35	43488.58	115.56	0.868	0.30(0.28)	0.95	52519.5	12410.00
36	42904.94	123.86	0.841	0.30(0.28)	0.95	56258.6	11201.00
37	42483.41	128.84	0.831	0.30(0.29)	0.95	57990.3	12201.00
38	41474.79	135.94	0.816	0.30(0.29)	0.95	59847.5	12231.00
39	40183.07	143.80	0.800	0.30(0.29)	0.95	61481.8	10400.00
40	38837.64	151.80	0.783	0.30(0.29)	0.95	62776.9	12010.00
41	37648.96	157.82	0.771	0.30(0.29)	0.95	63123.8	10210.00
42	33493.25	186.22	0.718	0.30(0.29)	0.95	63862.3	10100.00

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2013 Advanced Engineering Software (aes)
              Ver. 20.0  Release Date: 06/01/2013  License ID 1237

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 136 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 50-YR EV MAY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU50EV36.DAT
  TIME/DATE OF STUDY: 13:20 05/11/2023
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.245
   2)   10.00;  3.396
   3)   15.00;  2.615
   4)   20.00;  2.190
   5)   25.00;  1.899
   6)   30.00;  1.707
   7)   40.00;  1.447
   8)   50.00;  1.285
   9)   60.00;  1.174
  10)   90.00;  0.972
  11)  120.00;  0.842
  12)  180.00;  0.717
  13)  360.00;  0.527
  14) 1200.00;  0.230
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13600.00 TO NODE  13600.50 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   488.61
  ELEVATION DATA: UPSTREAM(FEET) =    872.12  DOWNSTREAM(FEET) =    744.80

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.995
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.241
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "OPEN BRUSH"                -        3.39      0.30     1.000    65   11.00
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =      8.97
  TOTAL AREA(ACRES) =      3.39   PEAK FLOW RATE(CFS) =      8.97

************************************************************************
  FLOW PROCESS FROM NODE  13600.50 TO NODE  13601.00 IS CODE =  56
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    744.80  DOWNSTREAM(FEET) =    707.32
  CHANNEL LENGTH THRU SUBAREA(FEET) =   418.30   CHANNEL SLOPE =  0.0896
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.43
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.962
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED                -        7.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.92
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.91
  AVERAGE FLOW DEPTH(FEET) =   0.42   TRAVEL TIME(MIN.) =   1.78
  Tc(MIN.) =   12.78
  SUBAREA AREA(ACRES) =     7.45       SUBAREA RUNOFF(CFS) =   17.85
  EFFECTIVE AREA(ACRES) =     10.84     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       10.8         PEAK FLOW RATE(CFS) =      25.97
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.52   FLOW VELOCITY(FEET/SEC.) =   4.49
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13601.00 =     906.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13601.00 TO NODE  13602.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    707.32  DOWNSTREAM(FEET) =    657.12
  CHANNEL LENGTH THRU SUBAREA(FEET) =   777.60   CHANNEL SLOPE =  0.0646
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.97
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.596
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.32      0.30     1.000     -
  USER-DEFINED               -        4.70      0.30     1.000     -
  USER-DEFINED               -       25.05      0.30     1.000     -
  USER-DEFINED               -        0.45      0.30     1.000     -
  USER-DEFINED               -        0.44      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.29
  AVERAGE FLOW DEPTH(FEET) =   0.93   TRAVEL TIME(MIN.) =   2.45
  Tc(MIN.) =   15.23
  SUBAREA AREA(ACRES) =    30.96       SUBAREA RUNOFF(CFS) =   63.97
  EFFECTIVE AREA(ACRES) =     41.80     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.8         PEAK FLOW RATE(CFS) =      86.36
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.16   FLOW VELOCITY(FEET/SEC.) =   6.03
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13602.00 =    1684.51 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13602.00 TO NODE  13603.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.12  DOWNSTREAM(FEET) =    584.58
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1186.54   CHANNEL SLOPE =  0.0611
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.36
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.331
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.03      0.30     1.000     -
  USER-DEFINED               -        2.51      0.30     1.000     -
```



```
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -       12.30      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     107.74
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.35
  AVERAGE FLOW DEPTH(FEET) =   1.34   TRAVEL TIME(MIN.) =   3.11
  Tc(MIN.) =   18.34
  SUBAREA AREA(ACRES) =    23.36       SUBAREA RUNOFF(CFS) =   42.70
  EFFECTIVE AREA(ACRES) =     65.16     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       65.2         PEAK FLOW RATE(CFS) =     119.11
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.41   FLOW VELOCITY(FEET/SEC.) =   6.56
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13603.00 =    2871.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    584.58  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =   860.98   CHANNEL SLOPE =  0.0461
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.67
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.152
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       10.22      0.30     1.000     -
  USER-DEFINED               -        4.19      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  USER-DEFINED               -        0.09      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
  AVERAGE FLOW DEPTH(FEET) =   1.65   TRAVEL TIME(MIN.) =   2.31
  Tc(MIN.) =   20.65
  SUBAREA AREA(ACRES) =    21.24       SUBAREA RUNOFF(CFS) =   35.41
  EFFECTIVE AREA(ACRES) =     86.40     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       86.4         PEAK FLOW RATE(CFS) =     144.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.70   FLOW VELOCITY(FEET/SEC.) =   6.30
  LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: S35X50.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1198.50   52.93  0.30( 0.28) 0.95    1515.8   13510.00
      2     1092.68   61.25  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =     1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13522.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
      1     1198.50   52.93  0.30( 0.28) 0.95    1515.8   13510.00
      2     1092.68   61.25  0.30( 0.28) 0.94    1579.8   13500.00
    TOTAL AREA(ACRES) =      1579.8

****************************************************************************
  FLOW PROCESS FROM NODE  13522.00 TO NODE  13620.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    632.19  DOWNSTREAM(FEET) =    544.91
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2062.96   CHANNEL SLOPE =  0.0423
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       17.68      0.30     1.000     -
  USER-DEFINED               -        2.36      0.30     1.000     -
  USER-DEFINED               -        0.60      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.22      0.30     1.000     -
  USER-DEFINED               -        3.42      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1209.50
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.50
```



```
  AVERAGE FLOW DEPTH(FEET) =   2.57   TRAVEL TIME(MIN.) =   2.75
  Tc(MIN.) =   55.68
  SUBAREA AREA(ACRES) =    26.50       SUBAREA RUNOFF(CFS) =   22.00
  EFFECTIVE AREA(ACRES) =   1542.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
  TOTAL AREA(ACRES) =     1606.3          PEAK FLOW RATE(CFS) =    1301.65
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.68

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.68   FLOW VELOCITY(FEET/SEC.) =  12.80
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1301.65   55.68    1.222  0.30( 0.28) 0.95    1542.3   13510.00
      2     1247.57   64.08    1.147  0.30( 0.28) 0.95    1606.3   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1301.65  Tc(MIN.) =   55.68
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1542.26

****************************************************************************
  FLOW PROCESS FROM NODE  13620.00 TO NODE  13620.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   55.68
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.222
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.44      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.01      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    1.45      SUBAREA RUNOFF(CFS) =    1.20
  EFFECTIVE AREA(ACRES) =   1543.71   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =     1607.8       PEAK FLOW RATE(CFS) =    1302.85

****************************************************************************
  FLOW PROCESS FROM NODE  13603.00 TO NODE  13620.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1302.85   55.68    1.222  0.30( 0.28) 0.95    1543.7   13510.00
      2     1248.68   64.08    1.147  0.30( 0.28) 0.95    1607.8   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.
```

```
 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      144.04   20.65    2.152  0.30( 0.30) 1.00       86.4   13600.00
 LONGEST FLOWPATH FROM NODE  13600.00 TO NODE  13620.00 =    3732.03 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1106.54   20.65    2.152  0.30( 0.29) 0.95      658.9   13600.00
     2     1374.55   55.68    1.222  0.30( 0.29) 0.95     1630.1   13510.00
     3     1314.51   64.08    1.147  0.30( 0.28) 0.95     1694.2   13500.00
   TOTAL AREA(ACRES) =      1694.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1374.55  Tc(MIN.) =   55.676
 EFFECTIVE AREA(ACRES) =   1630.11  AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1694.2
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13620.00 =   20677.72 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13620.00 TO NODE  13640.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    544.91  DOWNSTREAM(FEET) =    489.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1384.37   CHANNEL SLOPE =  0.0404
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.82
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        5.39      0.30     1.000     -
 USER-DEFINED               -       16.30      0.30     1.000     -
 USER-DEFINED               -        4.08      0.30     1.000     -
 USER-DEFINED               -       12.36      0.30     1.000     -
 USER-DEFINED               -       11.23      0.30     1.000     -
 USER-DEFINED               -        5.16      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1396.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.88
 AVERAGE FLOW DEPTH(FEET) =   2.82   TRAVEL TIME(MIN.) =   1.79
 Tc(MIN.) =   57.47
 SUBAREA AREA(ACRES) =    54.52       SUBAREA RUNOFF(CFS) =   44.27
 EFFECTIVE AREA(ACRES) =   1684.63     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     1748.7         PEAK FLOW RATE(CFS) =    1389.65
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.81

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  2.81   FLOW VELOCITY(FEET/SEC.) =  12.87
```



```
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1126.15   22.55    2.041  0.30( 0.29) 0.96      713.4   13600.00
     2     1389.65   57.47    1.202  0.30( 0.29) 0.95     1684.6   13510.00
     3     1336.79   65.90    1.134  0.30( 0.28) 0.95     1748.7   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1389.65  Tc(MIN.) =   57.47
 AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1684.63

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   57.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.202
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       53.93      0.30     1.000     -
 USER-DEFINED               -        0.45      0.30     1.000     -
 USER-DEFINED               -        3.98      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   58.36      SUBAREA RUNOFF(CFS) =   47.39
 EFFECTIVE AREA(ACRES) =   1742.99   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1807.1       PEAK FLOW RATE(CFS) =    1437.03

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE = 15.1
----------------------------------------------------------------------------
 >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
 PEAK FLOWRATE TABLE FILE NAME: P201XX50.DNA
 MEMORY BANK #  3 DEFINED AS FOLLOWS:
  STREAM        Q      Tc       Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)  (MIN.)  (INCH/HR)          (ACRES)    NODE
     1      238.49   17.13  0.30( 0.26) 0.85      133.8   20100.00
   TOTAL AREA(ACRES) =      133.8

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13640.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM        Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1217.61   22.55    2.041  0.30( 0.29) 0.96      771.8   13600.00
     2     1437.03   57.47    1.202  0.30( 0.29) 0.95     1743.0   13510.00
     3     1380.61   65.90    1.134  0.30( 0.29) 0.95     1807.1   13500.00
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.
```

```
 ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      238.49   17.13    2.434  0.30( 0.26) 0.85     133.8   20100.00
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  13640.00 =    5247.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1370.34   17.13    2.434  0.30( 0.28) 0.94     719.9   20100.00
     2     1413.09   22.55    2.041  0.30( 0.28) 0.95     905.6   13600.00
     3     1540.61   57.47    1.202  0.30( 0.28) 0.95    1876.8   13510.00
     4     1476.77   65.90    1.134  0.30( 0.28) 0.94    1940.9   13500.00
   TOTAL AREA(ACRES) =      1940.9

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     1540.61  Tc(MIN.) =   57.467
 EFFECTIVE AREA(ACRES) =   1876.79  AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     1940.9
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13640.00 =   22062.09 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13640.00 TO NODE  13641.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    489.00  DOWNSTREAM(FEET) =    436.89
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2994.52   CHANNEL SLOPE =  0.0174
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.79
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.96      0.30     1.000     -
 USER-DEFINED               -        0.01      0.30     1.000     -
 USER-DEFINED               -        1.56      0.30     1.000     -
 USER-DEFINED               -       10.45      0.30     1.000     -
 USER-DEFINED               -       44.94      0.30     1.000     -
 USER-DEFINED               -        9.66      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1566.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.98
 AVERAGE FLOW DEPTH(FEET) =   3.79   TRAVEL TIME(MIN.) =   5.00
 Tc(MIN.) =   62.47
 SUBAREA AREA(ACRES) =    67.58       SUBAREA RUNOFF(CFS) =   52.15
 EFFECTIVE AREA(ACRES) =   1944.37     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =     2008.4         PEAK FLOW RATE(CFS) =    1540.61
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.76
```



```
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.76   FLOW VELOCITY(FEET/SEC.) =   9.93
 LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13641.00 =   25056.61 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1     1370.34   22.27    2.058  0.30( 0.28) 0.95     787.5   20100.00
     2     1413.09   27.67    1.797  0.30( 0.28) 0.95     973.1   13600.00
     3     1540.61   62.47    1.157  0.30( 0.28) 0.95    1944.4   13510.00
     4     1476.77   70.96    1.100  0.30( 0.28) 0.95    2008.4   13500.00
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =    1540.61  Tc(MIN.) =   62.47
 AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
 AREA-AVERAGED Ap =  0.95  EFFECTIVE AREA(ACRES) =    1944.37

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   62.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -       16.49      0.30     1.000     -
 USER-DEFINED               -       20.39      0.30     1.000     -
 USER-DEFINED               -        7.02      0.30     1.000     -
 USER-DEFINED               -       12.58      0.30     1.000     -
 USER-DEFINED               -       42.49      0.30     1.000     -
 USER-DEFINED               -        5.73      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =  104.70      SUBAREA RUNOFF(CFS) =   80.80
 EFFECTIVE AREA(ACRES) =   2049.07   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2113.1       PEAK FLOW RATE(CFS) =    1608.30

****************************************************************************
 FLOW PROCESS FROM NODE  13641.00 TO NODE  13641.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   62.47
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.157
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        1.78      0.30     1.000     -
 USER-DEFINED               -        6.25      0.30     1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =    8.03      SUBAREA RUNOFF(CFS) =    6.20
 EFFECTIVE AREA(ACRES) =   2057.10   AREA-AVERAGED Fm(INCH/HR) =  0.29
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.95
 TOTAL AREA(ACRES) =     2121.2       PEAK FLOW RATE(CFS) =    1614.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13641.00 TO NODE  13642.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.89  DOWNSTREAM(FEET) =    394.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2814.16   CHANNEL SLOPE =  0.0150
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.13
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -       24.24      0.30     1.000     -
  USER-DEFINED               -        1.34      0.30     1.000     -
  USER-DEFINED               -       74.98      0.30     1.000     -
  USER-DEFINED               -      101.12      0.30     1.000     -
  USER-DEFINED               -       16.90      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1695.89
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.70
  AVERAGE FLOW DEPTH(FEET) =   4.12   TRAVEL TIME(MIN.) =   4.83
  Tc(MIN.) =   67.30
  SUBAREA AREA(ACRES) =   219.25       SUBAREA RUNOFF(CFS) =  162.77
  EFFECTIVE AREA(ACRES) =   2276.35     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2340.4         PEAK FLOW RATE(CFS) =    1717.01
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.16

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.16   FLOW VELOCITY(FEET/SEC.) =   9.73
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13642.00 =   27870.77 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     1536.97   27.21    1.814  0.30( 0.29) 0.96    1119.4   20100.00
      2     1587.17   32.58    1.640  0.30( 0.29) 0.96    1305.1   13600.00
      3     1717.01   67.30    1.125  0.30( 0.29) 0.96    2276.4   13510.00
      4     1645.19   75.85    1.067  0.30( 0.29) 0.95    2340.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1717.01  Tc(MIN.) =   67.30
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2276.35

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   67.30
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        9.95      0.30     1.000     -
  USER-DEFINED               -       10.02      0.30     1.000     -
  USER-DEFINED               -        4.45      0.30     1.000     -
  USER-DEFINED               -      179.37      0.30     1.000     -
  USER-DEFINED               -       11.47      0.30     1.000     -
  USER-DEFINED               -        0.17      0.30     0.850     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  215.43      SUBAREA RUNOFF(CFS) =  159.94
  EFFECTIVE AREA(ACRES) =   2491.78   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2555.9       PEAK FLOW RATE(CFS) =    1876.96

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13642.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   67.30
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.125
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.03      0.30     0.850     -
  USER-DEFINED               -        5.14      0.30     1.000     -
  USER-DEFINED               -       11.22      0.30     1.000     -
  USER-DEFINED               -        0.33      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   16.72      SUBAREA RUNOFF(CFS) =   12.41
  EFFECTIVE AREA(ACRES) =   2508.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2572.6       PEAK FLOW RATE(CFS) =    1889.37

****************************************************************************
  FLOW PROCESS FROM NODE  13642.00 TO NODE  13643.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    394.80  DOWNSTREAM(FEET) =    342.39
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2913.57   CHANNEL SLOPE =  0.0180
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.23
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.17      0.30     1.000     -
  USER-DEFINED               -        9.19      0.30     1.000     -
  USER-DEFINED               -       67.57      0.30     1.000     -
  USER-DEFINED               -       35.19      0.30     1.000     -
```

```
  USER-DEFINED               -       30.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1941.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.77
  AVERAGE FLOW DEPTH(FEET) =   4.22   TRAVEL TIME(MIN.) =   4.51
  Tc(MIN.) =   71.81
  SUBAREA AREA(ACRES) =   145.01       SUBAREA RUNOFF(CFS) =  103.69
  EFFECTIVE AREA(ACRES) =   2653.51     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.96
  TOTAL AREA(ACRES) =     2717.6         PEAK FLOW RATE(CFS) =    1924.53
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.21

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.21   FLOW VELOCITY(FEET/SEC.) =  10.73
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13643.00 =   30784.34 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     1853.35   31.72    1.662  0.30( 0.29) 0.97    1496.6   20100.00
      2     1867.13   37.09    1.523  0.30( 0.29) 0.97    1682.3   13600.00
      3     1924.53   71.81    1.094  0.30( 0.29) 0.96    2653.5   13510.00
      4     1830.43   80.42    1.036  0.30( 0.29) 0.96    2717.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    1924.53  Tc(MIN.) =   71.81
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.96  EFFECTIVE AREA(ACRES) =    2653.51

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   71.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       20.65      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  USER-DEFINED               -        8.45      0.30     1.000     -
  USER-DEFINED               -       96.93      0.30     1.000     -
  USER-DEFINED               -       13.19      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  142.80      SUBAREA RUNOFF(CFS) =  102.11
  EFFECTIVE AREA(ACRES) =   2796.31   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =     2860.4       PEAK FLOW RATE(CFS) =    2026.64

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13643.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN.) =   71.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.094
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       42.54      0.30     1.000     -
  USER-DEFINED               -       16.96      0.30     1.000     -
  USER-DEFINED               -       80.60      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        2.00      0.30     1.000     -
  USER-DEFINED               -        3.11      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =  146.77      SUBAREA RUNOFF(CFS) =  104.95
  EFFECTIVE AREA(ACRES) =   2943.08   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =     3007.2       PEAK FLOW RATE(CFS) =    2131.59

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2201.63   31.72    1.662  0.30( 0.29) 0.98    1786.2   20100.00
      2     2183.27   37.09    1.523  0.30( 0.29) 0.97    1971.9   13600.00
      3     2131.59   71.81    1.094  0.30( 0.29) 0.97    2943.1   13510.00
      4     2022.39   80.42    1.036  0.30( 0.29) 0.96    3007.2   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2201.63  Tc(MIN.) =   31.72
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1786.18

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    342.39  DOWNSTREAM(FEET) =    300.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1591.23   CHANNEL SLOPE =  0.0266
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.10
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.89      0.30     1.000     -
  USER-DEFINED               -       23.73      0.30     1.000     -
  USER-DEFINED               -        0.27      0.30     1.000     -
  USER-DEFINED               -       19.87      0.30     1.000     -
  USER-DEFINED               -        6.40      0.30     1.000     -
  USER-DEFINED               -        3.14      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2233.62
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.88
  AVERAGE FLOW DEPTH(FEET) =   4.10   TRAVEL TIME(MIN.) =   2.06
  Tc(MIN.) =   33.78
```

```
  SUBAREA AREA(ACRES) =    54.30       SUBAREA RUNOFF(CFS) =   63.97
  EFFECTIVE AREA(ACRES) =   1840.48     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =     3061.5         PEAK FLOW RATE(CFS) =    2201.63
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.06

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.06   FLOW VELOCITY(FEET/SEC.) =  12.84
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   32375.57 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2201.63   33.78    1.609  0.30( 0.29) 0.98    1840.5   20100.00
      2     2183.27   39.15    1.469  0.30( 0.29) 0.98    2026.2   13600.00
      3     2132.60   73.89    1.080  0.30( 0.29) 0.97    2997.4   13510.00
      4     2022.39   82.54    1.022  0.30( 0.29) 0.96    3061.5   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2201.63  Tc(MIN.) =   33.78
  AREA-AVERAGED Fm(INCH/HR) =  0.29  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.98  EFFECTIVE AREA(ACRES) =    1840.48

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        9.52      0.30     1.000     -
  USER-DEFINED               -        0.71      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -       39.42      0.30     1.000     -
  USER-DEFINED               -        0.62      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   51.16      SUBAREA RUNOFF(CFS) =   60.27
  EFFECTIVE AREA(ACRES) =   1891.64   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3112.6       PEAK FLOW RATE(CFS) =    2239.80

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   33.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.609
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  USER-DEFINED               -        0.11      0.30     1.000     -
  USER-DEFINED               -        0.77      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        2.69      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    3.79      SUBAREA RUNOFF(CFS) =    4.46
  EFFECTIVE AREA(ACRES) =   1895.43   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =     3116.4       PEAK FLOW RATE(CFS) =    2244.27

****************************************************************************
  FLOW PROCESS FROM NODE  13643.00 TO NODE  13660.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13659.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 2P50EVAA.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)         (ACRES)    NODE
      1      528.88   14.09  0.30( 0.11) 0.36     173.1     110.00
      2      529.33   16.63  0.30( 0.11) 0.37     204.3     100.00
      3      521.87   17.83  0.30( 0.11) 0.38     213.9     100.00
      4      463.87   20.89  0.30( 0.12) 0.40     221.1     130.00
    TOTAL AREA(ACRES) =      221.1

****************************************************************************
  FLOW PROCESS FROM NODE  13659.00 TO NODE  13660.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   338.00  DOWNSTREAM(FEET) =   300.00
  FLOW LENGTH(FEET) =   881.07   MANNING'S N =  0.013
  DEPTH OF FLOW IN 108.0 INCH PIPE IS  81.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  43.83
  ESTIMATED PIPE DIAMETER(INCH) = 108.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    2244.27
  PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =   34.11
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2244.27   34.11    1.600  0.30( 0.29) 0.98    1895.4   20100.00
      2     2202.96   39.49    1.460  0.30( 0.29) 0.98    2081.1   13600.00
```

```
    3     2171.20   74.23    1.078  0.30( 0.29) 0.97    3052.3   13510.00
    4     2054.87   82.88    1.020  0.30( 0.29) 0.97    3116.4   13500.00
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1      528.88   14.09    2.758  0.30( 0.11) 0.36     173.1     110.00
      2      529.33   16.63    2.477  0.30( 0.11) 0.37     204.3     100.00
      3      521.87   17.83    2.374  0.30( 0.11) 0.38     213.9     100.00
      4      463.87   20.89    2.138  0.30( 0.12) 0.40     221.1     130.00
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE  13660.00 =    6327.50 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)         (ACRES)    NODE
      1     2276.62   14.09    2.758  0.30( 0.26) 0.87     955.9     110.00
      2     2357.12   16.63    2.477  0.30( 0.26) 0.87    1128.4     100.00
      3     2390.18   17.83    2.374  0.30( 0.26) 0.87    1204.9     100.00
      4     2404.22   20.89    2.138  0.30( 0.27) 0.89    1381.9     130.00
      5     2584.45   34.11    1.600  0.30( 0.28) 0.92    2116.5   20100.00
      6     2510.99   39.49    1.460  0.30( 0.28) 0.92    2302.2   13600.00
      7     2391.39   74.23    1.078  0.30( 0.28) 0.93    3273.4   13510.00
      8     2261.67   82.88    1.020  0.30( 0.28) 0.93    3337.5   13500.00
    TOTAL AREA(ACRES) =      3337.5

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2584.45  Tc(MIN.) =   34.110
  EFFECTIVE AREA(ACRES) =   2116.53  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =     3337.5
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13660.00 =   33256.64 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.11
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.600
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.11      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.44      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        1.49      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        1.70      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.09      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.57      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   24.40      SUBAREA RUNOFF(CFS) =   28.55
```



```
  EFFECTIVE AREA(ACRES) =   2140.93   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3361.9       PEAK FLOW RATE(CFS) =    2584.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13660.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.11
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.600
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B       12.39      0.30     1.000    65
  AGRICULTURAL FAIR COVER
  "ORCHARDS"                 B        2.30      0.30     1.000    65
  AGRICULTURAL POOR COVER
  "ROW CROPS,CONTOURED"      B        5.19      0.30     1.000    79
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       28.71      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.17      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   48.76      SUBAREA RUNOFF(CFS) =   57.06
  EFFECTIVE AREA(ACRES) =   2189.69   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3410.7       PEAK FLOW RATE(CFS) =    2609.48

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    300.00  DOWNSTREAM(FEET) =    288.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   933.89   CHANNEL SLOPE =  0.0128
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.43
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        9.23      0.30     1.000     -
  USER-DEFINED               -        0.54      0.30     1.000     -
  USER-DEFINED               -        5.66      0.30     1.000     -
  USER-DEFINED               -        3.66      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2620.82
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.43
  AVERAGE FLOW DEPTH(FEET) =   5.43   TRAVEL TIME(MIN.) =   1.49
```

```
  Tc(MIN.) =   35.60
  SUBAREA AREA(ACRES) =    19.98       SUBAREA RUNOFF(CFS) =   22.68
  EFFECTIVE AREA(ACRES) =   2209.67     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
  TOTAL AREA(ACRES) =     3430.6         PEAK FLOW RATE(CFS) =    2609.48
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.41   FLOW VELOCITY(FEET/SEC.) =  10.43
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13680.00 =   34190.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2310.60   15.63    2.561  0.30( 0.26) 0.88    1049.1     110.00
      2     2393.75   18.16    2.347  0.30( 0.26) 0.88    1221.5     100.00
      3     2427.48   19.36    2.245  0.30( 0.26) 0.88    1298.1     100.00
      4     2450.06   22.41    2.050  0.30( 0.27) 0.89    1475.1     130.00
      5     2609.48   35.60    1.561  0.30( 0.28) 0.92    2209.7   20100.00
      6     2529.63   40.99    1.431  0.30( 0.28) 0.92    2395.3   13600.00
      7     2406.81   75.76    1.068  0.30( 0.28) 0.93    3366.6   13510.00
      8     2274.74   84.43    1.009  0.30( 0.28) 0.93    3430.6   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2609.48  Tc(MIN.) =   35.60
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2209.67

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -        9.40      0.30     1.000     -
  USER-DEFINED               -        2.76      0.30     1.000     -
  USER-DEFINED               -       17.38      0.30     1.000     -
  USER-DEFINED               -        2.46      0.30     1.000     -
  USER-DEFINED               -        5.56      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   39.12      SUBAREA RUNOFF(CFS) =   44.41
  EFFECTIVE AREA(ACRES) =   2248.79   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3469.8       PEAK FLOW RATE(CFS) =    2609.48
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
```



```
============================================================================
  MAINLINE Tc(MIN.) =   35.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.65      0.30     1.000     -
  USER-DEFINED               -        1.70      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    2.35      SUBAREA RUNOFF(CFS) =    2.67
  EFFECTIVE AREA(ACRES) =   2251.14   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3472.1       PEAK FLOW RATE(CFS) =    2609.48
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13660.00 TO NODE  13680.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        5.29      0.30     1.000     -
  USER-DEFINED               -       31.25      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        6.26      0.30     1.000     -
  USER-DEFINED               -        0.07      0.30     1.000     -
  USER-DEFINED               -        0.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   43.31      SUBAREA RUNOFF(CFS) =   49.17
  EFFECTIVE AREA(ACRES) =   2294.45   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3515.4       PEAK FLOW RATE(CFS) =    2651.97

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        2.47      0.30     0.850     -
  USER-DEFINED               -        3.06      0.30     0.850     -
  USER-DEFINED               -       17.76      0.30     0.500     -
```

```
  USER-DEFINED               -        7.31      0.30     0.500     -
  USER-DEFINED               -        0.34      0.30     1.000     -
  USER-DEFINED               -        8.22      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.659
  SUBAREA AREA(ACRES) =   39.16      SUBAREA RUNOFF(CFS) =   48.07
  EFFECTIVE AREA(ACRES) =   2333.61   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3554.6       PEAK FLOW RATE(CFS) =    2700.04

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13680.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   35.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.561
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.53      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    0.53      SUBAREA RUNOFF(CFS) =    0.60
  EFFECTIVE AREA(ACRES) =   2334.14   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3555.1       PEAK FLOW RATE(CFS) =    2700.64

****************************************************************************
  FLOW PROCESS FROM NODE  13680.00 TO NODE  13682.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.00  DOWNSTREAM(FEET) =    242.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2860.77   CHANNEL SLOPE =  0.0161
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.20
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.22      0.30     1.000     -
  USER-DEFINED               -        5.28      0.30     1.000     -
  USER-DEFINED               -        0.52      0.30     1.000     -
  USER-DEFINED               -        3.61      0.30     1.000     -
  USER-DEFINED               -        0.67      0.30     1.000     -
  USER-DEFINED               -        1.37      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2706.69
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.41
  AVERAGE FLOW DEPTH(FEET) =   5.20   TRAVEL TIME(MIN.) =   4.18
  Tc(MIN.) =   39.78
  SUBAREA AREA(ACRES) =    11.67       SUBAREA RUNOFF(CFS) =   12.11
  EFFECTIVE AREA(ACRES) =   2345.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.92
```



```
  TOTAL AREA(ACRES) =     3566.8       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.19   FLOW VELOCITY(FEET/SEC.) =  11.41
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13682.00 =   37051.30 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1     2426.61   19.94    2.195  0.30( 0.26) 0.88    1185.2     110.00
      2     2523.08   22.41    2.050  0.30( 0.26) 0.88    1357.6     100.00
      3     2535.23   23.61    1.980  0.30( 0.26) 0.88    1434.2     100.00
      4     2565.50   26.65    1.836  0.30( 0.27) 0.89    1611.2     130.00
      5     2700.64   39.78    1.453  0.30( 0.28) 0.92    2345.8   20100.00
      6     2617.49   45.21    1.363  0.30( 0.28) 0.92    2531.5   13600.00
      7     2479.31   80.04    1.039  0.30( 0.28) 0.93    3502.7   13510.00
      8     2338.52   88.79    0.980  0.30( 0.28) 0.93    3566.8   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   39.78
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.92  EFFECTIVE AREA(ACRES) =    2345.81

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.90      0.30     1.000     -
  USER-DEFINED               -       23.04      0.30     1.000     -
  USER-DEFINED               -        1.18      0.30     1.000     -
  USER-DEFINED               -        1.56      0.30     1.000     -
  USER-DEFINED               -       53.20      0.30     1.000     -
  USER-DEFINED               -        2.08      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   87.96      SUBAREA RUNOFF(CFS) =   91.26
  EFFECTIVE AREA(ACRES) =   2433.77   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =     3654.7       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   39.78
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        0.01      0.30      1.000     -
 USER-DEFINED               -        0.18      0.30      1.000     -
 USER-DEFINED               -        0.38      0.30      1.000     -
 USER-DEFINED               -        0.22      0.30      1.000     -
 USER-DEFINED               -        7.73      0.30      1.000     -
 USER-DEFINED               -        4.37      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.89      SUBAREA RUNOFF(CFS) =   13.37
 EFFECTIVE AREA(ACRES) =   2446.66   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3667.6       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.78
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        2.57      0.30      1.000    86
 AGRICULTURAL POOR COVER
 "FALLOW"                   B        1.97      0.30      1.000    86
 NATURAL FAIR COVER
 "GRASS"                    B        1.00      0.30      1.000    69
 NATURAL FAIR COVER
 "GRASS"                    B        2.98      0.30      1.000    69
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        2.39      0.30      1.000    66
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        1.67      0.30      1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   12.58      SUBAREA RUNOFF(CFS) =   13.05
 EFFECTIVE AREA(ACRES) =   2459.24   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3680.2       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.78
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 NATURAL FAIR COVER
 "OPEN BRUSH"               B        0.44      0.30      1.000    66
```



```
 PUBLIC PARK                B        2.65      0.30      0.850    56
 PUBLIC PARK                B        1.16      0.30      0.850    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.47      0.30      0.500    56
 RESIDENTIAL
 "5-7 DWELLINGS/ACRE"       B        0.25      0.30      0.500    56
 AGRICULTURAL POOR COVER
 "ROW CROPS,STRAIGHT ROW"   B       20.24      0.30      1.000    81
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.963
 SUBAREA AREA(ACRES) =   25.21      SUBAREA RUNOFF(CFS) =   26.41
 EFFECTIVE AREA(ACRES) =   2484.45   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3705.4       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13682.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   39.78
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.453
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        7.08      0.30      1.000     -
 USER-DEFINED               -        6.75      0.30      1.000     -
 USER-DEFINED               -        0.02      0.30      1.000     -
 USER-DEFINED               -        0.93      0.30      1.000     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA AREA(ACRES) =   14.78      SUBAREA RUNOFF(CFS) =   15.33
 EFFECTIVE AREA(ACRES) =   2499.23   AREA-AVERAGED Fm(INCH/HR) =  0.28
 AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.92
 TOTAL AREA(ACRES) =     3720.2       PEAK FLOW RATE(CFS) =    2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
 FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    242.00  DOWNSTREAM(FEET) =    208.53
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2526.22   CHANNEL SLOPE =  0.0132
 GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   5.49
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED               -        8.49      0.30      1.000     -
 USER-DEFINED               -       13.31      0.30      1.000     -
 USER-DEFINED               -        0.87      0.30      1.000     -
 USER-DEFINED               -       20.26      0.30      1.000     -
 USER-DEFINED               -        1.21      0.30      1.000     -
```

```
  USER-DEFINED               -        0.05      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2722.25
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.67
  AVERAGE FLOW DEPTH(FEET) =   5.49   TRAVEL TIME(MIN.) =   3.95
  Tc(MIN.) =   43.73
  SUBAREA AREA(ACRES) =    44.19       SUBAREA RUNOFF(CFS) =   43.22
  EFFECTIVE AREA(ACRES) =   2543.42     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3764.4         PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   5.47

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  5.47   FLOW VELOCITY(FEET/SEC.) =  10.64
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13683.00 =   39577.52 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   24.00    1.957  0.30( 0.27) 0.90    1382.8     110.00
      2     2523.08   26.43    1.844  0.30( 0.27) 0.90    1555.2     100.00
      3     2535.23   27.62    1.798  0.30( 0.27) 0.90    1631.8     100.00
      4     2565.50   30.65    1.690  0.30( 0.27) 0.90    1808.8     130.00
      5     2700.64   43.73    1.387  0.30( 0.28) 0.93    2543.4   20100.00
      6     2620.76   49.19    1.298  0.30( 0.28) 0.93    2729.1   13600.00
      7     2498.72   84.08    1.012  0.30( 0.28) 0.93    3700.3   13510.00
      8     2345.92   92.91    0.959  0.30( 0.28) 0.93    3764.4   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   43.73
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2543.42

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.56      0.30     1.000     -
  USER-DEFINED               -        0.81      0.30     1.000     -
  USER-DEFINED               -        0.01      0.30     1.000     -
  USER-DEFINED               -        1.11      0.30     1.000     -
  USER-DEFINED               -        0.59      0.30     1.000     -
  USER-DEFINED               -        3.04      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   18.12      SUBAREA RUNOFF(CFS) =   17.72
  EFFECTIVE AREA(ACRES) =   2561.54   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3782.5       PEAK FLOW RATE(CFS) =    2700.64
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
  PUBLIC PARK                B        1.30      0.30     0.850    56
  RESIDENTIAL
  "8-10 DWELLINGS/ACRE"      B        0.10      0.30     0.400    56
  PUBLIC PARK                B        1.70      0.30     0.850    56
  PUBLIC PARK                B        0.10      0.30     0.850    56
  PUBLIC PARK                B        2.90      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.835
  SUBAREA AREA(ACRES) =    6.20      SUBAREA RUNOFF(CFS) =    6.34
  EFFECTIVE AREA(ACRES) =   2567.74   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3788.7       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "5-7 DWELLINGS/ACRE"       B        0.10      0.30     0.500    56
  CONDOMINIUMS               B        0.10      0.30     0.350    56
  PUBLIC PARK                B        6.90      0.30     0.850    56
  PUBLIC PARK                B        0.40      0.30     0.850    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.839
  SUBAREA AREA(ACRES) =    7.50      SUBAREA RUNOFF(CFS) =    7.66
  EFFECTIVE AREA(ACRES) =   2575.24   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3796.2       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13682.00 TO NODE  13683.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================
  ***MEMORY BANK #  3 IS EMPTY - PROCESS IGNORED.***
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        2.55      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        0.01      0.30     1.000    86
  AGRICULTURAL POOR COVER
  "FALLOW"                   B        1.35      0.30     1.000    86
  NATURAL FAIR COVER
  "GRASS"                    B        0.44      0.30     1.000    69
  NATURAL FAIR COVER
  "GRASS"                    B        0.67      0.30     1.000    69
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.06      0.30     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.08      SUBAREA RUNOFF(CFS) =    5.95
  EFFECTIVE AREA(ACRES) =   2581.32   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3802.3       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.16      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.45      0.30     1.000    66
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        6.15      0.30     1.000    66
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        1.34      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B       18.46      0.30     1.000    81
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        4.13      0.30     1.000    81
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   34.69      SUBAREA RUNOFF(CFS) =   33.93
  EFFECTIVE AREA(ACRES) =   2616.01   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3837.0       PEAK FLOW RATE(CFS) =    2700.64
```



```
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13683.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   43.73
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.387
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  AGRICULTURAL POOR COVER
  "ROW CROPS,STRAIGHT ROW"   B        8.69      0.30     1.000    81
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.73      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        0.41      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        1.37      0.30     1.000    65
  NATURAL FAIR COVER
  "WOODLAND,GRASS"           B        3.11      0.30     1.000    65
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   14.31      SUBAREA RUNOFF(CFS) =   13.99
  EFFECTIVE AREA(ACRES) =   2630.32   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =     3851.3       PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

****************************************************************************
  FLOW PROCESS FROM NODE  13683.00 TO NODE  13685.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    208.53  DOWNSTREAM(FEET) =    194.24
  CHANNEL LENGTH THRU SUBAREA(FEET) =   289.01   CHANNEL SLOPE =  0.0494
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.84
  CHANNEL FLOW THRU SUBAREA(CFS) =    2700.64
  FLOW VELOCITY(FEET/SEC.) =  16.94   FLOW DEPTH(FEET) =   3.84
  TRAVEL TIME(MIN.) =   0.28   Tc(MIN.) =   44.01
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13685.00 =   39866.53 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   24.30    1.940  0.30( 0.27) 0.90    1469.7     110.00
      2     2523.08   26.72    1.833  0.30( 0.27) 0.90    1642.1     100.00
      3     2535.23   27.91    1.787  0.30( 0.27) 0.90    1718.7     100.00
      4     2565.50   30.94    1.683  0.30( 0.27) 0.91    1895.7     130.00
      5     2700.64   44.01    1.382  0.30( 0.28) 0.93    2630.3   20100.00
      6     2620.76   49.48    1.293  0.30( 0.28) 0.93    2816.0   13600.00
      7     2498.72   84.37    1.010  0.30( 0.28) 0.93    3787.2   13510.00
      8     2354.93   93.20    0.958  0.30( 0.28) 0.93    3851.3   13500.00
  NEW PEAK FLOW DATA ARE:
```

```
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   44.01
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2630.32

****************************************************************************
  FLOW PROCESS FROM NODE  13685.00 TO NODE  13410.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    194.24  DOWNSTREAM(FEET) =    178.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1843.57   CHANNEL SLOPE =  0.0084
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.16
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.327
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        0.23      0.30     1.000     -
  USER-DEFINED               -        1.52      0.30     1.000     -
  USER-DEFINED               -        0.06      0.30     1.000     -
  USER-DEFINED               -        0.13      0.30     1.000     -
  USER-DEFINED               -        6.45      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2704.52
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.06
  AVERAGE FLOW DEPTH(FEET) =   6.16   TRAVEL TIME(MIN.) =   3.39
  Tc(MIN.) =   47.40
  SUBAREA AREA(ACRES) =     8.39       SUBAREA RUNOFF(CFS) =    7.76
  EFFECTIVE AREA(ACRES) =   2638.71     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
  TOTAL AREA(ACRES) =     3859.7         PEAK FLOW RATE(CFS) =    2700.64
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =   30.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   3.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   6.15

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  6.15   FLOW VELOCITY(FEET/SEC.) =   9.06
  LONGEST FLOWPATH FROM NODE  13500.00 TO NODE  13410.00 =   41710.10 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   27.79    1.792  0.30( 0.27) 0.90    1478.1     110.00
      2     2523.08   30.18    1.702  0.30( 0.27) 0.90    1650.5     100.00
      3     2535.23   31.37    1.671  0.30( 0.27) 0.90    1727.1     100.00
      4     2565.50   34.38    1.593  0.30( 0.27) 0.91    1904.1     130.00
      5     2700.64   47.40    1.327  0.30( 0.28) 0.93    2638.7   20100.00
      6     2620.76   52.90    1.253  0.30( 0.28) 0.93    2824.4   13600.00
      7     2498.72   87.84    0.987  0.30( 0.28) 0.93    3795.6   13510.00
      8     2354.93   96.73    0.943  0.30( 0.28) 0.93    3859.7   13500.00
  NEW PEAK FLOW DATA ARE:
  PEAK FLOW RATE(CFS) =    2700.64  Tc(MIN.) =   47.40
  AREA-AVERAGED Fm(INCH/HR) =  0.28  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.93  EFFECTIVE AREA(ACRES) =    2638.71
```



```
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     3859.7  TC(MIN.) =     47.40
  EFFECTIVE AREA(ACRES) =   2638.71  AREA-AVERAGED Fm(INCH/HR)=  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap = 0.928
  PEAK FLOW RATE(CFS)   =    2700.64

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1     2426.61   27.79    1.792  0.30( 0.27) 0.90    1478.1     110.00
      2     2523.08   30.18    1.702  0.30( 0.27) 0.90    1650.5     100.00
      3     2535.23   31.37    1.671  0.30( 0.27) 0.90    1727.1     100.00
      4     2565.50   34.38    1.593  0.30( 0.27) 0.91    1904.1     130.00
      5     2700.64   47.40    1.327  0.30( 0.28) 0.93    2638.7   20100.00
      6     2620.76   52.90    1.253  0.30( 0.28) 0.93    2824.4   13600.00
      7     2498.72   87.84    0.987  0.30( 0.28) 0.93    3795.6   13510.00
      8     2354.93   96.73    0.943  0.30( 0.28) 0.93    3859.7   13500.00
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 137 COMPLEX                                *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                             *
* 50-YR EV JULY 2023 ROKAMOTO                                          *
 **********************************************************************

  FILE NAME: RU50EV37.DAT
  TIME/DATE OF STUDY: 13:11 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.240
   2)   10.00;  3.389
   3)   15.00;  2.611
   4)   20.00;  2.187
   5)   25.00;  1.897
   6)   30.00;  1.705
   7)   40.00;  1.446
   8)   50.00;  1.284
   9)   60.00;  1.172
  10)   90.00;  0.970
  11)  120.00;  0.840
  12)  180.00;  0.715
  13)  360.00;  0.524
  14) 1200.00;  0.229
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 15.1
------------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
==============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV34.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22485.22   15.18  0.30( 0.25) 0.83    3912.0     300.00
      2    24494.87   20.23  0.30( 0.25) 0.83    5355.6     210.00
      3    26884.46   28.19  0.30( 0.25) 0.84    7701.7     110.00
      4    30154.68   37.80  0.30( 0.26) 0.85   11736.4   10100.00
      5    31633.86   44.62  0.30( 0.26) 0.87   14477.4   50260.00
      6    33641.06   54.58  0.30( 0.27) 0.88   18577.2   31100.00
      7    36025.97   65.82  0.30( 0.27) 0.90   23713.6   40100.00
      8    37138.57   73.55  0.30( 0.27) 0.91   27158.7   11801.00
      9    39106.64   84.15  0.30( 0.28) 0.92   32590.1   11530.00
     10    40984.89   91.81  0.30( 0.28) 0.93   37537.5   11910.00
     11    42295.51   97.08  0.30( 0.28) 0.93   41380.4   13500.00
     12    43846.34  105.96  0.30( 0.28) 0.94   47478.3   11130.00
     13    43488.58  115.56  0.30( 0.28) 0.95   52519.5   12410.00
     14    42904.94  123.86  0.30( 0.28) 0.95   56258.6   11201.00
     15    42483.41  128.84  0.30( 0.29) 0.95   57990.3   12201.00
     16    41474.79  135.94  0.30( 0.29) 0.95   59847.5   12231.00
     17    40183.07  143.80  0.30( 0.29) 0.95   61481.8   10400.00
     18    38837.64  151.80  0.30( 0.29) 0.95   62776.9   12010.00
     19    37648.96  157.82  0.30( 0.29) 0.95   63123.8   10210.00
     20    33493.25  186.22  0.30( 0.29) 0.95   63862.3   10100.00
   TOTAL AREA(ACRES) =    63862.3

******************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13700.00 IS CODE = 14.0
------------------------------------------------------------------------------
  >>>>>MEMORY BANK #  3 COPIED ONTO MAIN-STREAM MEMORY<<<<<
==============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22485.22   15.18  0.30( 0.25) 0.83    3912.0     300.00
      2    24494.87   20.23  0.30( 0.25) 0.83    5355.6     210.00
      3    26884.46   28.19  0.30( 0.25) 0.84    7701.7     110.00
      4    30154.68   37.80  0.30( 0.26) 0.85   11736.4   10100.00
      5    31633.86   44.62  0.30( 0.26) 0.87   14477.4   50260.00
      6    33641.06   54.58  0.30( 0.27) 0.88   18577.2   31100.00
      7    36025.97   65.82  0.30( 0.27) 0.90   23713.6   40100.00
      8    37138.57   73.55  0.30( 0.27) 0.91   27158.7   11801.00
      9    39106.64   84.15  0.30( 0.28) 0.92   32590.1   11530.00
     10    40984.89   91.81  0.30( 0.28) 0.93   37537.5   11910.00
     11    42295.51   97.08  0.30( 0.28) 0.93   41380.4   13500.00
     12    43846.34  105.96  0.30( 0.28) 0.94   47478.3   11130.00
     13    43488.58  115.56  0.30( 0.28) 0.95   52519.5   12410.00
```

```
     14    42904.94  123.86  0.30( 0.28) 0.95   56258.6   11201.00
     15    42483.41  128.84  0.30( 0.29) 0.95   57990.3   12201.00
     16    41474.79  135.94  0.30( 0.29) 0.95   59847.5   12231.00
     17    40183.07  143.80  0.30( 0.29) 0.95   61481.8   10400.00
     18    38837.64  151.80  0.30( 0.29) 0.95   62776.9   12010.00
     19    37648.96  157.82  0.30( 0.29) 0.95   63123.8   10210.00
     20    33493.25  186.22  0.30( 0.29) 0.95   63862.3   10100.00
    TOTAL AREA(ACRES) =     63862.3

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    170.00  DOWNSTREAM(FEET) =    165.51
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1891.83   CHANNEL SLOPE =  0.0024
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.77
  CHANNEL FLOW THRU SUBAREA(CFS) =   43846.34
  FLOW VELOCITY(FEET/SEC.) =  11.85   FLOW DEPTH(FEET) =  13.77
  TRAVEL TIME(MIN.) =   2.66   Tc(MIN.) =  108.62
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13700.00 TO NODE  13720.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506102C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)   (INCH/HR)          (ACRES)    NODE
      1      368.04   14.55  0.30( 0.29) 0.96     189.6   10230.00
      2      334.70   24.11  0.30( 0.29) 0.95     240.8   10200.00
      3      332.42   24.51  0.30( 0.29) 0.95     241.8   10250.00
      4      305.13   28.32  0.30( 0.29) 0.95     246.3   10220.00
    TOTAL AREA(ACRES) =      246.3

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13720.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22485.22   18.48    2.316  0.30( 0.25) 0.83    3912.0     300.00
      2    24494.87   23.43    1.988  0.30( 0.25) 0.83    5355.6     210.00
      3    26884.46   31.30    1.671  0.30( 0.25) 0.84    7701.7     110.00
```



```
      4    30154.68   40.79    1.433  0.30( 0.26) 0.85   11736.4   10100.00
      5    31633.86   47.57    1.323  0.30( 0.26) 0.87   14477.4   50260.00
      6    33641.06   57.47    1.200  0.30( 0.27) 0.88   18577.2   31100.00
      7    36025.97   68.65    1.114  0.30( 0.27) 0.90   23713.6   40100.00
      8    37138.57   76.36    1.062  0.30( 0.27) 0.91   27158.7   11801.00
      9    39106.64   86.91    0.991  0.30( 0.28) 0.92   32590.1   11530.00
     10    40984.89   94.53    0.950  0.30( 0.28) 0.93   37537.5   11910.00
     11    42295.51   99.77    0.928  0.30( 0.28) 0.93   41380.4   13500.00
     12    43846.34  108.62    0.889  0.30( 0.28) 0.94   47478.3   11130.00
     13    43488.58  118.23    0.848  0.30( 0.28) 0.95   52519.5   12410.00
     14    42904.94  126.54    0.826  0.30( 0.28) 0.95   56258.6   11201.00
     15    42483.41  131.52    0.816  0.30( 0.29) 0.95   57990.3   12201.00
     16    41474.79  138.64    0.801  0.30( 0.29) 0.95   59847.5   12231.00
     17    40183.07  146.54    0.785  0.30( 0.29) 0.95   61481.8   10400.00
     18    38837.64  154.57    0.768  0.30( 0.29) 0.95   62776.9   12010.00
     19    37648.96  160.62    0.755  0.30( 0.29) 0.95   63123.8   10210.00
     20    33493.25  189.12    0.705  0.30( 0.29) 0.95   63862.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1      368.04   14.55    2.681  0.30( 0.29) 0.96     189.6   10230.00
    2      334.70   24.11    1.948  0.30( 0.29) 0.95     240.8   10200.00
    3      332.42   24.51    1.925  0.30( 0.29) 0.95     241.8   10250.00
    4      305.13   28.32    1.769  0.30( 0.29) 0.95     246.3   10220.00
LONGEST FLOWPATH FROM NODE  10200.00 TO NODE  13720.00 =    9099.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    21200.64   14.55    2.681  0.30( 0.25) 0.84    3269.9   10230.00
    2    22839.58   18.48    2.316  0.30( 0.25) 0.84    4122.6     300.00
    3    24831.95   23.43    1.988  0.30( 0.25) 0.84    5592.7     210.00
    4    25037.82   24.11    1.948  0.30( 0.25) 0.84    5800.9   10200.00
    5    25155.73   24.51    1.925  0.30( 0.25) 0.84    5919.8   10250.00
    6    26285.18   28.32    1.769  0.30( 0.25) 0.84    7060.0   10220.00
    7    27169.41   31.30    1.671  0.30( 0.25) 0.84    7948.0     110.00
    8    30390.62   40.79    1.433  0.30( 0.26) 0.85   11982.6   10100.00
    9    31847.24   47.57    1.323  0.30( 0.26) 0.87   14723.7   50260.00
   10    33829.12   57.47    1.200  0.30( 0.27) 0.88   18823.4   31100.00
   11    36196.21   68.65    1.114  0.30( 0.27) 0.90   23959.9   40100.00
   12    37298.15   76.36    1.062  0.30( 0.27) 0.91   27404.9   11801.00
   13    39251.61   86.91    0.991  0.30( 0.28) 0.92   32836.4   11530.00
   14    41121.54   94.53    0.950  0.30( 0.28) 0.93   37783.8   11910.00
   15    42427.48   99.77    0.928  0.30( 0.28) 0.94   41626.7   13500.00
   16    43970.43  108.62    0.889  0.30( 0.28) 0.94   47724.6   11130.00
   17    43604.11  118.23    0.848  0.30( 0.28) 0.95   52765.8   12410.00
   18    43016.08  126.54    0.826  0.30( 0.28) 0.95   56504.9   11201.00
   19    42592.41  131.52    0.816  0.30( 0.29) 0.95   58236.6   12201.00
   20    41580.74  138.64    0.801  0.30( 0.29) 0.95   60093.7   12231.00
   21    40285.64  146.54    0.785  0.30( 0.29) 0.95   61728.0   10400.00
   22    38936.77  154.57    0.768  0.30( 0.29) 0.95   63023.1   12010.00
   23    37745.49  160.62    0.755  0.30( 0.29) 0.95   63370.1   10210.00
   24    33579.49  189.12    0.705  0.30( 0.29) 0.95   64108.5   10100.00
  TOTAL AREA(ACRES) =     64108.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =    43970.43  Tc(MIN.) =  108.622
  EFFECTIVE AREA(ACRES) =  47724.57  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =    64108.5
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13720.00 =  126441.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    165.51  DOWNSTREAM(FEET) =    161.03
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2067.54   CHANNEL SLOPE =  0.0022
  GIVEN CHANNEL BASE(FEET) =  200.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   5.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  14.14
  CHANNEL FLOW THRU SUBAREA(CFS) =   43970.43
  FLOW VELOCITY(FEET/SEC.) =  11.49   FLOW DEPTH(FEET) =  14.14
  TRAVEL TIME(MIN.) =   3.00   Tc(MIN.) =  111.62
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13720.00 TO NODE  13740.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506103C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1      702.74   18.17  0.30( 0.23) 0.76     400.0   10300.00
      2      704.90   18.97  0.30( 0.23) 0.76     413.4   10380.00
      3      693.05   21.35  0.30( 0.23) 0.76     439.7   10320.00
      4      668.71   23.48  0.30( 0.23) 0.76     451.6   10360.00
      5      629.78   26.35  0.30( 0.23) 0.76     460.8   10340.00
    TOTAL AREA(ACRES) =      460.8

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13740.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21200.64   18.33    2.329  0.30( 0.25) 0.84    3269.9   10230.00
      2    22839.58   22.17    2.061  0.30( 0.25) 0.84    4122.6     300.00
      3    24831.95   27.02    1.819  0.30( 0.25) 0.84    5592.7     210.00
      4    25037.82   27.70    1.793  0.30( 0.25) 0.84    5800.9   10200.00
      5    25155.73   28.09    1.778  0.30( 0.25) 0.84    5919.8   10250.00
```



```
      6    26285.18   31.85    1.657  0.30( 0.25) 0.84    7060.0   10220.00
      7    27169.41   34.79    1.581  0.30( 0.25) 0.84    7948.0     110.00
      8    30390.62   44.16    1.379  0.30( 0.26) 0.85   11982.6   10100.00
      9    31847.24   50.88    1.274  0.30( 0.26) 0.87   14723.7   50260.00
     10    33829.12   60.72    1.167  0.30( 0.27) 0.88   18823.4   31100.00
     11    36196.21   71.84    1.092  0.30( 0.27) 0.90   23959.9   40100.00
     12    37298.15   79.51    1.041  0.30( 0.27) 0.91   27404.9   11801.00
     13    39251.61   90.01    0.970  0.30( 0.28) 0.92   32836.4   11530.00
     14    41121.54   97.59    0.937  0.30( 0.28) 0.93   37783.8   11910.00
     15    42427.48  102.80    0.915  0.30( 0.28) 0.94   41626.7   13500.00
     16    43970.43  111.62    0.876  0.30( 0.28) 0.94   47724.6   11130.00
     17    43604.11  121.23    0.837  0.30( 0.28) 0.95   52765.8   12410.00
     18    43016.08  129.56    0.820  0.30( 0.28) 0.95   56504.9   11201.00
     19    42592.41  134.55    0.810  0.30( 0.29) 0.95   58236.6   12201.00
     20    41580.74  141.70    0.795  0.30( 0.29) 0.95   60093.7   12231.00
     21    40285.64  149.62    0.778  0.30( 0.29) 0.95   61728.0   10400.00
     22    38936.77  157.68    0.761  0.30( 0.29) 0.95   63023.1   12010.00
     23    37745.49  163.76    0.749  0.30( 0.29) 0.95   63370.1   10210.00
     24    33579.49  192.38    0.702  0.30( 0.29) 0.95   64108.5   10100.00
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      702.74   18.17    2.342  0.30( 0.23) 0.76     400.0   10300.00
      2      704.90   18.97    2.274  0.30( 0.23) 0.76     413.4   10380.00
      3      693.05   21.35    2.109  0.30( 0.23) 0.76     439.7   10320.00
      4      668.71   23.48    1.985  0.30( 0.23) 0.76     451.6   10360.00
      5      629.78   26.35    1.845  0.30( 0.23) 0.76     460.8   10340.00
  LONGEST FLOWPATH FROM NODE  10320.00 TO NODE  13740.00 =    8457.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21855.04   18.17    2.342  0.30( 0.25) 0.83    3641.0   10300.00
      2    21903.82   18.33    2.329  0.30( 0.25) 0.83    3672.6   10230.00
      3    22179.45   18.97    2.274  0.30( 0.25) 0.83    3825.8   10380.00
      4    23183.10   21.35    2.109  0.30( 0.25) 0.83    4380.4   10320.00
      5    23523.27   22.17    2.061  0.30( 0.25) 0.83    4566.8     300.00
      6    24045.91   23.48    1.985  0.30( 0.25) 0.83    4970.9   10360.00
      7    25187.98   26.35    1.845  0.30( 0.25) 0.83    5851.5   10340.00
      8    25451.75   27.02    1.819  0.30( 0.25) 0.83    6053.5     210.00
      9    25647.51   27.70    1.793  0.30( 0.25) 0.83    6261.7   10200.00
     10    25759.55   28.09    1.778  0.30( 0.25) 0.83    6380.6   10250.00
     11    26841.74   31.85    1.657  0.30( 0.25) 0.84    7520.8   10220.00
     12    27696.28   34.79    1.581  0.30( 0.25) 0.84    8408.8     110.00
     13    30838.63   44.16    1.379  0.30( 0.26) 0.85   12443.4   10100.00
     14    32254.54   50.88    1.274  0.30( 0.26) 0.86   15184.5   50260.00
     15    34194.72   60.72    1.167  0.30( 0.26) 0.88   19284.2   31100.00
     16    36532.64   71.84    1.092  0.30( 0.27) 0.90   24420.7   40100.00
     17    37614.45   79.51    1.041  0.30( 0.27) 0.91   27865.7   11801.00
     18    39540.36   90.01    0.970  0.30( 0.28) 0.92   33297.2   11530.00
     19    41397.48   97.59    0.937  0.30( 0.28) 0.93   38244.6   11910.00
     20    42694.63  102.80    0.915  0.30( 0.28) 0.93   42087.5   13500.00
     21    44222.68  111.62    0.876  0.30( 0.28) 0.94   48185.4   11130.00
     22    43841.21  121.23    0.837  0.30( 0.28) 0.95   53226.6   12410.00
     23    43246.43  129.56    0.820  0.30( 0.28) 0.95   56965.7   11201.00
     24    42818.70  134.55    0.810  0.30( 0.28) 0.95   58697.4   12201.00
```

```
    25    41801.23  141.70    0.795  0.30( 0.29) 0.95   60554.5   12231.00
    26    40499.70  149.62    0.778  0.30( 0.29) 0.95   62188.8   10400.00
    27    39144.28  157.68    0.761  0.30( 0.29) 0.95   63483.9   12010.00
    28    37948.07  163.76    0.749  0.30( 0.29) 0.95   63830.9   10210.00
    29    33763.76  192.38    0.702  0.30( 0.29) 0.95   64569.3   10100.00
   TOTAL AREA(ACRES) =     64569.3

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    44222.68  Tc(MIN.) =  111.622
  EFFECTIVE AREA(ACRES) =  48185.38  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =    64569.3
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13740.00 =  128508.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    161.03  DOWNSTREAM(FEET) =    141.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   364.08   CHANNEL SLOPE =  0.0550
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =   8.22
  CHANNEL FLOW THRU SUBAREA(CFS) =   44222.68
  FLOW VELOCITY(FEET/SEC.) =  40.49   FLOW DEPTH(FEET) =   8.22
  TRAVEL TIME(MIN.) =   0.15   Tc(MIN.) =  111.77
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13740.00 TO NODE  13741.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 3 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 0506104C.DNA
  MEMORY BANK #  3 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS) (MIN.)  (INCH/HR)          (ACRES)    NODE
      1       71.30   19.53  0.30( 0.24) 0.80      44.3   10400.00
    TOTAL AREA(ACRES) =       44.3

****************************************************************************
  FLOW PROCESS FROM NODE  13741.00 TO NODE  13741.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    21855.04   18.36    2.326  0.30( 0.25) 0.83    3641.0   10300.00
```



```
    2    21903.82   18.52    2.313  0.30( 0.25) 0.83    3672.6   10230.00
    3    22179.45   19.16    2.258  0.30( 0.25) 0.83    3825.8   10380.00
    4    23183.10   21.53    2.098  0.30( 0.25) 0.83    4380.4   10320.00
    5    23523.27   22.35    2.051  0.30( 0.25) 0.83    4566.8     300.00
    6    24045.91   23.66    1.975  0.30( 0.25) 0.83    4970.9   10360.00
    7    25187.98   26.53    1.838  0.30( 0.25) 0.83    5851.5   10340.00
    8    25451.75   27.20    1.813  0.30( 0.25) 0.83    6053.5     210.00
    9    25647.51   27.88    1.787  0.30( 0.25) 0.83    6261.7   10200.00
   10    25759.55   28.27    1.772  0.30( 0.25) 0.83    6380.6   10250.00
   11    26841.74   32.02    1.653  0.30( 0.25) 0.84    7520.8   10220.00
   12    27696.28   34.96    1.576  0.30( 0.25) 0.84    8408.8     110.00
   13    30838.63   44.33    1.376  0.30( 0.26) 0.85   12443.4   10100.00
   14    32254.54   51.05    1.272  0.30( 0.26) 0.86   15184.5   50260.00
   15    34194.72   60.89    1.166  0.30( 0.26) 0.88   19284.2   31100.00
   16    36532.64   72.00    1.091  0.30( 0.27) 0.90   24420.7   40100.00
   17    37614.45   79.67    1.040  0.30( 0.27) 0.91   27865.7   11801.00
   18    39540.36   90.17    0.969  0.30( 0.28) 0.92   33297.2   11530.00
   19    41397.48   97.75    0.936  0.30( 0.28) 0.93   38244.6   11910.00
   20    42694.63  102.95    0.914  0.30( 0.28) 0.93   42087.5   13500.00
   21    44222.68  111.77    0.876  0.30( 0.28) 0.94   48185.4   11130.00
   22    43841.21  121.38    0.837  0.30( 0.28) 0.95   53226.6   12410.00
   23    43246.43  129.71    0.820  0.30( 0.28) 0.95   56965.7   11201.00
   24    42818.70  134.71    0.809  0.30( 0.28) 0.95   58697.4   12201.00
   25    41801.23  141.85    0.794  0.30( 0.29) 0.95   60554.5   12231.00
   26    40499.70  149.77    0.778  0.30( 0.29) 0.95   62188.8   10400.00
   27    39144.28  157.84    0.761  0.30( 0.29) 0.95   63483.9   12010.00
   28    37948.07  163.92    0.749  0.30( 0.29) 0.95   63830.9   10210.00
   29    33763.76  192.54    0.702  0.30( 0.29) 0.95   64569.3   10100.00
LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13741.00 =  128872.66 FEET.

** MEMORY BANK #  3 CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1       71.30   19.53    2.227  0.30( 0.24) 0.80      44.3   10400.00
LONGEST FLOWPATH FROM NODE  10400.00 TO NODE  13741.00 =    6237.00 FEET.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
    1    21925.41   18.36    2.326  0.30( 0.25) 0.83    3682.6   10300.00
    2    21974.34   18.52    2.313  0.30( 0.25) 0.83    3714.6   10230.00
    3    22250.51   19.16    2.258  0.30( 0.25) 0.83    3869.2   10380.00
    4    22409.57   19.53    2.227  0.30( 0.25) 0.83    3957.9   10400.00
    5    23249.79   21.53    2.098  0.30( 0.25) 0.83    4424.7   10320.00
    6    23588.26   22.35    2.051  0.30( 0.25) 0.83    4611.1     300.00
    7    24108.19   23.66    1.975  0.30( 0.25) 0.83    5015.2   10360.00
    8    25245.35   26.53    1.838  0.30( 0.25) 0.83    5895.8   10340.00
    9    25508.20   27.20    1.813  0.30( 0.25) 0.83    6097.8     210.00
   10    25703.02   27.88    1.787  0.30( 0.25) 0.83    6306.0   10200.00
   11    25814.53   28.27    1.772  0.30( 0.25) 0.83    6424.9   10250.00
   12    26892.45   32.02    1.653  0.30( 0.25) 0.83    7565.1   10220.00
   13    27744.26   34.96    1.576  0.30( 0.25) 0.84    8453.1     110.00
   14    30879.41   44.33    1.376  0.30( 0.26) 0.85   12487.7   10100.00
   15    32291.60   51.05    1.272  0.30( 0.26) 0.86   15228.8   50260.00
   16    34227.97   60.89    1.166  0.30( 0.26) 0.88   19328.5   31100.00
   17    36563.20   72.00    1.091  0.30( 0.27) 0.90   24465.0   40100.00
   18    37643.16   79.67    1.040  0.30( 0.27) 0.91   27910.0   11801.00
   19    39566.54   90.17    0.969  0.30( 0.28) 0.92   33341.5   11530.00
```

20	41422.49	97.75	0.936	0.30(0.28)	0.93	38288.9	11910.00
21	42718.83	102.95	0.914	0.30(0.28)	0.93	42131.8	13500.00
22	44245.51	111.77	0.876	0.30(0.28)	0.94	48229.7	11130.00
23	43862.66	121.38	0.837	0.30(0.28)	0.95	53270.9	12410.00
24	43267.25	129.71	0.820	0.30(0.28)	0.95	57010.0	11201.00
25	42839.15	134.71	0.809	0.30(0.28)	0.95	58741.7	12201.00
26	41821.15	141.85	0.794	0.30(0.29)	0.95	60598.8	12231.00
27	40519.03	149.77	0.778	0.30(0.29)	0.95	62233.1	10400.00
28	39163.00	157.84	0.761	0.30(0.29)	0.95	63528.2	12010.00
29	37966.33	163.92	0.749	0.30(0.29)	0.95	63875.2	10210.00
30	33780.35	192.54	0.702	0.30(0.29)	0.95	64613.6	10100.00

TOTAL AREA(ACRES) = 64613.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44245.51 Tc(MIN.) = 111.772
EFFECTIVE AREA(ACRES) = 48229.68 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 64613.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128872.66 FEET.

****
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.64
CHANNEL FLOW THRU SUBAREA(CFS) = 44245.51
FLOW VELOCITY(FEET/SEC.) = 15.96 FLOW DEPTH(FEET) = 16.64
TRAVEL TIME(MIN.) = 1.60 Tc(MIN.) = 113.37
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========
PEAK FLOWRATE TABLE FILE NAME: 0506105J.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	385.37	14.62	0.30(0.27)	0.90	207.5	10520.00
2	453.34	31.20	0.30(0.28)	0.93	403.6	10500.00

TOTAL AREA(ACRES) = 403.6

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21925.41	20.32	2.169	0.30(0.25)	0.83	3682.6	10300.00
2	21974.34	20.48	2.159	0.30(0.25)	0.83	3714.6	10230.00
3	22250.51	21.11	2.123	0.30(0.25)	0.83	3869.2	10380.00
4	22409.57	21.48	2.101	0.30(0.25)	0.83	3957.9	10400.00
5	23249.79	23.46	1.986	0.30(0.25)	0.83	4424.7	10320.00
6	23588.26	24.27	1.939	0.30(0.25)	0.83	4611.1	300.00
7	24108.19	25.56	1.875	0.30(0.25)	0.83	5015.2	10360.00
8	25245.35	28.41	1.766	0.30(0.25)	0.83	5895.8	10340.00
9	25508.20	29.08	1.741	0.30(0.25)	0.83	6097.8	210.00
10	25703.02	29.75	1.715	0.30(0.25)	0.83	6306.0	10200.00
11	25814.53	30.14	1.701	0.30(0.25)	0.83	6424.9	10250.00
12	26892.45	33.87	1.605	0.30(0.25)	0.83	7565.1	10220.00
13	27744.26	36.79	1.529	0.30(0.25)	0.84	8453.1	110.00
14	30879.41	46.10	1.347	0.30(0.26)	0.85	12487.7	10100.00
15	32291.60	52.80	1.253	0.30(0.26)	0.86	15228.8	50260.00
16	34227.97	62.61	1.154	0.30(0.26)	0.88	19328.5	31100.00
17	36563.20	73.69	1.080	0.30(0.27)	0.90	24465.0	40100.00
18	37643.16	81.35	1.028	0.30(0.27)	0.91	27910.0	11801.00
19	39566.54	91.82	0.962	0.30(0.28)	0.92	33341.5	11530.00
20	41422.49	99.38	0.929	0.30(0.28)	0.93	38288.9	11910.00
21	42718.83	104.57	0.907	0.30(0.28)	0.93	42131.8	13500.00
22	44245.51	113.37	0.869	0.30(0.28)	0.94	48229.7	11130.00
23	43862.66	122.99	0.834	0.30(0.28)	0.95	53270.9	12410.00
24	43267.25	131.32	0.816	0.30(0.28)	0.95	57010.0	11201.00
25	42839.15	136.32	0.806	0.30(0.28)	0.95	58741.7	12201.00
26	41821.15	143.48	0.791	0.30(0.29)	0.95	60598.8	12231.00
27	40519.03	151.41	0.775	0.30(0.29)	0.95	62233.1	10400.00
28	39163.00	159.50	0.758	0.30(0.29)	0.95	63528.2	12010.00
29	37966.33	165.59	0.745	0.30(0.29)	0.95	63875.2	10210.00
30	33780.35	194.27	0.700	0.30(0.29)	0.95	64613.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	385.37	14.62	2.670	0.30(0.27)	0.90	207.5	10520.00
2	453.34	31.20	1.674	0.30(0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20284.97	14.62	2.670	0.30(0.25)	0.84	2857.6	10520.00
2	22334.13	20.32	2.169	0.30(0.25)	0.84	3957.5	10300.00
3	22383.72	20.48	2.159	0.30(0.25)	0.84	3991.4	10230.00
4	22662.48	21.11	2.123	0.30(0.25)	0.84	4153.5	10380.00
5	22823.07	21.48	2.101	0.30(0.25)	0.84	4246.5	10400.00
6	23671.40	23.46	1.986	0.30(0.25)	0.84	4736.8	10320.00
7	24013.18	24.27	1.939	0.30(0.25)	0.84	4932.8	300.00
8	24538.42	25.56	1.875	0.30(0.25)	0.84	5352.1	10360.00
9	25687.26	28.41	1.766	0.30(0.25)	0.84	6266.5	10340.00
10	25952.81	29.08	1.741	0.30(0.25)	0.84	6476.3	210.00

11	26150.39	29.75	1.715	0.30(0.25)	0.84	6692.3	10200.00
12	26263.49	30.14	1.701	0.30(0.25)	0.84	6815.9	10250.00
13	26576.31	31.20	1.674	0.30(0.25)	0.84	7154.8	10500.00
14	27323.37	33.87	1.605	0.30(0.25)	0.84	7968.7	10220.00
15	28150.58	36.79	1.529	0.30(0.25)	0.84	8856.7	110.00
16	31226.65	46.10	1.347	0.30(0.26)	0.85	12891.3	10100.00
17	32608.15	52.80	1.253	0.30(0.26)	0.87	15632.4	50260.00
18	34512.62	62.61	1.154	0.30(0.26)	0.88	19732.1	31100.00
19	36823.62	73.69	1.080	0.30(0.27)	0.90	24868.6	40100.00
20	37886.83	81.35	1.028	0.30(0.27)	0.91	28313.6	11801.00
21	39788.73	91.82	0.962	0.30(0.28)	0.92	33745.1	11530.00
22	41634.05	99.38	0.929	0.30(0.28)	0.93	38692.5	11910.00
23	42923.08	104.57	0.907	0.30(0.28)	0.93	42535.4	13500.00
24	44437.36	113.37	0.869	0.30(0.28)	0.94	48633.3	11130.00
25	44043.16	122.99	0.834	0.30(0.28)	0.95	53674.5	12410.00
26	43442.12	131.32	0.816	0.30(0.28)	0.95	57413.6	11201.00
27	43010.64	136.32	0.806	0.30(0.28)	0.95	59145.3	12201.00
28	41987.80	143.48	0.791	0.30(0.29)	0.95	61002.4	12231.00
29	40680.30	151.41	0.775	0.30(0.29)	0.95	62636.7	10400.00
30	39318.81	159.50	0.758	0.30(0.29)	0.95	63931.8	12010.00
31	38118.02	165.59	0.745	0.30(0.29)	0.95	64278.8	10210.00
32	33917.36	194.27	0.700	0.30(0.29)	0.95	65017.2	10100.00

TOTAL AREA(ACRES) = 65017.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44437.36 Tc(MIN.) = 113.373
EFFECTIVE AREA(ACRES) = 48633.28 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 65017.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130406.07 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0097
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.19
CHANNEL FLOW THRU SUBAREA(CFS) = 44437.36
FLOW VELOCITY(FEET/SEC.) = 22.06 FLOW DEPTH(FEET) = 13.19
TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 113.53
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

****
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>>CLEAR MEMORY BANK # 3 <<<<<
==========

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>>DEFINE MEMORY BANK # 3 <<<<<
==========

PEAK FLOWRATE TABLE FILE NAME: 0506106C.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.85	17.52	0.30(0.20)	0.67	36.9	10600.00

TOTAL AREA(ACRES) = 36.9

****
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20284.97	14.82	2.639	0.30(0.25)	0.84	2857.6	10520.00
2	22334.13	20.51	2.158	0.30(0.25)	0.84	3957.5	10300.00
3	22383.72	20.67	2.148	0.30(0.25)	0.84	3991.4	10230.00
4	22662.48	21.30	2.112	0.30(0.25)	0.84	4153.5	10380.00
5	22823.07	21.67	2.090	0.30(0.25)	0.84	4246.5	10400.00
6	23671.40	23.65	1.975	0.30(0.25)	0.84	4736.8	10320.00
7	24013.18	24.46	1.928	0.30(0.25)	0.84	4932.8	300.00
8	24538.42	25.75	1.868	0.30(0.25)	0.84	5352.1	10360.00
9	25687.26	28.60	1.759	0.30(0.25)	0.84	6266.5	10340.00
10	25952.81	29.26	1.733	0.30(0.25)	0.84	6476.3	210.00
11	26150.39	29.93	1.708	0.30(0.25)	0.84	6692.3	10200.00
12	26263.49	30.32	1.697	0.30(0.25)	0.84	6815.9	10250.00
13	26576.31	31.39	1.669	0.30(0.25)	0.84	7154.8	10500.00
14	27323.37	34.05	1.600	0.30(0.25)	0.84	7968.7	10220.00
15	28150.58	36.97	1.524	0.30(0.25)	0.84	8856.7	110.00
16	31226.65	46.28	1.344	0.30(0.26)	0.85	12891.3	10100.00
17	32608.15	52.97	1.251	0.30(0.26)	0.87	15632.4	50260.00
18	34512.62	62.78	1.153	0.30(0.26)	0.88	19732.1	31100.00
19	36823.62	73.85	1.079	0.30(0.27)	0.90	24868.6	40100.00
20	37886.83	81.51	1.027	0.30(0.27)	0.91	28313.6	11801.00
21	39788.73	91.98	0.961	0.30(0.28)	0.92	33745.1	11530.00
22	41634.05	99.54	0.929	0.30(0.28)	0.93	38692.5	11910.00
23	42923.08	104.73	0.906	0.30(0.28)	0.93	42535.4	13500.00
24	44437.36	113.53	0.868	0.30(0.28)	0.94	48633.3	11130.00
25	44043.16	123.14	0.833	0.30(0.28)	0.95	53674.5	12410.00
26	43442.12	131.48	0.816	0.30(0.28)	0.95	57413.6	11201.00
27	43010.64	136.48	0.806	0.30(0.28)	0.95	59145.3	12201.00
28	41987.80	143.63	0.791	0.30(0.29)	0.95	61002.4	12231.00
29	40680.30	151.57	0.774	0.30(0.29)	0.95	62636.7	10400.00
30	39318.81	159.66	0.757	0.30(0.29)	0.95	63931.8	12010.00
31	38118.02	165.75	0.745	0.30(0.29)	0.95	64278.8	10210.00
32	33917.36	194.44	0.700	0.30(0.29)	0.95	65017.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.85	17.52	2.397	0.30(0.20)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)		(ACRES)	NODE
1	20344.92	14.82	2.639	0.30(0.25)	0.83	2888.9	10520.00
2	21321.94	17.52	2.397	0.30(0.25)	0.83	3416.9	10600.00
3	22391.01	20.51	2.158	0.30(0.25)	0.83	3994.4	10300.00
4	22440.33	20.67	2.148	0.30(0.25)	0.83	4028.3	10230.00
5	22718.02	21.30	2.112	0.30(0.25)	0.83	4190.4	10380.00
6	22877.99	21.67	2.090	0.30(0.25)	0.83	4283.4	10400.00
7	23722.98	23.65	1.975	0.30(0.25)	0.83	4773.7	10320.00
8	24063.40	24.46	1.928	0.30(0.25)	0.83	4969.7	300.00
9	24586.88	25.75	1.868	0.30(0.25)	0.84	5389.0	10360.00
10	25732.55	28.60	1.759	0.30(0.25)	0.84	6303.4	10340.00
11	25997.37	29.26	1.733	0.30(0.25)	0.84	6513.2	210.00
12	26194.19	29.93	1.708	0.30(0.25)	0.84	6729.2	10200.00
13	26306.97	30.32	1.697	0.30(0.25)	0.84	6852.8	10250.00
14	26618.99	31.39	1.669	0.30(0.25)	0.84	7191.7	10500.00
15	27364.04	34.05	1.600	0.30(0.25)	0.84	8005.6	10220.00
16	28189.06	36.97	1.524	0.30(0.25)	0.84	8893.6	110.00
17	31259.89	46.28	1.344	0.30(0.26)	0.85	12928.2	10100.00
18	32638.67	52.97	1.251	0.30(0.26)	0.86	15669.3	50260.00
19	34540.31	62.78	1.153	0.30(0.26)	0.88	19769.0	31100.00
20	36849.14	73.85	1.079	0.30(0.27)	0.90	24905.5	40100.00
21	37910.85	81.51	1.027	0.30(0.27)	0.91	28350.5	11801.00
22	39810.84	91.98	0.961	0.30(0.28)	0.92	33782.0	11530.00
23	41655.20	99.54	0.929	0.30(0.28)	0.93	38729.4	11910.00
24	42943.58	104.73	0.906	0.30(0.28)	0.93	42572.3	13500.00
25	44456.76	113.53	0.868	0.30(0.28)	0.94	48670.2	11130.00
26	44061.55	123.14	0.833	0.30(0.28)	0.95	53711.4	12410.00
27	43460.01	131.48	0.816	0.30(0.28)	0.95	57450.5	11201.00
28	43028.21	136.48	0.806	0.30(0.28)	0.95	59182.2	12201.00
29	42004.94	143.63	0.791	0.30(0.28)	0.95	61039.3	12231.00
30	40696.96	151.57	0.774	0.30(0.29)	0.95	62673.6	10400.00
31	39334.98	159.66	0.757	0.30(0.29)	0.95	63968.7	12010.00
32	38133.82	165.75	0.745	0.30(0.29)	0.95	64315.7	10210.00
33	33931.86	194.44	0.700	0.30(0.29)	0.95	65054.1	10100.00

TOTAL AREA(ACRES) = 65054.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44456.76 Tc(MIN.) = 113.530
EFFECTIVE AREA(ACRES) = 48670.18 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 65054.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130613.30 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 65054.1 TC(MIN.) = 113.53
EFFECTIVE AREA(ACRES) = 48670.18 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.941
PEAK FLOW RATE(CFS) = 44456.76

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20344.92	14.82	2.639	0.30(0.25)	0.83	2888.9	10520.00
2	21321.94	17.52	2.397	0.30(0.25)	0.83	3416.9	10600.00
3	22391.01	20.51	2.158	0.30(0.25)	0.83	3994.4	10300.00
4	22440.33	20.67	2.148	0.30(0.25)	0.83	4028.3	10230.00
5	22718.02	21.30	2.112	0.30(0.25)	0.83	4190.4	10380.00
6	22877.99	21.67	2.090	0.30(0.25)	0.83	4283.4	10400.00

7	23722.98	23.65	1.975	0.30(0.25)	0.83	4773.7	10320.00
8	24063.40	24.46	1.928	0.30(0.25)	0.83	4969.7	300.00
9	24586.88	25.75	1.868	0.30(0.25)	0.84	5389.0	10360.00
10	25732.55	28.60	1.759	0.30(0.25)	0.84	6303.4	10340.00
11	25997.37	29.26	1.733	0.30(0.25)	0.84	6513.2	210.00
12	26194.19	29.93	1.708	0.30(0.25)	0.84	6729.2	10200.00
13	26306.97	30.32	1.697	0.30(0.25)	0.84	6852.8	10250.00
14	26618.99	31.39	1.669	0.30(0.25)	0.84	7191.7	10500.00
15	27364.04	34.05	1.600	0.30(0.25)	0.84	8005.6	10220.00
16	28189.06	36.97	1.524	0.30(0.25)	0.84	8893.6	110.00
17	31259.89	46.28	1.344	0.30(0.26)	0.85	12928.2	10100.00
18	32638.67	52.97	1.251	0.30(0.26)	0.86	15669.3	50260.00
19	34540.31	62.78	1.153	0.30(0.26)	0.88	19769.0	31100.00
20	36849.14	73.85	1.079	0.30(0.27)	0.90	24905.5	40100.00
21	37910.85	81.51	1.027	0.30(0.27)	0.91	28350.5	11801.00
22	39810.84	91.98	0.961	0.30(0.28)	0.92	33782.0	11530.00
23	41655.20	99.54	0.929	0.30(0.28)	0.93	38729.4	11910.00
24	42943.58	104.73	0.906	0.30(0.28)	0.93	42572.3	13500.00
25	44456.76	113.53	0.868	0.30(0.28)	0.94	48670.2	11130.00
26	44061.55	123.14	0.833	0.30(0.28)	0.95	53711.4	12410.00
27	43460.01	131.48	0.816	0.30(0.28)	0.95	57450.5	11201.00
28	43028.21	136.48	0.806	0.30(0.28)	0.95	59182.2	12201.00
29	42004.94	143.63	0.791	0.30(0.28)	0.95	61039.3	12231.00
30	40696.96	151.57	0.774	0.30(0.29)	0.95	62673.6	10400.00
31	39334.98	159.66	0.757	0.30(0.29)	0.95	63968.7	12010.00
32	38133.82	165.75	0.745	0.30(0.29)	0.95	64315.7	10210.00
33	33931.86	194.44	0.700	0.30(0.29)	0.95	65054.1	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 138 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 50-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU50EV38.DAT
  TIME/DATE OF STUDY: 13:12 07/05/2023
============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.225
   2)   10.00;  3.382
   3)   15.00;  2.607
   4)   20.00;  2.184
   5)   25.00;  1.895
   6)   30.00;  1.703
   7)   40.00;  1.444
   8)   50.00;  1.282
   9)   60.00;  1.170
  10)   90.00;  0.968
  11)  120.00;  0.838
  12)  180.00;  0.713
  13)  360.00;  0.522
  14) 1200.00;  0.227
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 15.1
------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 1 <<<<<
========================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV37.DNA
  MEMORY BANK #  1 DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22877.99   21.67  0.30( 0.25) 0.83    4283.4   10400.00
      2    24586.88   25.75  0.30( 0.25) 0.84    5389.0   10360.00
      3    28189.06   36.97  0.30( 0.25) 0.84    8893.6     110.00
      4    31259.89   46.28  0.30( 0.26) 0.85   12928.2   10100.00
      5    32638.67   52.97  0.30( 0.26) 0.86   15669.3   50260.00
      6    34540.31   62.78  0.30( 0.26) 0.88   19769.0   31100.00
      7    36849.14   73.85  0.30( 0.27) 0.90   24905.5   40100.00
      8    37910.85   81.51  0.30( 0.27) 0.91   28350.5   11801.00
      9    39810.84   91.98  0.30( 0.28) 0.92   33782.0   11530.00
     10    41655.20   99.54  0.30( 0.28) 0.93   38729.4   11910.00
     11    42943.58  104.73  0.30( 0.28) 0.93   42572.3   13500.00
     12    44456.76  113.53  0.30( 0.28) 0.94   48670.2   11130.00
     13    44061.55  123.14  0.30( 0.28) 0.95   53711.4   12410.00
     14    43460.01  131.48  0.30( 0.28) 0.95   57450.5   11201.00
     15    43028.21  136.48  0.30( 0.28) 0.95   59182.2   12201.00
     16    42004.94  143.63  0.30( 0.28) 0.95   61039.3   12231.00
     17    40696.96  151.57  0.30( 0.29) 0.95   62673.6   10400.00
     18    39334.98  159.66  0.30( 0.29) 0.95   63968.7   12010.00
     19    38133.82  165.75  0.30( 0.29) 0.95   64315.7   10210.00
     20    33931.86  194.44  0.30( 0.29) 0.95   65054.1   10100.00
   TOTAL AREA(ACRES) =    65054.1

************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13803.00 IS CODE = 14.0
------------------------------------------------------------------------
  >>>>>MEMORY BANK #  1 COPIED ONTO MAIN-STREAM MEMORY<<<<<
========================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
   STREAM       Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)  (MIN.)  (INCH/HR)           (ACRES)     NODE
      1    22877.99   21.67  0.30( 0.25) 0.83    4283.4   10400.00
      2    24586.88   25.75  0.30( 0.25) 0.84    5389.0   10360.00
      3    28189.06   36.97  0.30( 0.25) 0.84    8893.6     110.00
      4    31259.89   46.28  0.30( 0.26) 0.85   12928.2   10100.00
      5    32638.67   52.97  0.30( 0.26) 0.86   15669.3   50260.00
      6    34540.31   62.78  0.30( 0.26) 0.88   19769.0   31100.00
      7    36849.14   73.85  0.30( 0.27) 0.90   24905.5   40100.00
      8    37910.85   81.51  0.30( 0.27) 0.91   28350.5   11801.00
      9    39810.84   91.98  0.30( 0.28) 0.92   33782.0   11530.00
     10    41655.20   99.54  0.30( 0.28) 0.93   38729.4   11910.00
     11    42943.58  104.73  0.30( 0.28) 0.93   42572.3   13500.00
     12    44456.76  113.53  0.30( 0.28) 0.94   48670.2   11130.00
     13    44061.55  123.14  0.30( 0.28) 0.95   53711.4   12410.00
```

```
     14    43460.01  131.48  0.30( 0.28) 0.95   57450.5   11201.00
     15    43028.21  136.48  0.30( 0.28) 0.95   59182.2   12201.00
     16    42004.94  143.63  0.30( 0.28) 0.95   61039.3   12231.00
     17    40696.96  151.57  0.30( 0.29) 0.95   62673.6   10400.00
     18    39334.98  159.66  0.30( 0.29) 0.95   63968.7   12010.00
     19    38133.82  165.75  0.30( 0.29) 0.95   64315.7   10210.00
     20    33931.86  194.44  0.30( 0.29) 0.95   65054.1   10100.00
    TOTAL AREA(ACRES) =     65054.1

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    140.00  DOWNSTREAM(FEET) =    137.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   926.91   CHANNEL SLOPE =  0.0032
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  17.52
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.862
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       31.44      0.30     0.983     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.983
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   44464.78
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  14.92
  AVERAGE FLOW DEPTH(FEET) =  17.52   TRAVEL TIME(MIN.) =   1.04
  Tc(MIN.) =  114.57
  SUBAREA AREA(ACRES) =    31.44       SUBAREA RUNOFF(CFS) =   16.04
  EFFECTIVE AREA(ACRES) =  48701.62     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65085.6         PEAK FLOW RATE(CFS) =   44456.76
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  17.51

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 17.51   FLOW VELOCITY(FEET/SEC.) =  14.93
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13820.00 =  131540.20 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13803.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  114.57
  RAINFALL INTENSITY(INCH/HR) =   0.86
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   48701.62
  TOTAL STREAM AREA(ACRES) =   65085.59
```



```
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   44456.76

****************************************************************************
  FLOW PROCESS FROM NODE  13810.00 TO NODE  13811.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   648.54
  ELEVATION DATA: UPSTREAM(FEET) =    756.46  DOWNSTREAM(FEET) =    586.02

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.293
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.027
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.58      0.30     1.000    65   12.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     13.69
  TOTAL AREA(ACRES) =      5.58   PEAK FLOW RATE(CFS) =     13.69

****************************************************************************
  FLOW PROCESS FROM NODE  13811.00 TO NODE  13811.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    586.02  DOWNSTREAM(FEET) =    437.69
  CHANNEL LENGTH THRU SUBAREA(FEET) =   696.28   CHANNEL SLOPE =  0.2130
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.739
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       14.79      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      29.95
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.26
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   1.85
  Tc(MIN.) =   14.15
  SUBAREA AREA(ACRES) =    14.79       SUBAREA RUNOFF(CFS) =   32.47
  EFFECTIVE AREA(ACRES) =     20.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.4          PEAK FLOW RATE(CFS) =      44.72
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.56   FLOW VELOCITY(FEET/SEC.) =   7.18
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13811.50 =    1344.82 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  13811.50 TO NODE  13812.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    437.69  DOWNSTREAM(FEET) =    402.36
  CHANNEL LENGTH THRU SUBAREA(FEET) =   681.04   CHANNEL SLOPE =  0.0519
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.05
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.490
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.41      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      62.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.08
  AVERAGE FLOW DEPTH(FEET) =   1.03   TRAVEL TIME(MIN.) =   2.23
  Tc(MIN.) =   16.38
  SUBAREA AREA(ACRES) =    18.41       SUBAREA RUNOFF(CFS) =   36.29
  EFFECTIVE AREA(ACRES) =     38.78     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       38.8         PEAK FLOW RATE(CFS) =      76.44
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.15

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =   5.41
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13812.00 =    2025.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13812.00 TO NODE  13813.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    402.36  DOWNSTREAM(FEET) =    259.72
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1282.56   CHANNEL SLOPE =  0.1112
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.254
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.87      0.30     0.858     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.858
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     101.51
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.66
  AVERAGE FLOW DEPTH(FEET) =   1.09   TRAVEL TIME(MIN.) =   2.79
  Tc(MIN.) =   19.17
  SUBAREA AREA(ACRES) =    27.87       SUBAREA RUNOFF(CFS) =   50.08
  EFFECTIVE AREA(ACRES) =     66.65     AREA-AVERAGED Fm(INCH/HR) =   0.28
```



```
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       66.7         PEAK FLOW RATE(CFS) =     118.29
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.19

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.19   FLOW VELOCITY(FEET/SEC.) =   8.05
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13813.00 =    3308.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   259.72  DOWNSTREAM(FEET) =   137.00
  FLOW LENGTH(FEET) =  2412.88   MANNING'S N =  0.013
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  25.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  22.57
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     118.29
  PIPE TRAVEL TIME(MIN.) =   1.78    Tc(MIN.) =   20.95
  LONGEST FLOWPATH FROM NODE  13810.00 TO NODE  13820.00 =    5721.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.95
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.129
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       83.64      0.30     0.570     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.570
  SUBAREA AREA(ACRES) =   83.64       SUBAREA RUNOFF(CFS) =  147.39
  EFFECTIVE AREA(ACRES) =    150.29   AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      150.3        PEAK FLOW RATE(CFS) =     258.17

****************************************************************************
  FLOW PROCESS FROM NODE  13813.00 TO NODE  13820.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   20.95
  RAINFALL INTENSITY(INCH/HR) =   2.13
  AREA-AVERAGED Fm(INCH/HR) =  0.22
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     150.29
  TOTAL STREAM AREA(ACRES) =     150.29
```

PEAK FLOW RATE(CFS) AT CONFLUENCE = 258.17

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22877.99	22.92	2.015	0.30(0.25)	0.84	4314.9	10400.00
1	24586.88	26.98	1.819	0.30(0.25)	0.84	5420.5	10360.00
1	28189.06	38.15	1.492	0.30(0.25)	0.84	8925.0	110.00
1	31259.89	47.42	1.324	0.30(0.26)	0.85	12959.7	10100.00
1	32638.67	54.10	1.236	0.30(0.26)	0.86	15700.7	50260.00
1	34540.31	63.89	1.144	0.30(0.26)	0.88	19800.5	31100.00
1	36849.14	74.95	1.069	0.30(0.27)	0.90	24936.9	40100.00
1	37910.85	82.59	1.018	0.30(0.27)	0.91	28382.0	11801.00
1	39810.84	93.05	0.955	0.30(0.28)	0.92	33813.4	11530.00
1	41655.20	100.59	0.922	0.30(0.28)	0.93	38760.8	11910.00
1	42943.58	105.77	0.900	0.30(0.28)	0.93	42603.7	13500.00
1	44456.76	114.57	0.862	0.30(0.28)	0.94	48701.6	11130.00
1	44061.55	124.18	0.829	0.30(0.28)	0.95	53742.8	12410.00
1	43460.01	132.52	0.812	0.30(0.28)	0.95	57481.9	11201.00
1	43028.21	137.52	0.801	0.30(0.28)	0.95	59213.6	12201.00
1	42004.94	144.69	0.787	0.30(0.28)	0.95	61070.8	12231.00
1	40696.96	152.64	0.770	0.30(0.29)	0.95	62705.1	10400.00
1	39334.98	160.73	0.753	0.30(0.29)	0.95	64000.2	12010.00
1	38133.82	166.84	0.740	0.30(0.29)	0.95	64347.1	10210.00
1	33931.86	195.56	0.696	0.30(0.29)	0.95	65085.6	10100.00
2	258.17	20.95	2.129	0.30(0.22)	0.73	150.3	13810.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22519.19	20.95	2.129	0.30(0.25)	0.83	4094.1	13810.00
2	23120.74	22.92	2.015	0.30(0.25)	0.83	4465.2	10400.00
3	24803.14	26.98	1.819	0.30(0.25)	0.83	5570.7	10360.00
4	28361.06	38.15	1.492	0.30(0.25)	0.84	9075.3	110.00
5	31409.16	47.42	1.324	0.30(0.26)	0.85	13110.0	10100.00
6	32776.07	54.10	1.236	0.30(0.26)	0.86	15851.0	50260.00
7	34665.23	63.89	1.144	0.30(0.26)	0.88	19950.8	31100.00
8	36963.99	74.95	1.069	0.30(0.27)	0.90	25087.2	40100.00
9	38018.74	82.59	1.018	0.30(0.27)	0.91	28532.2	11801.00
10	39910.19	93.05	0.955	0.30(0.28)	0.92	33963.7	11530.00
11	41750.14	100.59	0.922	0.30(0.28)	0.93	38911.1	11910.00
12	43035.47	105.77	0.900	0.30(0.28)	0.93	42754.0	13500.00
13	44543.50	114.57	0.862	0.30(0.28)	0.94	48851.9	11130.00
14	44143.93	124.18	0.829	0.30(0.28)	0.95	53893.1	12410.00
15	43540.04	132.52	0.812	0.30(0.28)	0.95	57632.2	11201.00
16	43106.83	137.52	0.801	0.30(0.28)	0.95	59363.9	12201.00
17	42081.54	144.69	0.787	0.30(0.28)	0.95	61221.1	12231.00
18	40771.32	152.64	0.770	0.30(0.29)	0.95	62855.4	10400.00
19	39407.06	160.73	0.753	0.30(0.29)	0.95	64150.5	12010.00
20	38204.18	166.84	0.740	0.30(0.29)	0.95	64497.4	10210.00
21	33996.28	195.56	0.696	0.30(0.29)	0.95	65235.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44543.50 Tc(MIN.) = 114.57
EFFECTIVE AREA(ACRES) = 48851.91 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65235.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131540.20 FEET.

****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 17.63
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.855
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.60	0.30	0.683	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 44552.75
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.82
AVERAGE FLOW DEPTH(FEET) = 17.63 TRAVEL TIME(MIN.) = 1.42
Tc(MIN.) = 115.98
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 18.50
EFFECTIVE AREA(ACRES) = 48883.51 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65267.5 PEAK FLOW RATE(CFS) = 44543.50
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 17.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 17.63 FLOW VELOCITY(FEET/SEC.) = 14.82
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132801.55 FEET.

****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 115.98
RAINFALL INTENSITY(INCH/HR) = 0.86
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48883.51
TOTAL STREAM AREA(ACRES) = 65267.48
PEAK FLOW RATE(CFS) AT CONFLUENCE = 44543.50

****
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   744.71
  ELEVATION DATA: UPSTREAM(FEET) =   1100.95  DOWNSTREAM(FEET) =    959.21

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.858
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.784
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        5.06      0.30     1.000    65   13.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     11.31
  TOTAL AREA(ACRES) =      5.06   PEAK FLOW RATE(CFS) =     11.31

******************************************************************************
  FLOW PROCESS FROM NODE  13831.00 TO NODE  13832.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    959.21  DOWNSTREAM(FEET) =    832.83
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1076.71   CHANNEL SLOPE =  0.1174
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.69
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.443
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.57      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.82
  AVERAGE FLOW DEPTH(FEET) =   0.65   TRAVEL TIME(MIN.) =   3.08
  Tc(MIN.) =   16.94
  SUBAREA AREA(ACRES) =    32.57       SUBAREA RUNOFF(CFS) =   62.82
  EFFECTIVE AREA(ACRES) =     37.63     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       37.6         PEAK FLOW RATE(CFS) =      72.58
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.88

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.88   FLOW VELOCITY(FEET/SEC.) =   6.99
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13832.00 =    1821.42 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13832.00 TO NODE  13833.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
```



```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    832.83  DOWNSTREAM(FEET) =    572.49
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1883.58   CHANNEL SLOPE =  0.1382
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.03
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.139
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       32.23      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      99.30
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.18
  AVERAGE FLOW DEPTH(FEET) =   1.01   TRAVEL TIME(MIN.) =   3.84
  Tc(MIN.) =   20.78
  SUBAREA AREA(ACRES) =    32.23       SUBAREA RUNOFF(CFS) =   53.35
  EFFECTIVE AREA(ACRES) =     69.86     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       69.9         PEAK FLOW RATE(CFS) =     115.63
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   8.59
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13833.00 =    3705.00 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  13833.00 TO NODE  13834.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    572.49  DOWNSTREAM(FEET) =    471.65
  CHANNEL LENGTH THRU SUBAREA(FEET) =   943.78   CHANNEL SLOPE =  0.1068
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.030
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       27.51      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     137.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.31
  AVERAGE FLOW DEPTH(FEET) =   1.31   TRAVEL TIME(MIN.) =   1.89
  Tc(MIN.) =   22.67
  SUBAREA AREA(ACRES) =    27.51       SUBAREA RUNOFF(CFS) =   42.83
  EFFECTIVE AREA(ACRES) =     97.37     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       97.4         PEAK FLOW RATE(CFS) =     151.58
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.38
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.38   FLOW VELOCITY(FEET/SEC.) =   8.58
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13834.00 =    4648.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13834.00 TO NODE  13835.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    471.65  DOWNSTREAM(FEET) =    347.06
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1647.45   CHANNEL SLOPE =  0.0756
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.90
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.861
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       94.21      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     217.79
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.51
  AVERAGE FLOW DEPTH(FEET) =   1.86   TRAVEL TIME(MIN.) =   3.23
  Tc(MIN.) =   25.90
  SUBAREA AREA(ACRES) =    94.21       SUBAREA RUNOFF(CFS) =  132.32
  EFFECTIVE AREA(ACRES) =    191.58     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      191.6         PEAK FLOW RATE(CFS) =     269.08
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   2.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.09   FLOW VELOCITY(FEET/SEC.) =   9.06
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13835.00 =    6296.23 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13835.00 TO NODE  13836.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    347.06  DOWNSTREAM(FEET) =    269.29
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1696.71   CHANNEL SLOPE =  0.0458
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.09
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.734
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      233.25      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     419.75
```



```
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.61
  AVERAGE FLOW DEPTH(FEET) =   3.03   TRAVEL TIME(MIN.) =   3.28
  Tc(MIN.) =   29.18
  SUBAREA AREA(ACRES) =   233.25       SUBAREA RUNOFF(CFS) =  301.14
  EFFECTIVE AREA(ACRES) =    424.83     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =      424.8         PEAK FLOW RATE(CFS) =     548.48
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   3.48

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  3.48   FLOW VELOCITY(FEET/SEC.) =   9.28
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13836.00 =    7992.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13836.00 TO NODE  13837.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    269.29  DOWNSTREAM(FEET) =    191.87
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2529.21   CHANNEL SLOPE =  0.0306
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.16
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.593
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -      134.70      0.30     0.880     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.880
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     629.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.31
  AVERAGE FLOW DEPTH(FEET) =   4.14   TRAVEL TIME(MIN.) =   5.07
  Tc(MIN.) =   34.25
  SUBAREA AREA(ACRES) =   134.70       SUBAREA RUNOFF(CFS) =  161.11
  EFFECTIVE AREA(ACRES) =    559.53     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.97
  TOTAL AREA(ACRES) =      559.5         PEAK FLOW RATE(CFS) =     655.45
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   4.23

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  4.23   FLOW VELOCITY(FEET/SEC.) =   8.40
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13837.00 =   10522.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   191.87  DOWNSTREAM(FEET) =   133.00
  FLOW LENGTH(FEET) =  1151.02   MANNING'S N =  0.013
  DEPTH OF FLOW IN  66.0 INCH PIPE IS  49.4 INCHES
```

```
  PIPE-FLOW VELOCITY(FEET/SEC.) =  34.36
  ESTIMATED PIPE DIAMETER(INCH) =  66.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     655.45
  PIPE TRAVEL TIME(MIN.) =   0.56    Tc(MIN.) =   34.81
  LONGEST FLOWPATH FROM NODE  13830.00 TO NODE  13840.00 =   11673.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.81
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.578
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        5.97      0.30     0.622     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.622
  SUBAREA AREA(ACRES) =    5.97      SUBAREA RUNOFF(CFS) =    7.48
  EFFECTIVE AREA(ACRES) =    565.50   AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      565.5       PEAK FLOW RATE(CFS) =     655.65

****************************************************************************
  FLOW PROCESS FROM NODE  13837.00 TO NODE  13840.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   34.81
  RAINFALL INTENSITY(INCH/HR) =   1.58
  AREA-AVERAGED Fm(INCH/HR) =  0.29
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.97
  EFFECTIVE STREAM AREA(ACRES) =     565.50
  TOTAL STREAM AREA(ACRES) =     565.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     655.65

  ** CONFLUENCE DATA **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    22519.19   22.68    2.029  0.30( 0.25) 0.83    4125.7   13810.00
      1    23120.74   24.63    1.916  0.30( 0.25) 0.83    4496.8   10400.00
      1    24803.14   28.65    1.755  0.30( 0.25) 0.83    5602.3   10360.00
      1    28361.06   39.76    1.450  0.30( 0.25) 0.84    9106.9     110.00
      1    31409.16   48.98    1.298  0.30( 0.26) 0.85   13141.6   10100.00
      1    32776.07   55.65    1.219  0.30( 0.26) 0.86   15882.6   50260.00
      1    34665.23   65.41    1.134  0.30( 0.26) 0.88   19982.4   31100.00
      1    36963.99   76.44    1.059  0.30( 0.27) 0.90   25118.8   40100.00
      1    38018.74   84.08    1.008  0.30( 0.27) 0.91   28563.8   11801.00
      1    39910.19   94.51    0.948  0.30( 0.28) 0.92   33995.3   11530.00
      1    41750.14  102.04    0.916  0.30( 0.28) 0.93   38942.7   11910.00
      1    43035.47  107.21    0.893  0.30( 0.28) 0.93   42785.6   13500.00
      1    44543.50  115.98    0.855  0.30( 0.28) 0.94   48883.5   11130.00
      1    44143.93  125.60    0.826  0.30( 0.28) 0.94   53924.7   12410.00
```



```
      1    43540.04  133.94    0.809  0.30( 0.28) 0.95   57663.8   11201.00
      1    43106.83  138.96    0.799  0.30( 0.28) 0.95   59395.5   12201.00
      1    42081.54  146.13    0.784  0.30( 0.28) 0.95   61252.7   12231.00
      1    40771.32  154.09    0.767  0.30( 0.29) 0.95   62887.0   10400.00
      1    39407.06  162.20    0.750  0.30( 0.29) 0.95   64182.1   12010.00
      1    38204.18  168.32    0.737  0.30( 0.29) 0.95   64529.0   10210.00
      1    33996.28  197.09    0.695  0.30( 0.29) 0.95   65267.5   10100.00
      2      655.65   34.81    1.578  0.30( 0.29) 0.97     565.5   13830.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc    Intensity   Fp(Fm)     Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23095.79   22.68    2.029  0.30( 0.25) 0.84    4494.1   13810.00
      2    23706.36   24.63    1.916  0.30( 0.25) 0.84    4896.9   10400.00
      3    25416.68   28.65    1.755  0.30( 0.25) 0.84    6067.8   10360.00
      4    27431.08   34.81    1.578  0.30( 0.25) 0.84    8110.6   13830.00
      5    28951.45   39.76    1.450  0.30( 0.25) 0.85    9672.4     110.00
      6    31922.33   48.98    1.298  0.30( 0.26) 0.86   13707.1   10100.00
      7    33248.68   55.65    1.219  0.30( 0.26) 0.87   16448.1   50260.00
      8    35094.48   65.41    1.134  0.30( 0.26) 0.88   20547.9   31100.00
      9    37355.45   76.44    1.059  0.30( 0.27) 0.90   25684.3   40100.00
     10    38384.03   84.08    1.008  0.30( 0.27) 0.91   29129.3   11801.00
     11    40245.23   94.51    0.948  0.30( 0.28) 0.92   34560.8   11530.00
     12    42068.58  102.04    0.916  0.30( 0.28) 0.93   39508.2   11910.00
     13    43342.51  107.21    0.893  0.30( 0.28) 0.93   43351.1   13500.00
     14    44831.18  115.98    0.855  0.30( 0.28) 0.94   49449.0   11130.00
     15    44416.81  125.60    0.826  0.30( 0.28) 0.95   54490.2   12410.00
     16    43804.07  133.94    0.809  0.30( 0.28) 0.95   58229.3   11201.00
     17    43365.55  138.96    0.799  0.30( 0.28) 0.95   59961.0   12201.00
     18    42332.66  146.13    0.784  0.30( 0.28) 0.95   61818.2   12231.00
     19    41014.00  154.09    0.767  0.30( 0.29) 0.95   63452.5   10400.00
     20    39641.14  162.20    0.750  0.30( 0.29) 0.95   64747.6   12010.00
     21    38431.77  168.32    0.737  0.30( 0.29) 0.95   65094.5   10210.00
     22    34202.25  197.09    0.695  0.30( 0.29) 0.95   65833.0   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   44831.18    Tc(MIN.) =   115.98
  EFFECTIVE AREA(ACRES) =   49449.01   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    65833.0
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13840.00 =  132801.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    133.00  DOWNSTREAM(FEET) =    130.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   654.44   CHANNEL SLOPE =  0.0046
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.09
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.853
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.61      0.30     0.975     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.975
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   44832.85
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  16.96
  AVERAGE FLOW DEPTH(FEET) =  16.09   TRAVEL TIME(MIN.) =   0.64
  Tc(MIN.) =  116.63
  SUBAREA AREA(ACRES) =     6.61       SUBAREA RUNOFF(CFS) =    3.33
  EFFECTIVE AREA(ACRES) =  49455.62     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65839.6         PEAK FLOW RATE(CFS) =   44831.18
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  16.09

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 16.09   FLOW VELOCITY(FEET/SEC.) =  16.96
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13840.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  116.63
  RAINFALL INTENSITY(INCH/HR) =   0.85
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49455.62
  TOTAL STREAM AREA(ACRES) =   65839.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   44831.18

****************************************************************************
  FLOW PROCESS FROM NODE  13850.00 TO NODE  13851.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   617.57
  ELEVATION DATA: UPSTREAM(FEET) =    646.95  DOWNSTREAM(FEET) =    490.10

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.137
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.051
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "CHAPARRAL,BROADLEAF"      -        4.95      0.30     1.000    65   12.14
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     12.25
```



```
  TOTAL AREA(ACRES) =      4.95   PEAK FLOW RATE(CFS) =     12.25

****************************************************************************
  FLOW PROCESS FROM NODE  13851.00 TO NODE  13851.50 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    490.10  DOWNSTREAM(FEET) =    440.98
  CHANNEL LENGTH THRU SUBAREA(FEET) =   351.14   CHANNEL SLOPE =  0.1399
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.36
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.846
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.02      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      16.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.43
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   1.32
  Tc(MIN.) =   13.46
  SUBAREA AREA(ACRES) =     4.02       SUBAREA RUNOFF(CFS) =    9.21
  EFFECTIVE AREA(ACRES) =      8.97     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =        9.0         PEAK FLOW RATE(CFS) =      20.55
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.40

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.40   FLOW VELOCITY(FEET/SEC.) =   4.74
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13851.50 =     968.71 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13851.50 TO NODE  13852.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    440.98  DOWNSTREAM(FEET) =    395.76
  CHANNEL LENGTH THRU SUBAREA(FEET) =   512.91   CHANNEL SLOPE =  0.0882
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.56
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.578
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        7.17      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      27.91
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.55
  AVERAGE FLOW DEPTH(FEET) =   0.55   TRAVEL TIME(MIN.) =   1.88
  Tc(MIN.) =   15.34
```

```
  SUBAREA AREA(ACRES) =     7.17       SUBAREA RUNOFF(CFS) =   14.70
  EFFECTIVE AREA(ACRES) =     16.14     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       16.1         PEAK FLOW RATE(CFS) =      33.10
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.61

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.61   FLOW VELOCITY(FEET/SEC.) =   4.86
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13852.00 =    1481.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13852.00 TO NODE  13853.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    395.76  DOWNSTREAM(FEET) =    354.94
  CHANNEL LENGTH THRU SUBAREA(FEET) =   443.69   CHANNEL SLOPE =  0.0920
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.67
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.459
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        6.76      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      39.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.67   TRAVEL TIME(MIN.) =   1.41
  Tc(MIN.) =   16.75
  SUBAREA AREA(ACRES) =     6.76       SUBAREA RUNOFF(CFS) =   13.14
  EFFECTIVE AREA(ACRES) =     22.90     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       22.9         PEAK FLOW RATE(CFS) =      44.50
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.71   FLOW VELOCITY(FEET/SEC.) =   5.45
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13853.00 =    1925.31 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13853.00 TO NODE  13854.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    354.94  DOWNSTREAM(FEET) =    263.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   962.09   CHANNEL SLOPE =  0.0950
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.86
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.237
```



```
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       18.16      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      60.34
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.12
  AVERAGE FLOW DEPTH(FEET) =   0.84   TRAVEL TIME(MIN.) =   2.62
  Tc(MIN.) =   19.37
  SUBAREA AREA(ACRES) =    18.16       SUBAREA RUNOFF(CFS) =   31.66
  EFFECTIVE AREA(ACRES) =     41.06     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       41.1         PEAK FLOW RATE(CFS) =      71.59
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   6.46
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13854.00 =    2887.40 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13854.00 TO NODE  13855.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    263.57  DOWNSTREAM(FEET) =    188.74
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1228.77   CHANNEL SLOPE =  0.0609
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.031
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       38.75      0.30     0.879     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     102.43
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.25
  AVERAGE FLOW DEPTH(FEET) =   1.30   TRAVEL TIME(MIN.) =   3.27
  Tc(MIN.) =   22.65
  SUBAREA AREA(ACRES) =    38.75       SUBAREA RUNOFF(CFS) =   61.64
  EFFECTIVE AREA(ACRES) =     79.81     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =       79.8         PEAK FLOW RATE(CFS) =     125.61
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.46

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.46   FLOW VELOCITY(FEET/SEC.) =   6.66
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13855.00 =    4116.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  31
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   188.74  DOWNSTREAM(FEET) =   130.00
  FLOW LENGTH(FEET) =  2092.67   MANNING'S N =  0.013
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  30.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  18.01
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     125.61
  PIPE TRAVEL TIME(MIN.) =   1.94    Tc(MIN.) =   24.58
  LONGEST FLOWPATH FROM NODE  13850.00 TO NODE  13860.00 =    6208.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.58
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.919
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.41      0.30     0.707     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.707
  SUBAREA AREA(ACRES) =   43.41      SUBAREA RUNOFF(CFS) =   66.69
  EFFECTIVE AREA(ACRES) =    123.22   AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.86
  TOTAL AREA(ACRES) =      123.2       PEAK FLOW RATE(CFS) =     184.26

****************************************************************************
  FLOW PROCESS FROM NODE  13855.00 TO NODE  13860.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   24.58
  RAINFALL INTENSITY(INCH/HR) =   1.92
  AREA-AVERAGED Fm(INCH/HR) =  0.26
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.86
  EFFECTIVE STREAM AREA(ACRES) =     123.22
  TOTAL STREAM AREA(ACRES) =     123.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     184.26

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23095.79   23.46    1.984  0.30( 0.25) 0.84    4500.7   13810.00
      1    23706.36   25.41    1.879  0.30( 0.25) 0.84    4903.6   10400.00
      1    25416.68   29.41    1.726  0.30( 0.25) 0.84    6074.4   10360.00
      1    27431.08   35.55    1.559  0.30( 0.25) 0.85    8117.2   13830.00
      1    28951.45   40.49    1.436  0.30( 0.25) 0.85    9679.0     110.00
      1    31922.33   49.69    1.287  0.30( 0.26) 0.86   13713.7   10100.00
      1    33248.68   56.35    1.211  0.30( 0.26) 0.87   16454.7   50260.00
```



```
      1    35094.48   66.10    1.129  0.30( 0.26) 0.88   20554.5   31100.00
      1    37355.45   77.12    1.055  0.30( 0.27) 0.90   25690.9   40100.00
      1    38384.03   84.75    1.003  0.30( 0.27) 0.91   29136.0   11801.00
      1    40245.23   95.18    0.946  0.30( 0.28) 0.92   34567.4   11530.00
      1    42068.58  102.69    0.913  0.30( 0.28) 0.93   39514.8   11910.00
      1    43342.51  107.85    0.891  0.30( 0.28) 0.93   43357.7   13500.00
      1    44831.18  116.63    0.853  0.30( 0.28) 0.94   49455.6   11130.00
      1    44416.81  126.25    0.825  0.30( 0.28) 0.95   54496.8   12410.00
      1    43804.07  134.59    0.808  0.30( 0.28) 0.95   58235.9   11201.00
      1    43365.55  139.60    0.797  0.30( 0.28) 0.95   59967.6   12201.00
      1    42332.66  146.78    0.782  0.30( 0.28) 0.95   61824.8   12231.00
      1    41014.00  154.75    0.766  0.30( 0.29) 0.95   63459.1   10400.00
      1    39641.14  162.86    0.749  0.30( 0.29) 0.95   64754.2   12010.00
      1    38431.77  168.99    0.736  0.30( 0.29) 0.95   65101.1   10210.00
      1    34202.25  197.78    0.694  0.30( 0.29) 0.95   65839.6   10100.00
      2      184.26   24.58    1.919  0.30( 0.26) 0.86     123.2   13850.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1    23278.49   23.46    1.984  0.30( 0.25) 0.84    4618.2   13810.00
      2    23632.63   24.58    1.919  0.30( 0.25) 0.84    4856.5   13850.00
      3    23886.22   25.41    1.879  0.30( 0.25) 0.84    5026.8   10400.00
      4    25579.49   29.41    1.726  0.30( 0.25) 0.84    6197.6   10360.00
      5    27575.43   35.55    1.559  0.30( 0.25) 0.85    8240.4   13830.00
      6    29082.14   40.49    1.436  0.30( 0.25) 0.85    9802.3     110.00
      7    32036.49   49.69    1.287  0.30( 0.26) 0.86   13836.9   10100.00
      8    33354.41   56.35    1.211  0.30( 0.26) 0.87   16577.9   50260.00
      9    35191.11   66.10    1.129  0.30( 0.26) 0.88   20677.7   31100.00
     10    37443.85   77.12    1.055  0.30( 0.27) 0.90   25814.1   40100.00
     11    38466.73   84.75    1.003  0.30( 0.27) 0.91   29259.2   11801.00
     12    40321.53   95.18    0.946  0.30( 0.28) 0.92   34690.7   11530.00
     13    42141.27  102.69    0.913  0.30( 0.28) 0.93   39638.0   11910.00
     14    43412.72  107.85    0.891  0.30( 0.28) 0.93   43480.9   13500.00
     15    44897.17  116.63    0.853  0.30( 0.28) 0.94   49578.8   11130.00
     16    44479.73  126.25    0.825  0.30( 0.28) 0.94   54620.0   12410.00
     17    43865.07  134.59    0.808  0.30( 0.28) 0.95   58359.2   11201.00
     18    43425.39  139.60    0.797  0.30( 0.28) 0.95   60090.9   12201.00
     19    42390.84  146.78    0.782  0.30( 0.28) 0.95   61948.0   12231.00
     20    41070.34  154.75    0.766  0.30( 0.29) 0.95   63582.3   10400.00
     21    39695.61  162.86    0.749  0.30( 0.29) 0.95   64877.4   12010.00
     22    38484.82  168.99    0.736  0.30( 0.29) 0.95   65224.4   10210.00
     23    34250.67  197.78    0.694  0.30( 0.29) 0.95   65962.8   10100.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =   44897.17    Tc(MIN.) =   116.63
  EFFECTIVE AREA(ACRES) =   49578.84   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =    65962.8
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13860.00 =  133455.98 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    130.00  DOWNSTREAM(FEET) =    120.57
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.77   CHANNEL SLOPE =  0.0154
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.71
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.851
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        4.89      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   44898.38
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  26.12
  AVERAGE FLOW DEPTH(FEET) =  11.71   TRAVEL TIME(MIN.) =   0.39
  Tc(MIN.) =  117.02
  SUBAREA AREA(ACRES) =     4.89       SUBAREA RUNOFF(CFS) =    2.42
  EFFECTIVE AREA(ACRES) =  49583.73     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    65967.7         PEAK FLOW RATE(CFS) =   44897.17
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  11.71

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 11.71   FLOW VELOCITY(FEET/SEC.) =  26.12
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13880.00 =  134066.75 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13860.00 TO NODE  13880.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  117.02
  RAINFALL INTENSITY(INCH/HR) =   0.85
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49583.73
  TOTAL STREAM AREA(ACRES) =   65967.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   44897.17

****************************************************************************
  FLOW PROCESS FROM NODE  13870.00 TO NODE  13871.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.65
  ELEVATION DATA: UPSTREAM(FEET) =    558.52  DOWNSTREAM(FEET) =    436.47

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   15.704
```



```
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.547
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  NATURAL FAIR COVER
  "GRASS"                    -        7.32      0.30     1.000    65   15.70
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     14.81
  TOTAL AREA(ACRES) =      7.32   PEAK FLOW RATE(CFS) =     14.81

****************************************************************************
  FLOW PROCESS FROM NODE  13871.00 TO NODE  13872.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    436.47  DOWNSTREAM(FEET) =    337.62
  CHANNEL LENGTH THRU SUBAREA(FEET) =   827.95   CHANNEL SLOPE =  0.1194
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.51
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.311
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       13.01      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.93
  AVERAGE FLOW DEPTH(FEET) =   0.49   TRAVEL TIME(MIN.) =   2.80
  Tc(MIN.) =   18.50
  SUBAREA AREA(ACRES) =    13.01       SUBAREA RUNOFF(CFS) =   23.54
  EFFECTIVE AREA(ACRES) =     20.33     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       20.3         PEAK FLOW RATE(CFS) =      36.79
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.59

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.59   FLOW VELOCITY(FEET/SEC.) =   5.55
  LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13872.00 =    1700.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13872.00 TO NODE  13873.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    337.62  DOWNSTREAM(FEET) =    253.88
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1049.16   CHANNEL SLOPE =  0.0798
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.94
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.099
  SUBAREA LOSS RATE DATA(AMC  II):
```

```
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       32.99      0.30     0.923     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.923
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      63.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.88
 AVERAGE FLOW DEPTH(FEET) =   0.92   TRAVEL TIME(MIN.) =   2.98
 Tc(MIN.) =   21.48
 SUBAREA AREA(ACRES) =    32.99       SUBAREA RUNOFF(CFS) =   54.09
 EFFECTIVE AREA(ACRES) =     53.32     AREA-AVERAGED Fm(INCH/HR) =   0.29
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.95
 TOTAL AREA(ACRES) =       53.3         PEAK FLOW RATE(CFS) =      87.00
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.10

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.10   FLOW VELOCITY(FEET/SEC.) =   6.51
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13873.00 =    2749.76 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13873.00 TO NODE  13874.00 IS CODE =  56
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    253.88  DOWNSTREAM(FEET) =    160.73
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1518.60   CHANNEL SLOPE =  0.0613
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.09
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.925
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       30.94      0.30     0.900     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     110.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.45
 AVERAGE FLOW DEPTH(FEET) =   1.07   TRAVEL TIME(MIN.) =   3.00
 Tc(MIN.) =   24.47
 SUBAREA AREA(ACRES) =    30.94       SUBAREA RUNOFF(CFS) =   46.10
 EFFECTIVE AREA(ACRES) =     84.26     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =       84.3         PEAK FLOW RATE(CFS) =     124.79
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   1.15

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  1.15   FLOW VELOCITY(FEET/SEC.) =   8.78
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13874.00 =    4268.36 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13874.00 TO NODE  13875.00 IS CODE =  56
----------------------------------------------------------------------------
```



```
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    160.73  DOWNSTREAM(FEET) =    158.14
 CHANNEL LENGTH THRU SUBAREA(FEET) =   582.74   CHANNEL SLOPE =  0.0044
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   2.90
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.820
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       73.67      0.30     0.930     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     175.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.90
 AVERAGE FLOW DEPTH(FEET) =   2.87   TRAVEL TIME(MIN.) =   2.49
 Tc(MIN.) =   26.96
 SUBAREA AREA(ACRES) =    73.67       SUBAREA RUNOFF(CFS) =  102.15
 EFFECTIVE AREA(ACRES) =    157.93     AREA-AVERAGED Fm(INCH/HR) =   0.28
 AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.93
 TOTAL AREA(ACRES) =      157.9         PEAK FLOW RATE(CFS) =     218.91
 GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
 "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) =   3.21

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  3.21   FLOW VELOCITY(FEET/SEC.) =   4.14
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13875.00 =    4851.10 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   158.14  DOWNSTREAM(FEET) =   120.57
 FLOW LENGTH(FEET) =  1855.67   MANNING'S N =  0.013
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  40.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  18.30
 ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =     218.91
 PIPE TRAVEL TIME(MIN.) =   1.69    Tc(MIN.) =   28.65
 LONGEST FLOWPATH FROM NODE  13870.00 TO NODE  13880.00 =    6706.77 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  13875.00 TO NODE  13880.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   28.65
 *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  1.755
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 USER-DEFINED              -       34.90      0.30     0.743     -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
```

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 48.11
EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 257.80

****
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
==========
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 28.65
RAINFALL INTENSITY(INCH/HR) = 1.75
AREA-AVERAGED Fm(INCH/HR) = 0.27
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.90
EFFECTIVE STREAM AREA(ACRES) = 192.83
TOTAL STREAM AREA(ACRES) = 192.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 257.80

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23278.49	23.93	1.957	0.30(0.25)	0.84	4623.1	13810.00
1	23632.63	25.06	1.893	0.30(0.25)	0.84	4861.4	13850.00
1	23886.22	25.88	1.861	0.30(0.25)	0.84	5031.7	10400.00
1	25579.49	29.87	1.708	0.30(0.25)	0.84	6202.5	10360.00
1	27575.43	36.00	1.548	0.30(0.25)	0.85	8245.3	13830.00
1	29082.14	40.94	1.429	0.30(0.25)	0.85	9807.1	110.00
1	32036.49	50.12	1.281	0.30(0.26)	0.86	13841.8	10100.00
1	33354.41	56.77	1.206	0.30(0.26)	0.87	16582.8	50260.00
1	35191.11	66.52	1.126	0.30(0.26)	0.88	20682.6	31100.00
1	37443.85	77.53	1.052	0.30(0.27)	0.90	25819.0	40100.00
1	38466.73	85.16	1.001	0.30(0.27)	0.91	29264.1	11801.00
1	40321.53	95.58	0.944	0.30(0.28)	0.92	34695.6	11530.00
1	42141.27	103.09	0.911	0.30(0.28)	0.93	39642.9	11910.00
1	43412.72	108.25	0.889	0.30(0.28)	0.93	43485.8	13500.00
1	44897.17	117.02	0.851	0.30(0.28)	0.94	49583.7	11130.00
1	44479.73	126.64	0.824	0.30(0.28)	0.94	54624.9	12410.00
1	43865.07	134.98	0.807	0.30(0.28)	0.95	58364.0	11201.00
1	43425.39	140.00	0.796	0.30(0.28)	0.95	60095.7	12201.00
1	42390.84	147.18	0.781	0.30(0.28)	0.95	61952.9	12231.00
1	41070.34	155.15	0.765	0.30(0.29)	0.95	63587.2	10400.00
1	39695.61	163.27	0.748	0.30(0.29)	0.95	64882.3	12010.00
1	38484.82	169.40	0.735	0.30(0.29)	0.95	65229.3	10210.00
1	34250.67	198.21	0.694	0.30(0.29)	0.95	65967.7	10100.00
2	257.80	28.65	1.755	0.30(0.27)	0.90	192.8	13870.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23523.09	23.93	1.957	0.30(0.25)	0.84	4784.2	13810.00
2	23879.03	25.06	1.893	0.30(0.25)	0.84	5030.0	13850.00
3	24135.75	25.88	1.861	0.30(0.25)	0.84	5205.8	10400.00
4	25321.11	28.65	1.755	0.30(0.25)	0.85	6038.4	13870.00
5	25829.18	29.87	1.708	0.30(0.25)	0.85	6395.3	10360.00
6	27797.28	36.00	1.548	0.30(0.25)	0.85	8438.1	13830.00
7	29283.39	40.94	1.429	0.30(0.25)	0.85	10000.0	110.00
8	32212.02	50.12	1.281	0.30(0.26)	0.86	14034.6	10100.00
9	33517.01	56.77	1.206	0.30(0.26)	0.87	16775.6	50260.00
10	35339.83	66.52	1.126	0.30(0.26)	0.88	20875.4	31100.00
11	37579.70	77.53	1.052	0.30(0.27)	0.90	26011.8	40100.00
12	38593.67	85.16	1.001	0.30(0.27)	0.91	29456.9	11801.00
13	40438.61	95.58	0.944	0.30(0.28)	0.92	34888.4	11530.00
14	42252.70	103.09	0.911	0.30(0.28)	0.93	39835.7	11910.00
15	43520.27	108.25	0.889	0.30(0.28)	0.93	43678.7	13500.00
16	44998.13	117.02	0.851	0.30(0.28)	0.94	49776.6	11130.00
17	44576.05	126.64	0.824	0.30(0.28)	0.94	54817.8	12410.00
18	43958.37	134.98	0.807	0.30(0.28)	0.95	58556.9	11201.00
19	43516.88	140.00	0.796	0.30(0.28)	0.95	60288.6	12201.00
20	42479.73	147.18	0.781	0.30(0.28)	0.95	62145.7	12231.00
21	41156.35	155.15	0.765	0.30(0.29)	0.95	63780.0	10400.00
22	39778.68	163.27	0.748	0.30(0.29)	0.95	65075.1	12010.00
23	38565.68	169.40	0.735	0.30(0.29)	0.95	65422.1	10210.00
24	34324.34	198.21	0.694	0.30(0.29)	0.95	66160.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44998.13 Tc(MIN.) = 117.02
EFFECTIVE AREA(ACRES) = 49776.55 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66160.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134066.75 FEET.

****
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
==========
ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 25.54
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 45031.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.72
AVERAGE FLOW DEPTH(FEET) = 25.54 TRAVEL TIME(MIN.) = 2.27
Tc(MIN.) = 119.29
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 66.09
EFFECTIVE AREA(ACRES) = 49894.25 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66278.2 PEAK FLOW RATE(CFS) = 44998.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

```
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  25.53

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 25.53   FLOW VELOCITY(FEET/SEC.) =   8.72
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13910.00 =  135256.95 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13880.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  119.29
  RAINFALL INTENSITY(INCH/HR) =   0.84
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =   49894.25
  TOTAL STREAM AREA(ACRES) =   66278.22
  PEAK FLOW RATE(CFS) AT CONFLUENCE =   44998.13

****************************************************************************
  FLOW PROCESS FROM NODE  13889.00 TO NODE  13890.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   447.89
  ELEVATION DATA: UPSTREAM(FEET) =    564.89  DOWNSTREAM(FEET) =    421.92

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.976
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  4.497
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                -        3.03      0.30     0.960    65    6.98
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA RUNOFF(CFS) =     11.48
  TOTAL AREA(ACRES) =      3.03   PEAK FLOW RATE(CFS) =     11.48

****************************************************************************
  FLOW PROCESS FROM NODE  13890.00 TO NODE  13891.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    421.92  DOWNSTREAM(FEET) =    392.64
  CHANNEL LENGTH THRU SUBAREA(FEET) =   435.33   CHANNEL SLOPE =  0.0673
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.46
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.985
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -        8.12      0.30     0.986     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      25.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.23
  AVERAGE FLOW DEPTH(FEET) =   0.44   TRAVEL TIME(MIN.) =   1.39
  Tc(MIN.) =    8.36
  SUBAREA AREA(ACRES) =     8.12       SUBAREA RUNOFF(CFS) =   26.96
  EFFECTIVE AREA(ACRES) =     11.15     AREA-AVERAGED Fm(INCH/HR) =   0.29
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.98
  TOTAL AREA(ACRES) =       11.1          PEAK FLOW RATE(CFS) =      37.04
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.55

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.55   FLOW VELOCITY(FEET/SEC.) =   6.02
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13891.00 =     883.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13891.00 TO NODE  13892.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    392.64  DOWNSTREAM(FEET) =    324.46
  CHANNEL LENGTH THRU SUBAREA(FEET) =   662.40   CHANNEL SLOPE =  0.1029
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.64
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.473
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       12.50      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      54.93
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.95
  AVERAGE FLOW DEPTH(FEET) =   0.62   TRAVEL TIME(MIN.) =   1.39
  Tc(MIN.) =    9.75
  SUBAREA AREA(ACRES) =    12.50       SUBAREA RUNOFF(CFS) =   35.70
  EFFECTIVE AREA(ACRES) =     23.65     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       23.6          PEAK FLOW RATE(CFS) =      67.61
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.70

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.70   FLOW VELOCITY(FEET/SEC.) =   8.51
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13892.00 =    1545.62 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13892.00 TO NODE  13893.00 IS CODE =  56
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    324.46  DOWNSTREAM(FEET) =    240.82
  CHANNEL LENGTH THRU SUBAREA(FEET) =   980.03   CHANNEL SLOPE =  0.0853
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.87
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.131
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       15.87      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      87.84
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   8.75
  AVERAGE FLOW DEPTH(FEET) =   0.86   TRAVEL TIME(MIN.) =   1.87
  Tc(MIN.) =   11.62
  SUBAREA AREA(ACRES) =    15.87       SUBAREA RUNOFF(CFS) =   40.43
  EFFECTIVE AREA(ACRES) =     39.52     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       39.5         PEAK FLOW RATE(CFS) =     100.75
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.93

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.93   FLOW VELOCITY(FEET/SEC.) =   9.18
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13893.00 =    2525.65 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13893.00 TO NODE  13894.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    240.82  DOWNSTREAM(FEET) =    163.04
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1144.35   CHANNEL SLOPE =  0.0680
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.18
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.812
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       28.41      0.30     0.985     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.985
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     132.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.28
  AVERAGE FLOW DEPTH(FEET) =   1.16   TRAVEL TIME(MIN.) =   2.05
  Tc(MIN.) =   13.68
  SUBAREA AREA(ACRES) =    28.41       SUBAREA RUNOFF(CFS) =   64.36
  EFFECTIVE AREA(ACRES) =     67.93     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       67.9         PEAK FLOW RATE(CFS) =     153.78
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
```



```
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   1.26

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.26   FLOW VELOCITY(FEET/SEC.) =   9.73
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13894.00 =    3670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   163.04  DOWNSTREAM(FEET) =   119.70
  FLOW LENGTH(FEET) =  1899.01   MANNING'S N =  0.013
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  33.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.73
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     153.78
  PIPE TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =   15.46
  LONGEST FLOWPATH FROM NODE  13889.00 TO NODE  13910.00 =    5569.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.46
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.568
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       11.69      0.30     0.634     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.634
  SUBAREA AREA(ACRES) =   11.69      SUBAREA RUNOFF(CFS) =   25.02
  EFFECTIVE AREA(ACRES) =     79.62   AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.94
  TOTAL AREA(ACRES) =       79.6       PEAK FLOW RATE(CFS) =     163.86

****************************************************************************
  FLOW PROCESS FROM NODE  13894.00 TO NODE  13910.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   15.46
  RAINFALL INTENSITY(INCH/HR) =   2.57
  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30
  AREA-AVERAGED Ap =  0.94
  EFFECTIVE STREAM AREA(ACRES) =      79.62
  TOTAL STREAM AREA(ACRES) =      79.62
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     163.86

  ** CONFLUENCE DATA **
```

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23523.09	26.64	1.832	0.30(0.25)	0.84	4901.9	13810.00
1	23879.03	27.76	1.789	0.30(0.25)	0.84	5147.7	13850.00
1	24135.75	28.57	1.758	0.30(0.25)	0.84	5323.5	10400.00
1	25321.11	31.31	1.669	0.30(0.25)	0.84	6156.1	13870.00
1	25829.18	32.51	1.638	0.30(0.25)	0.84	6513.0	10360.00
1	27797.28	38.59	1.480	0.30(0.25)	0.84	8555.8	13830.00
1	29283.39	43.49	1.387	0.30(0.25)	0.85	10117.7	110.00
1	32212.02	52.61	1.253	0.30(0.26)	0.86	14152.3	10100.00
1	33517.01	59.23	1.179	0.30(0.26)	0.87	16893.3	50260.00
1	35339.83	68.95	1.110	0.30(0.26)	0.88	20993.1	31100.00
1	37579.70	79.92	1.036	0.30(0.27)	0.90	26129.5	40100.00
1	38593.67	87.53	0.985	0.30(0.27)	0.91	29574.6	11801.00
1	40438.61	97.92	0.934	0.30(0.28)	0.92	35006.1	11530.00
1	42252.70	105.40	0.901	0.30(0.28)	0.93	39953.4	11910.00
1	43520.27	110.54	0.879	0.30(0.28)	0.93	43796.4	13500.00
1	44998.13	119.29	0.841	0.30(0.28)	0.94	49894.2	11130.00
1	44576.05	128.92	0.819	0.30(0.28)	0.94	54935.4	12410.00
1	43958.37	137.27	0.802	0.30(0.28)	0.95	58674.6	11201.00
1	43516.88	142.29	0.792	0.30(0.28)	0.95	60406.3	12201.00
1	42479.73	149.49	0.777	0.30(0.28)	0.95	62263.4	12231.00
1	41156.35	157.48	0.760	0.30(0.28)	0.95	63897.7	10400.00
1	39778.68	165.62	0.743	0.30(0.29)	0.95	65192.8	12010.00
1	38565.68	171.77	0.730	0.30(0.29)	0.95	65539.8	10210.00
1	34324.34	200.65	0.691	0.30(0.29)	0.95	66278.2	10100.00
2	163.86	15.46	2.568	0.30(0.28)	0.94	79.6	13889.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20175.80	15.46	2.568	0.30(0.25)	0.84	2924.2	13889.00
2	23634.21	26.64	1.832	0.30(0.25)	0.84	4981.5	13810.00
3	23987.07	27.76	1.789	0.30(0.25)	0.84	5227.4	13850.00
4	24241.56	28.57	1.758	0.30(0.25)	0.84	5403.1	10400.00
5	25420.55	31.31	1.669	0.30(0.25)	0.84	6235.7	13870.00
6	25926.39	32.51	1.638	0.30(0.25)	0.84	6592.7	10360.00
7	27883.21	38.59	1.480	0.30(0.25)	0.85	8635.4	13830.00
8	29362.66	43.49	1.387	0.30(0.25)	0.85	10197.3	110.00
9	32281.63	52.61	1.253	0.30(0.26)	0.86	14231.9	10100.00
10	33581.31	59.23	1.179	0.30(0.26)	0.87	16972.9	50260.00
11	35399.19	68.95	1.110	0.30(0.26)	0.88	21072.7	31100.00
12	37633.77	79.92	1.036	0.30(0.27)	0.90	26209.1	40100.00
13	38644.07	87.53	0.985	0.30(0.27)	0.91	29654.2	11801.00
14	40485.36	97.92	0.934	0.30(0.28)	0.92	35085.7	11530.00
15	42297.12	105.40	0.901	0.30(0.28)	0.93	40033.1	11910.00
16	43563.10	110.54	0.879	0.30(0.28)	0.93	43876.0	13500.00
17	45038.24	119.29	0.841	0.30(0.28)	0.94	49973.9	11130.00
18	44614.61	128.92	0.819	0.30(0.28)	0.94	55015.1	12410.00
19	43995.68	137.27	0.802	0.30(0.28)	0.95	58754.2	11201.00
20	43553.44	142.29	0.792	0.30(0.28)	0.95	60485.9	12201.00
21	42515.22	149.49	0.777	0.30(0.28)	0.95	62343.0	12231.00
22	41190.64	157.48	0.760	0.30(0.28)	0.95	63977.3	10400.00
23	39811.77	165.62	0.743	0.30(0.29)	0.95	65272.4	12010.00
24	38597.84	171.77	0.730	0.30(0.29)	0.95	65619.4	10210.00

25	34353.70	200.65	0.691	0.30(0.29)	0.95	66357.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 45038.24 Tc(MIN.) = 119.29
EFFECTIVE AREA(ACRES) = 49973.87 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66357.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135256.95 FEET.

==========

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 66357.8 TC(MIN.) = 119.29
EFFECTIVE AREA(ACRES) = 49973.87 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.940
PEAK FLOW RATE(CFS) = 45038.24

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20175.80	15.46	2.568	0.30(0.25)	0.84	2924.2	13889.00
2	23634.21	26.64	1.832	0.30(0.25)	0.84	4981.5	13810.00
3	23987.07	27.76	1.789	0.30(0.25)	0.84	5227.4	13850.00
4	24241.56	28.57	1.758	0.30(0.25)	0.84	5403.1	10400.00
5	25420.55	31.31	1.669	0.30(0.25)	0.84	6235.7	13870.00
6	25926.39	32.51	1.638	0.30(0.25)	0.84	6592.7	10360.00
7	27883.21	38.59	1.480	0.30(0.25)	0.85	8635.4	13830.00
8	29362.66	43.49	1.387	0.30(0.25)	0.85	10197.3	110.00
9	32281.63	52.61	1.253	0.30(0.26)	0.86	14231.9	10100.00
10	33581.31	59.23	1.179	0.30(0.26)	0.87	16972.9	50260.00
11	35399.19	68.95	1.110	0.30(0.26)	0.88	21072.7	31100.00
12	37633.77	79.92	1.036	0.30(0.27)	0.90	26209.1	40100.00
13	38644.07	87.53	0.985	0.30(0.27)	0.91	29654.2	11801.00
14	40485.36	97.92	0.934	0.30(0.28)	0.92	35085.7	11530.00
15	42297.12	105.40	0.901	0.30(0.28)	0.93	40033.1	11910.00
16	43563.10	110.54	0.879	0.30(0.28)	0.93	43876.0	13500.00
17	45038.24	119.29	0.841	0.30(0.28)	0.94	49973.9	11130.00
18	44614.61	128.92	0.819	0.30(0.28)	0.94	55015.1	12410.00
19	43995.68	137.27	0.802	0.30(0.28)	0.95	58754.2	11201.00
20	43553.44	142.29	0.792	0.30(0.28)	0.95	60485.9	12201.00
21	42515.22	149.49	0.777	0.30(0.28)	0.95	62343.0	12231.00
22	41190.64	157.48	0.760	0.30(0.28)	0.95	63977.3	10400.00
23	39811.77	165.62	0.743	0.30(0.29)	0.95	65272.4	12010.00
24	38597.84	171.77	0.730	0.30(0.29)	0.95	65619.4	10210.00
25	34353.70	200.65	0.691	0.30(0.29)	0.95	66357.8	10100.00

==========

==========

END OF RATIONAL METHOD ANALYSIS

```
******************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
          (c) Copyright 1983-2010 Advanced Engineering Software (aes)
              Ver. 17.0  Release Date: 07/01/2010  License ID 1527

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* RMV PA-3 BODR 2022 - NODE 139 COMPLEX                                 *
* RATIONAL METHOD HYDROLOGY MODEL REGIONAL                              *
* 50-YR EV JULY 2023 ROKAMOTO                                           *
 ************************************************************************

  FILE NAME: RU50EV39.DAT
  TIME/DATE OF STUDY: 13:12 07/05/2023
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   50.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  36.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *USER-DEFINED TABLED RAINFALL USED*
  NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14
   1)    5.00;  5.220
   2)   10.00;  3.380
   3)   15.00;  2.606
   4)   20.00;  2.184
   5)   25.00;  1.894
   6)   30.00;  1.703
   7)   40.00;  1.444
   8)   50.00;  1.282
   9)   60.00;  1.169
  10)   90.00;  0.968
  11)  120.00;  0.837
  12)  180.00;  0.712
  13)  360.00;  0.522
  14) 1200.00;  0.227
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
```



```
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

******************************************************************************
  FLOW PROCESS FROM NODE  13900.00 TO NODE  13901.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   600.65
  ELEVATION DATA: UPSTREAM(FEET) =    442.40  DOWNSTREAM(FEET) =    385.16

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.859
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  3.247
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  AGRICULTURAL POOR COVER
  "FALLOW"                  -        4.00      0.30     1.000    65   10.86
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     10.61
  TOTAL AREA(ACRES) =      4.00   PEAK FLOW RATE(CFS) =     10.61

******************************************************************************
  FLOW PROCESS FROM NODE  13901.00 TO NODE  13902.00 IS CODE =  56
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    385.16  DOWNSTREAM(FEET) =    288.21
  CHANNEL LENGTH THRU SUBAREA(FEET) =   647.42   CHANNEL SLOPE =  0.1497
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.32
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.983
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -        8.47      0.30     1.000     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      20.86
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.34
  AVERAGE FLOW DEPTH(FEET) =   0.31   TRAVEL TIME(MIN.) =   1.70
  Tc(MIN.) =   12.56
  SUBAREA AREA(ACRES) =     8.47       SUBAREA RUNOFF(CFS) =   20.46
  EFFECTIVE AREA(ACRES) =     12.47     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   1.00
  TOTAL AREA(ACRES) =       12.5         PEAK FLOW RATE(CFS) =      30.12
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.39

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
  DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   7.24
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13902.00 =    1248.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13902.00 TO NODE  13903.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    288.21  DOWNSTREAM(FEET) =    184.89
  CHANNEL LENGTH THRU SUBAREA(FEET) =   669.27   CHANNEL SLOPE =  0.1544
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.57
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.795
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       23.85      0.30     0.982     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.982
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      56.98
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   9.15
  AVERAGE FLOW DEPTH(FEET) =   0.56   TRAVEL TIME(MIN.) =   1.22
  Tc(MIN.) =   13.78
  SUBAREA AREA(ACRES) =    23.85       SUBAREA RUNOFF(CFS) =   53.67
  EFFECTIVE AREA(ACRES) =     36.32     AREA-AVERAGED Fm(INCH/HR) =   0.30
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.99
  TOTAL AREA(ACRES) =       36.3         PEAK FLOW RATE(CFS) =      81.67
  GIVEN CHANNEL BASE(FEET) =   10.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   2.000   MANNING'S FACTOR = 0.040
  *ESTIMATED CHANNEL HEIGHT(FEET) =   0.69

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.69   FLOW VELOCITY(FEET/SEC.) =  10.38
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13903.00 =    1917.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   184.89  DOWNSTREAM(FEET) =   155.08
  FLOW LENGTH(FEET) =   876.66   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  22.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  17.86
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      81.67
  PIPE TRAVEL TIME(MIN.) =   0.82    Tc(MIN.) =   14.60
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13904.00 =    2794.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13903.00 TO NODE  13904.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
```



```
  MAINLINE Tc(MIN.) =   14.60
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.668
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       21.29      0.30     0.996     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.996
  SUBAREA AREA(ACRES) =   21.29      SUBAREA RUNOFF(CFS) =   45.40
  EFFECTIVE AREA(ACRES) =     57.61   AREA-AVERAGED Fm(INCH/HR) =  0.30
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =       57.6       PEAK FLOW RATE(CFS) =     122.93

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   155.08  DOWNSTREAM(FEET) =   118.00
  FLOW LENGTH(FEET) =  1961.38   MANNING'S N =  0.013
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.50
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     122.93
  PIPE TRAVEL TIME(MIN.) =   2.11    Tc(MIN.) =   16.71
  LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.71
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  2.462
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED               -       43.53      0.30     0.649     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.649
  SUBAREA AREA(ACRES) =   43.53      SUBAREA RUNOFF(CFS) =   88.82
  EFFECTIVE AREA(ACRES) =    101.14   AREA-AVERAGED Fm(INCH/HR) =  0.25
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =      101.1       PEAK FLOW RATE(CFS) =     201.06

****************************************************************************
  FLOW PROCESS FROM NODE  13904.00 TO NODE  13920.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  13910.00 TO NODE  13910.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: RU50EV38.DNA
```

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20175.80	15.46	0.30(0.25)	0.84	2924.2	13889.00
2	25926.39	32.51	0.30(0.25)	0.84	6592.7	10360.00
3	29362.66	43.49	0.30(0.25)	0.85	10197.3	110.00
4	32281.63	52.61	0.30(0.26)	0.86	14231.9	10100.00
5	33581.31	59.23	0.30(0.26)	0.87	16972.9	50260.00
6	35399.19	68.95	0.30(0.26)	0.88	21072.7	31100.00
7	37633.77	79.92	0.30(0.27)	0.90	26209.1	40100.00
8	38644.07	87.53	0.30(0.27)	0.91	29654.2	11801.00
9	40485.36	97.92	0.30(0.28)	0.92	35085.7	11530.00
10	42297.12	105.40	0.30(0.28)	0.93	40033.1	11910.00
11	43563.10	110.54	0.30(0.28)	0.93	43876.0	13500.00
12	45038.24	119.29	0.30(0.28)	0.94	49973.9	11130.00
13	44614.61	128.92	0.30(0.28)	0.94	55015.1	12410.00
14	43995.68	137.27	0.30(0.28)	0.95	58754.2	11201.00
15	43553.44	142.29	0.30(0.28)	0.95	60485.9	12201.00
16	42515.22	149.49	0.30(0.28)	0.95	62343.0	12231.00
17	41190.64	157.48	0.30(0.28)	0.95	63977.3	10400.00
18	39811.77	165.62	0.30(0.29)	0.95	65272.4	12010.00
19	38597.84	171.77	0.30(0.29)	0.95	65619.4	10210.00
20	34353.70	200.65	0.30(0.29)	0.95	66357.8	10100.00

TOTAL AREA(ACRES) = 66357.8

****

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

==========

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20175.80	15.46	0.30(0.25)	0.84	2924.2	13889.00
2	25926.39	32.51	0.30(0.25)	0.84	6592.7	10360.00
3	29362.66	43.49	0.30(0.25)	0.85	10197.3	110.00
4	32281.63	52.61	0.30(0.26)	0.86	14231.9	10100.00
5	33581.31	59.23	0.30(0.26)	0.87	16972.9	50260.00
6	35399.19	68.95	0.30(0.26)	0.88	21072.7	31100.00
7	37633.77	79.92	0.30(0.27)	0.90	26209.1	40100.00
8	38644.07	87.53	0.30(0.27)	0.91	29654.2	11801.00
9	40485.36	97.92	0.30(0.28)	0.92	35085.7	11530.00
10	42297.12	105.40	0.30(0.28)	0.93	40033.1	11910.00
11	43563.10	110.54	0.30(0.28)	0.93	43876.0	13500.00
12	45038.24	119.29	0.30(0.28)	0.94	49973.9	11130.00
13	44614.61	128.92	0.30(0.28)	0.94	55015.1	12410.00
14	43995.68	137.27	0.30(0.28)	0.95	58754.2	11201.00
15	43553.44	142.29	0.30(0.28)	0.95	60485.9	12201.00
16	42515.22	149.49	0.30(0.28)	0.95	62343.0	12231.00
17	41190.64	157.48	0.30(0.28)	0.95	63977.3	10400.00
18	39811.77	165.62	0.30(0.29)	0.95	65272.4	12010.00
19	38597.84	171.77	0.30(0.29)	0.95	65619.4	10210.00
20	34353.70	200.65	0.30(0.29)	0.95	66357.8	10100.00

TOTAL AREA(ACRES) = 66357.8

****

FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>>TRAVELTIME THRU SUBAREA<<<<<

==========

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 22.47

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.834

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.09	0.30	0.535	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 45067.36

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.57

AVERAGE FLOW DEPTH(FEET) = 22.46 TRAVEL TIME(MIN.) = 2.17

Tc(MIN.) = 121.46

SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 58.24

EFFECTIVE AREA(ACRES) = 50069.96 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 66453.9 PEAK FLOW RATE(CFS) = 45038.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 22.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 22.46 FLOW VELOCITY(FEET/SEC.) = 10.57

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136633.22 FEET.

****

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

==========

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20175.80	18.17	2.338	0.30(0.25)	0.83	3020.3	13889.00
2	25926.39	35.04	1.572	0.30(0.25)	0.84	6688.7	10360.00
3	29362.66	45.93	1.348	0.30(0.25)	0.84	10293.4	110.00
4	32281.63	54.99	1.226	0.30(0.26)	0.85	14328.0	10100.00
5	33581.31	61.59	1.158	0.30(0.26)	0.86	17069.0	50260.00
6	35399.19	71.26	1.094	0.30(0.26)	0.88	21168.8	31100.00
7	37633.77	82.20	1.020	0.30(0.27)	0.90	26305.2	40100.00
8	38644.07	89.79	0.969	0.30(0.27)	0.91	29750.3	11801.00
9	40485.36	100.15	0.924	0.30(0.28)	0.92	35181.8	11530.00
10	42297.12	107.61	0.891	0.30(0.28)	0.93	40129.1	11910.00
11	43563.10	112.73	0.869	0.30(0.28)	0.93	43972.1	13500.00
12	45038.24	121.46	0.834	0.30(0.28)	0.94	50070.0	11130.00
13	44614.61	131.10	0.814	0.30(0.28)	0.94	55111.2	12410.00
14	43995.68	139.46	0.796	0.30(0.28)	0.95	58850.3	11201.00
15	43553.44	144.48	0.786	0.30(0.28)	0.95	60582.0	12201.00
16	42515.22	151.69	0.771	0.30(0.28)	0.95	62439.1	12231.00

```
   17    41190.64  159.70    0.754  0.30( 0.28) 0.95   64073.4   10400.00
   18    39811.77  167.86    0.737  0.30( 0.29) 0.95   65368.5   12010.00
   19    38597.84  174.03    0.724  0.30( 0.29) 0.95   65715.5   10210.00
   20    34353.70  202.99    0.688  0.30( 0.29) 0.95   66453.9   10100.00
 LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      201.06   16.71    2.462  0.30( 0.25) 0.84     101.1   13900.00
 LONGEST FLOWPATH FROM NODE  13900.00 TO NODE  13920.00 =    4755.38 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1    19848.91   16.71    2.462  0.30( 0.25) 0.83    2878.0   13900.00
     2    20365.61   18.17    2.338  0.30( 0.25) 0.83    3121.4   13889.00
     3    26046.48   35.04    1.572  0.30( 0.25) 0.84    6789.9   10360.00
     4    29462.32   45.93    1.348  0.30( 0.25) 0.84   10394.5     110.00
     5    32370.15   54.99    1.226  0.30( 0.26) 0.85   14429.1   10100.00
     6    33663.71   61.59    1.158  0.30( 0.26) 0.86   17170.2   50260.00
     7    35475.69   71.26    1.094  0.30( 0.26) 0.88   21270.0   31100.00
     8    37703.61   82.20    1.020  0.30( 0.27) 0.90   26406.4   40100.00
     9    38709.27   89.79    0.969  0.30( 0.27) 0.91   29851.4   11801.00
    10    40546.39  100.15    0.924  0.30( 0.28) 0.92   35282.9   11530.00
    11    42355.20  107.61    0.891  0.30( 0.28) 0.93   40230.3   11910.00
    12    43619.14  112.73    0.869  0.30( 0.28) 0.93   44073.2   13500.00
    13    45091.11  121.46    0.834  0.30( 0.28) 0.94   50171.1   11130.00
    14    44665.65  131.10    0.814  0.30( 0.28) 0.94   55212.3   12410.00
    15    44045.14  139.46    0.796  0.30( 0.28) 0.95   58951.4   11201.00
    16    43601.95  144.48    0.786  0.30( 0.28) 0.95   60683.1   12201.00
    17    42562.36  151.69    0.771  0.30( 0.28) 0.95   62540.3   12231.00
    18    41236.27  159.70    0.754  0.30( 0.28) 0.95   64174.6   10400.00
    19    39855.84  167.86    0.737  0.30( 0.28) 0.95   65469.7   12010.00
    20    38640.75  174.03    0.724  0.30( 0.29) 0.95   65816.6   10210.00
    21    34393.26  202.99    0.688  0.30( 0.29) 0.95   66555.1   10100.00
   TOTAL AREA(ACRES) =     66555.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =    45091.11  Tc(MIN.) =  121.461
  EFFECTIVE AREA(ACRES) =  50171.10  AREA-AVERAGED Fm(INCH/HR) =  0.28
  AREA-AVERAGED Fp(INCH/HR) =  0.30  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =    66555.1
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13920.00 =  136633.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13920.00 TO NODE  13921.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    118.00  DOWNSTREAM(FEET) =    115.28
  CHANNEL LENGTH THRU SUBAREA(FEET) =   335.44   CHANNEL SLOPE =  0.0081
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.92
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.833
  SUBAREA LOSS RATE DATA(AMC  II):
```



```
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -      134.30      0.30      0.658     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.658
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   45129.55
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  20.83
  AVERAGE FLOW DEPTH(FEET) =  13.92   TRAVEL TIME(MIN.) =   0.27
  Tc(MIN.) =  121.73
  SUBAREA AREA(ACRES) =   134.30       SUBAREA RUNOFF(CFS) =   76.88
  EFFECTIVE AREA(ACRES) =  50305.40     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    66689.4         PEAK FLOW RATE(CFS) =   45091.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  13.91

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 13.91   FLOW VELOCITY(FEET/SEC.) =  20.82
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  13921.00 =  136968.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  13921.00 TO NODE  14010.00 IS CODE =  56
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    115.28  DOWNSTREAM(FEET) =    100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1396.08   CHANNEL SLOPE =  0.0109
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.86
  *  50 YEAR RAINFALL INTENSITY(INCH/HR) =  0.831
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE           GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  USER-DEFINED              -       96.27      0.30      0.723     -
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.30
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.723
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   45117.73
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  23.17
  AVERAGE FLOW DEPTH(FEET) =  12.86   TRAVEL TIME(MIN.) =   1.00
  Tc(MIN.) =  122.73
  SUBAREA AREA(ACRES) =    96.27       SUBAREA RUNOFF(CFS) =   53.24
  EFFECTIVE AREA(ACRES) =  50401.67     AREA-AVERAGED Fm(INCH/HR) =   0.28
  AREA-AVERAGED Fp(INCH/HR) =   0.30  AREA-AVERAGED Ap =   0.94
  TOTAL AREA(ACRES) =    66785.6         PEAK FLOW RATE(CFS) =   45091.11
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
  GIVEN CHANNEL BASE(FEET) =  100.00   CHANNEL FREEBOARD(FEET) =  0.0
  "Z" FACTOR =   4.000   MANNING'S FACTOR = 0.030
  *ESTIMATED CHANNEL HEIGHT(FEET) =  12.86

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) = 12.86   FLOW VELOCITY(FEET/SEC.) =  23.16
  LONGEST FLOWPATH FROM NODE  10100.00 TO NODE  14010.00 =  138364.73 FEET.
============================================================================
  END OF STUDY SUMMARY:
```

TOTAL AREA(ACRES) = 66785.6 TC(MIN.) = 122.73
EFFECTIVE AREA(ACRES) = 50401.67 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.937
PEAK FLOW RATE(CFS) = 45091.11

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19848.91	18.33	2.325	0.30(0.25)	0.82	3108.6	13900.00
2	20365.61	19.78	2.202	0.30(0.25)	0.82	3352.0	13889.00
3	26046.48	36.54	1.534	0.30(0.25)	0.83	7020.5	10360.00
4	29462.32	47.37	1.325	0.30(0.25)	0.84	10625.1	110.00
5	32370.15	56.39	1.210	0.30(0.26)	0.85	14659.7	10100.00
6	33663.71	62.97	1.149	0.30(0.26)	0.86	17400.8	50260.00
7	35475.69	72.63	1.084	0.30(0.26)	0.88	21500.5	31100.00
8	37703.61	83.54	1.011	0.30(0.27)	0.90	26636.9	40100.00
9	38709.27	91.12	0.963	0.30(0.27)	0.91	30082.0	11801.00
10	40546.39	101.47	0.918	0.30(0.27)	0.92	35513.5	11530.00
11	42355.20	108.90	0.885	0.30(0.28)	0.92	40460.9	11910.00
12	43619.14	114.02	0.863	0.30(0.28)	0.93	44303.8	13500.00
13	45091.11	122.73	0.831	0.30(0.28)	0.94	50401.7	11130.00
14	44665.65	132.37	0.811	0.30(0.28)	0.94	55442.9	12410.00
15	44045.14	140.74	0.794	0.30(0.28)	0.95	59182.0	11201.00
16	43601.95	145.77	0.783	0.30(0.28)	0.95	60913.7	12201.00
17	42562.36	152.99	0.768	0.30(0.28)	0.95	62770.8	12231.00
18	41236.27	161.01	0.752	0.30(0.28)	0.95	64405.1	10400.00
19	39855.84	169.18	0.735	0.30(0.28)	0.95	65700.2	12010.00
20	38640.75	175.36	0.722	0.30(0.28)	0.95	66047.2	10210.00
21	34393.26	204.37	0.686	0.30(0.28)	0.95	66785.6	10100.00

==========
==========

END OF RATIONAL METHOD ANALYSIS