CITY OF REDLANDS

MASTER PLAN OF DRAINAGE (MPD)

RBF CONSULTING
A Baker Company

TECHNICAL APPENDIX A.3

Opal Basin Hydrology (AMC II)
(100-year)

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             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* REDLANDS MPD  - UPDATE                                                *
* REVISED RATIONAL METHOD HYDROLOGY - TO NODE 20151                     *
* BY TMULI   SEPT 2013                                                  *
 ************************************************************************

  FILE NAME: LR0201.DAT
  TIME/DATE OF STUDY: 15:28 09/24/2013
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *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   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
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 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 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

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
          S-GRAPH TYPE                PERCENTAGE(DECIMAL)
        VALLEY(DEVELOPED)                   1.000
        FOOTHILL                            0.000
        MOUNTAIN                            0.000
        VALLEY(UNDEVELOPED)/DESERT          0.000
        DESERT(UNDEVELOPED)                 0.000
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE  20100.00 TO NODE  20101.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   219.52
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2385.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.474
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.755
  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"               B        1.33      0.61     1.000    66   10.43
  NATURAL FAIR COVER
  "OPEN BRUSH"               A        0.04      0.86     1.000    46   10.43
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.55      0.75     0.700    56    6.47
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.805
  SUBAREA RUNOFF(CFS) =     14.81
  TOTAL AREA(ACRES) =      3.92   PEAK FLOW RATE(CFS) =     14.81

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 9.00

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  FLOW PROCESS FROM NODE  20101.00 TO NODE  20102.00 IS CODE =  62
------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 2385.00  DOWNSTREAM ELEVATION(FEET) = 2340.00
  STREET LENGTH(FEET) =   138.73   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      22.82
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.32
    HALFSTREET FLOOD WIDTH(FEET) =    9.84
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.51
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.39
  STREET FLOW TRAVEL TIME(MIN.) =   0.22   Tc(MIN.) =    6.69
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.660
  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"               A        0.45      0.86     1.000    46
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.90      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.01      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.793
  SUBAREA AREA(ACRES) =    4.36      SUBAREA RUNOFF(CFS) =   16.02
  EFFECTIVE AREA(ACRES) =      8.28    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =        8.3        PEAK FLOW RATE(CFS) =      30.50

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.79

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.35   HALFSTREET FLOOD WIDTH(FEET) =  11.09
  FLOW VELOCITY(FEET/SEC.) = 11.32   DEPTH*VELOCITY(FT*FT/SEC.) =   3.94
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20102.00 =     358.25 FEET.

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  FLOW PROCESS FROM NODE  20102.00 TO NODE  20103.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 2340.00  DOWNSTREAM ELEVATION(FEET) = 2320.00
  STREET LENGTH(FEET) =   287.27   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      42.06
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.47
    HALFSTREET FLOOD WIDTH(FEET) =   17.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.79
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.20
  STREET FLOW TRAVEL TIME(MIN.) =   0.70   Tc(MIN.) =    7.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.389
  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"               A        1.17      0.86     1.000    46
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        2.63      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.01      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.71
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.867
  SUBAREA AREA(ACRES) =    6.81      SUBAREA RUNOFF(CFS) =   23.12
  EFFECTIVE AREA(ACRES) =     15.09    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.83
  TOTAL AREA(ACRES) =       15.1        PEAK FLOW RATE(CFS) =      51.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 8.63

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.50   HALFSTREET FLOOD WIDTH(FEET) =  18.00
  FLOW VELOCITY(FEET/SEC.) =  7.23   DEPTH*VELOCITY(FT*FT/SEC.) =   3.60
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20103.00 =     645.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20103.00 TO NODE  20104.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 2320.00  DOWNSTREAM ELEVATION(FEET) = 2310.00
  STREET LENGTH(FEET) =   249.70   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      97.01
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.64
   HALFSTREET FLOOD WIDTH(FEET) =   24.79
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.45
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.74
  STREET FLOW TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =    7.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.201
  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"                A        1.82      0.86     1.000    46
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       19.46      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        6.79      0.75     0.700    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          A        0.01      0.98     0.700    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.927
  SUBAREA AREA(ACRES) =   28.08      SUBAREA RUNOFF(CFS) =   90.80
  EFFECTIVE AREA(ACRES) =     43.17    AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =       43.2        PEAK FLOW RATE(CFS) =     139.84

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.80

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.51
  FLOW VELOCITY(FEET/SEC.) =  8.23   DEPTH*VELOCITY(FT*FT/SEC.) =   5.85
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  249.7 FT WITH ELEVATION-DROP =  10.0 FT, IS   93.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20104.00
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20104.00 =     895.22 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20104.00 TO NODE  20105.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2310.00  DOWNSTREAM ELEVATION(FEET) = 2270.00
  STREET LENGTH(FEET) =   747.57   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     220.14
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.78
   HALFSTREET FLOOD WIDTH(FEET) =   32.17
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.27
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.05
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =    9.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.858
  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"                A        5.68      0.86     1.000    46
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          A        3.92      0.98     0.700    32
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        6.10      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B       39.60      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.946
  SUBAREA AREA(ACRES) =   55.30      SUBAREA RUNOFF(CFS) =  160.46
  EFFECTIVE AREA(ACRES) =     98.47    AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =       98.5        PEAK FLOW RATE(CFS) =     286.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.72

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  35.77
  FLOW VELOCITY(FEET/SEC.) = 10.90   DEPTH*VELOCITY(FT*FT/SEC.) =   9.32
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  747.6 FT WITH ELEVATION-DROP =  40.0 FT, IS  139.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20105.00
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20105.00 =    1642.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20105.00 TO NODE  20106.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2270.00  DOWNSTREAM(FEET) =   2230.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1238.14   CHANNEL SLOPE =  0.0323
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   3.30
  CHANNEL FLOW THRU SUBAREA(CFS) =     286.98
  FLOW VELOCITY(FEET/SEC.) =  10.51   FLOW DEPTH(FEET) =   2.65
  TRAVEL TIME(MIN.) =   1.96   Tc(MIN.) =   11.13
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20106.00 =    2880.93 FEET.

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  FLOW PROCESS FROM NODE  20106.00 TO NODE  20106.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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 MAINLINE Tc(MIN.) =   11.13
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.434
 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"               A        2.42      0.86     1.000    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        7.44      0.98     0.700    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       21.25      0.75     0.700    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B      127.72      0.61     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.946
 SUBAREA AREA(ACRES) =  158.83      SUBAREA RUNOFF(CFS) =  403.88
 EFFECTIVE AREA(ACRES) =    257.30   AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.94
 TOTAL AREA(ACRES) =      257.3       PEAK FLOW RATE(CFS) =     653.29

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.52

****************************************************************************
 FLOW PROCESS FROM NODE  20108.00 TO NODE  20107.00 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2230.00  DOWNSTREAM(FEET) =   2170.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1330.76   CHANNEL SLOPE =  0.0451
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     653.29
 FLOW VELOCITY(FEET/SEC.) =  11.75   FLOW DEPTH(FEET) =   1.67
 TRAVEL TIME(MIN.) =   1.89   Tc(MIN.) =   13.02
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20107.00 =    4211.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20107.00 TO NODE  20107.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   13.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.126
 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"               A        2.55      0.86     1.000    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A       12.67      0.98     0.700    32
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       10.30      0.75     0.700    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       66.90      0.61     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.925
```



```
 SUBAREA AREA(ACRES) =   92.42      SUBAREA RUNOFF(CFS) =  208.45
 EFFECTIVE AREA(ACRES) =    349.72   AREA-AVERAGED Fm(INCH/HR) =  0.61
 AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.93
 TOTAL AREA(ACRES) =      349.7       PEAK FLOW RATE(CFS) =     790.41

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
 FLOW PROCESS FROM NODE  20107.00 TO NODE  20108.00 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2095.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  1995.70   CHANNEL SLOPE =  0.0376
 CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =     790.41
 FLOW VELOCITY(FEET/SEC.) =  11.81   FLOW DEPTH(FEET) =   1.97
 TRAVEL TIME(MIN.) =   2.82   Tc(MIN.) =   15.84
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20108.00 =    6207.39 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20108.00 TO NODE  20108.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   15.84
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.780
 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"               A        3.92      0.86     1.000    46
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         A        0.86      0.98     0.700    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       16.85      0.98     0.600    32
 MOBILE HOME PARK           B       25.39      0.75     0.250    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B       10.75      0.75     0.600    56
 NATURAL FAIR COVER
 "OPEN BRUSH"               B       87.64      0.61     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.791
 SUBAREA AREA(ACRES) =  145.41      SUBAREA RUNOFF(CFS) =  294.30
 EFFECTIVE AREA(ACRES) =    495.13   AREA-AVERAGED Fm(INCH/HR) =  0.59
 AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.89
 TOTAL AREA(ACRES) =      495.1       PEAK FLOW RATE(CFS) =     975.67

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
 FLOW PROCESS FROM NODE  20108.00 TO NODE  20109.00 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2095.00  DOWNSTREAM(FEET) =   2020.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2023.91   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   40.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     975.67
  FLOW VELOCITY(FEET/SEC.) =  11.71   FLOW DEPTH(FEET) =   1.90
  TRAVEL TIME(MIN.) =   2.88   Tc(MIN.) =   18.72
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =    8231.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20109.00 TO NODE  20109.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.72
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.514
  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"               A        2.81      0.86     1.000    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       27.06      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       26.94      0.75     0.600    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       35.77      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B      102.40      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.834
  SUBAREA AREA(ACRES) =  194.98      SUBAREA RUNOFF(CFS) =  340.50
  EFFECTIVE AREA(ACRES) =    690.11   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =      690.1       PEAK FLOW RATE(CFS) =    1197.96

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20109.00 TO NODE  20109.00 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.25;6H= 3.25;24H= 7.56
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.31; LAG(HR) = 0.25; Fm(INCH/HR) = 0.59; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      690.1
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20109.00 =    8231.30 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
```



```
   Lca/L=0.3,n=.0333; Lca/L=0.4,n=.0299; Lca/L=0.5,n=.0274;Lca/L=0.6,n=.0256
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     224.38
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =   1236.59
  TOTAL PEAK FLOW RATE(CFS) =   1236.59 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =   1197.96
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =   1197.96)
  PEAK FLOW RATE(CFS) USED =   1236.59

****************************************************************************
  FLOW PROCESS FROM NODE  20109.00 TO NODE  20110.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2020.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1927.24   CHANNEL SLOPE =  0.0311
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1236.59
  FLOW VELOCITY(FEET/SEC.) =  14.88   FLOW DEPTH(FEET) =   4.41
  TRAVEL TIME(MIN.) =   2.16   Tc(MIN.) =   20.88
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 =   10158.54 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20110.00 TO NODE  20110.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.355
  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"               A        5.83      0.86     1.000    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       33.80      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       25.19      0.75     0.600    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        9.84      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       45.99      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.780
  SUBAREA AREA(ACRES) =  120.65
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.25;6H= 3.25;24H= 7.55
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.35; LAG(HR) = 0.28; Fm(INCH/HR) = 0.58; Ybar = 0.51
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      810.8
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20110.00 =   10158.54 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0313; Lca/L=0.4,n=.0280; Lca/L=0.5,n=.0258;Lca/L=0.6,n=.0240
```

```
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     262.28
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    1349.99
  TOTAL AREA(ACRES) =      810.8       PEAK FLOW RATE(CFS) =    1349.99

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20110.00 TO NODE  20111.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   928.33   CHANNEL SLOPE =  0.0431
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1349.99
  FLOW VELOCITY(FEET/SEC.) =  17.14   FLOW DEPTH(FEET) =   4.25
  TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =   21.78
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 =   11086.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20111.00 TO NODE  20111.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.296
  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"               A       28.59      0.86     1.000    46
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       31.08      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       31.56      0.75     0.600    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       41.72      0.61     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        5.26      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.815
  SUBAREA AREA(ACRES) =  138.21
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.24;6H= 3.22;24H= 7.55
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.36; LAG(HR) = 0.29; Fm(INCH/HR) = 0.59; Ybar = 0.52
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      949.0
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20111.00 =   11086.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0305; Lca/L=0.4,n=.0274; Lca/L=0.5,n=.0251;Lca/L=0.6,n=.0235
  TIME OF PEAK FLOW(HR) = 16.33  RUNOFF VOLUME(AF) =     301.99
```



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  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    1499.62
  TOTAL AREA(ACRES) =      949.0       PEAK FLOW RATE(CFS) =    1499.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.16; 6HR = 3.06; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20111.00 TO NODE  20112.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1920.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1664.97   CHANNEL SLOPE =  0.0300
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1499.62
  FLOW VELOCITY(FEET/SEC.) =  15.44   FLOW DEPTH(FEET) =   4.90
  TRAVEL TIME(MIN.) =   1.80   Tc(MIN.) =   23.58
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 =   12751.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20112.00 TO NODE  20112.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.58
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.189
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.51      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.54      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         A        3.29      0.98     0.900    32
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       75.85      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.12      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.879
  SUBAREA AREA(ACRES) =   95.31
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.22;6H= 3.18;24H= 7.54
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.39; LAG(HR) = 0.31; Fm(INCH/HR) = 0.60; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     1044.3
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20112.00 =   12751.84 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0295; Lca/L=0.4,n=.0264; Lca/L=0.5,n=.0243;Lca/L=0.6,n=.0227
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     327.56
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    1525.78
```

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 TOTAL AREA(ACRES) =     1044.3       PEAK FLOW RATE(CFS) =    1525.78

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
 FLOW PROCESS FROM NODE  20112.00 TO NODE  20150.00 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1850.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   907.32   CHANNEL SLOPE =  0.0220
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    1525.78
 FLOW VELOCITY(FEET/SEC.) =  13.86   FLOW DEPTH(FEET) =   5.33
 TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =   24.67
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 =   13659.16 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20150.00 TO NODE  20150.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   24.67
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.131
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.19      0.75     0.600    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        3.83      0.75     0.900    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.743
 SUBAREA AREA(ACRES) =    8.02
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.22;6H= 3.18;24H= 7.54
 S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.41; LAG(HR) = 0.33; Fm(INCH/HR) = 0.60; Ybar = 0.53
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.95; 30M = 0.95; 1HR = 0.95;
 3HR = 0.99; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     1052.3
 LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 =   13659.16 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0291; Lca/L=0.4,n=.0261; Lca/L=0.5,n=.0240;Lca/L=0.6,n=.0224
 TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     330.18
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    1524.49
 TOTAL AREA(ACRES) =     1052.3       PEAK FLOW RATE(CFS) =    1525.78
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

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



```
 FLOW PROCESS FROM NODE  20150.00 TO NODE  20150.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  20120.00 TO NODE  20121.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   591.56
 ELEVATION DATA: UPSTREAM(FEET) =   3148.00  DOWNSTREAM(FEET) =   2920.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.975
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.464
 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"               B        5.75      0.61     1.000    66   10.98
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
 SUBAREA RUNOFF(CFS) =     14.75
 TOTAL AREA(ACRES) =      5.75   PEAK FLOW RATE(CFS) =     14.75

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
 FLOW PROCESS FROM NODE  20121.00 TO NODE  20122.00 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2920.00  DOWNSTREAM(FEET) =   2860.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   401.18   CHANNEL SLOPE =  0.1496
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
 MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      14.75
 FLOW VELOCITY(FEET/SEC.) =   7.20   FLOW DEPTH(FEET) =   0.91
 TRAVEL TIME(MIN.) =   0.93   Tc(MIN.) =   11.90
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20122.00 =     992.74 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20122.00 TO NODE  20122.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   11.90
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.299
 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        6.02      0.61     1.000    66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    6.02      SUBAREA RUNOFF(CFS) =   14.55
  EFFECTIVE AREA(ACRES) =     11.77   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       11.8       PEAK FLOW RATE(CFS) =      28.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20122.00 TO NODE  20123.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2860.00  DOWNSTREAM(FEET) =   2800.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   404.41   CHANNEL SLOPE =  0.1484
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      28.44
  FLOW VELOCITY(FEET/SEC.) =   8.42   FLOW DEPTH(FEET) =   1.16
  TRAVEL TIME(MIN.) =   0.80   Tc(MIN.) =   12.70
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20123.00 =    1397.15 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20123.00 TO NODE  20123.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   12.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.173
  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        5.11      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =    5.11      SUBAREA RUNOFF(CFS) =   11.77
  EFFECTIVE AREA(ACRES) =     16.88   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       16.9       PEAK FLOW RATE(CFS) =      38.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20123.00 TO NODE  20124.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2800.00  DOWNSTREAM(FEET) =   2720.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   734.74   CHANNEL SLOPE =  0.1089
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      38.87
  FLOW VELOCITY(FEET/SEC.) =   8.12   FLOW DEPTH(FEET) =   1.38
```



```
  TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =   14.21
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20124.00 =    2131.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20124.00 TO NODE  20124.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.966
  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       33.25      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   33.25      SUBAREA RUNOFF(CFS) =   70.39
  EFFECTIVE AREA(ACRES) =     50.13   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       50.1       PEAK FLOW RATE(CFS) =     106.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20124.00 TO NODE  20125.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2720.00  DOWNSTREAM(FEET) =   2620.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   932.28   CHANNEL SLOPE =  0.1073
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     106.12
  FLOW VELOCITY(FEET/SEC.) =  10.36   FLOW DEPTH(FEET) =   2.02
  TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =   15.71
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20125.00 =    3064.17 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20125.00 TO NODE  20125.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.71
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.793
  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       36.51      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   36.51      SUBAREA RUNOFF(CFS) =   71.59
  EFFECTIVE AREA(ACRES) =     86.64   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       86.6       PEAK FLOW RATE(CFS) =     169.90
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20125.00 TO NODE  20126.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2620.00  DOWNSTREAM(FEET) =   2600.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1333.93   CHANNEL SLOPE =  0.0150
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     169.90
  FLOW VELOCITY(FEET/SEC.) =   5.58   FLOW DEPTH(FEET) =   3.49
  TRAVEL TIME(MIN.) =   3.98   Tc(MIN.) =   19.70
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20126.00 =    4398.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20126.00 TO NODE  20126.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   19.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.439
  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       60.59      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   60.59      SUBAREA RUNOFF(CFS) =   99.51
  EFFECTIVE AREA(ACRES) =    147.23   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      147.2       PEAK FLOW RATE(CFS) =     241.79

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20126.00 TO NODE  20127.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1404.24   CHANNEL SLOPE =  0.1282
  CHANNEL BASE(FEET) =   20.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     241.79
  FLOW VELOCITY(FEET/SEC.) =  11.03   FLOW DEPTH(FEET) =   1.00
  TRAVEL TIME(MIN.) =   2.12   Tc(MIN.) =   21.82
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20127.00 =    5802.34 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20127.00 TO NODE  20127.00 IS CODE =  81
```



```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.82
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.294
  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       45.37      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   45.37      SUBAREA RUNOFF(CFS) =   68.58
  EFFECTIVE AREA(ACRES) =    192.60   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =      192.6       PEAK FLOW RATE(CFS) =     291.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.18; 6HR = 3.11; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20127.00 TO NODE  20128.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.58   CHANNEL SLOPE =  0.1444
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     291.14
  FLOW VELOCITY(FEET/SEC.) =  10.78   FLOW DEPTH(FEET) =   0.85
  TRAVEL TIME(MIN.) =   1.93   Tc(MIN.) =   23.74
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20128.00 =    7048.92 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20128.00 TO NODE  20128.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.180
  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       27.94      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.51      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.930
  SUBAREA AREA(ACRES) =   36.45      SUBAREA RUNOFF(CFS) =   52.07
  EFFECTIVE AREA(ACRES) =    229.05   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =      229.0       PEAK FLOW RATE(CFS) =     323.52

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  20128.00 TO NODE  20129.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2120.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1393.78   CHANNEL SLOPE =  0.0861
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     323.52
  FLOW VELOCITY(FEET/SEC.) =   9.54   FLOW DEPTH(FEET) =   1.06
  TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =   26.18
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20129.00 =    8442.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20129.00 TO NODE  20129.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.056
  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       18.57      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.38      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.892
  SUBAREA AREA(ACRES) =   28.95      SUBAREA RUNOFF(CFS) =   38.42
  EFFECTIVE AREA(ACRES) =    258.00   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.62  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =      258.0       PEAK FLOW RATE(CFS) =     336.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  10129.00 TO NODE  20130.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   1995.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2018.40   CHANNEL SLOPE =  0.0619
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     336.38
  FLOW VELOCITY(FEET/SEC.) =   8.71   FLOW DEPTH(FEET) =   1.19
  TRAVEL TIME(MIN.) =   3.86   Tc(MIN.) =   30.04
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20130.00 =   10461.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20130.00 TO NODE  20130.00 IS CODE =  81
----------------------------------------------------------------------------
```



```
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   30.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.893
  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       28.04      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       51.49      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       30.71      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.891
  SUBAREA AREA(ACRES) =  110.24      SUBAREA RUNOFF(CFS) =  127.90
  EFFECTIVE AREA(ACRES) =    368.24   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =      368.2       PEAK FLOW RATE(CFS) =     426.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.07; 6HR = 2.84; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20130.00 TO NODE  20148.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1995.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1246.14   CHANNEL SLOPE =  0.0562
  CHANNEL BASE(FEET) =   30.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     426.43
  FLOW VELOCITY(FEET/SEC.) =   9.23   FLOW DEPTH(FEET) =   1.41
  TRAVEL TIME(MIN.) =   2.25   Tc(MIN.) =   32.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 =   11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20148.00 TO NODE  20148.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   32.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.813
  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       19.93      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.891
  SUBAREA AREA(ACRES) =   20.58      SUBAREA RUNOFF(CFS) =   21.24
  EFFECTIVE AREA(ACRES) =    388.82   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =      388.8       PEAK FLOW RATE(CFS) =     426.43
```

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

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20148.00 TO NODE  20148.00 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.) =   32.29
  RAINFALL INTENSITY(INCH/HR) =   1.81
  AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.64
  AREA-AVERAGED Ap =  0.95
  EFFECTIVE STREAM AREA(ACRES) =     388.82
  TOTAL STREAM AREA(ACRES) =     388.82
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     426.43

****************************************************************************
  FLOW PROCESS FROM NODE  20140.00 TO NODE  20141.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   823.61
  ELEVATION DATA: UPSTREAM(FEET) =   3000.00  DOWNSTREAM(FEET) =   2690.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.588
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.190
  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"               B        8.14      0.61     1.000    66   12.59
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     18.87
  TOTAL AREA(ACRES) =      8.14   PEAK FLOW RATE(CFS) =     18.87

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.53; 6HR = 2.22; 24HR = 4.71

****************************************************************************
  FLOW PROCESS FROM NODE  20141.00 TO NODE  20142.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2690.00  DOWNSTREAM(FEET) =   2560.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   610.78   CHANNEL SLOPE =  0.2128
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      18.87
  FLOW VELOCITY(FEET/SEC.) =   8.66   FLOW DEPTH(FEET) =   0.93
```



```
  TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =   13.76
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20142.00 =    1434.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20142.00 TO NODE  20142.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   13.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.024
  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       15.44      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.44      SUBAREA RUNOFF(CFS) =   33.49
  EFFECTIVE AREA(ACRES) =     23.58   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       23.6       PEAK FLOW RATE(CFS) =      51.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20142.00 TO NODE  20143.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2560.00  DOWNSTREAM(FEET) =   2420.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   771.13   CHANNEL SLOPE =  0.1816
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      51.14
  FLOW VELOCITY(FEET/SEC.) =  10.54   FLOW DEPTH(FEET) =   1.39
  TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =   14.98
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20143.00 =    2205.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20143.00 TO NODE  20143.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.98
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.874
  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       22.70      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   22.70      SUBAREA RUNOFF(CFS) =   46.16
  EFFECTIVE AREA(ACRES) =     46.28   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       46.3       PEAK FLOW RATE(CFS) =      94.12
```

```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20143.00 TO NODE  20144.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2240.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1310.58   CHANNEL SLOPE =  0.1373
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.500
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      94.12
  FLOW VELOCITY(FEET/SEC.) =  11.01   FLOW DEPTH(FEET) =   1.85
  TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   16.97
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20144.00 =    3516.10 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20144.00 TO NODE  20144.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.97
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.667
  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       61.27      0.61     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.25      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.984
  SUBAREA AREA(ACRES) =   72.52      SUBAREA RUNOFF(CFS) =  133.40
  EFFECTIVE AREA(ACRES) =    118.80   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.99
  TOTAL AREA(ACRES) =      118.8       PEAK FLOW RATE(CFS) =     218.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.25; 6HR = 3.25; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20144.00 TO NODE  20145.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1185.29   CHANNEL SLOPE =  0.0759
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.50
  CHANNEL FLOW THRU SUBAREA(CFS) =     218.91
  FLOW VELOCITY(FEET/SEC.) =  11.15   FLOW DEPTH(FEET) =   2.12
  TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =   18.74
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20145.00 =    4701.39 FEET.
```



```
****************************************************************************
  FLOW PROCESS FROM NODE  20145.00 TO NODE  20145.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   18.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.513
  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       27.90      0.61     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       18.45      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.960
  SUBAREA AREA(ACRES) =   46.35      SUBAREA RUNOFF(CFS) =   78.22
  EFFECTIVE AREA(ACRES) =    165.15   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.98
  TOTAL AREA(ACRES) =      165.1       PEAK FLOW RATE(CFS) =     280.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.15; 6HR = 3.04; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20145.00 TO NODE  20146.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2065.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1106.66   CHANNEL SLOPE =  0.0768
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     280.63
  FLOW VELOCITY(FEET/SEC.) =  11.94   FLOW DEPTH(FEET) =   2.40
  TRAVEL TIME(MIN.) =   1.54   Tc(MIN.) =   20.28
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20146.00 =    5808.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20146.00 TO NODE  20146.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.28
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.396
  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        5.66      0.61     1.000    66
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       28.22      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.917
  SUBAREA AREA(ACRES) =   33.88      SUBAREA RUNOFF(CFS) =   52.84
  EFFECTIVE AREA(ACRES) =    199.03   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.97
```

```
  TOTAL AREA(ACRES) =      199.0       PEAK FLOW RATE(CFS) =     316.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20146.00 TO NODE  20147.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2065.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1084.55   CHANNEL SLOPE =  0.0784
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     316.14
  FLOW VELOCITY(FEET/SEC.) =  12.43   FLOW DEPTH(FEET) =   2.53
  TRAVEL TIME(MIN.) =   1.45   Tc(MIN.) =   21.74
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20147.00 =    6892.60 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20147.00 TO NODE  20147.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   21.74
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.299
  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       15.70      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  SUBAREA AREA(ACRES) =   15.70      SUBAREA RUNOFF(CFS) =   22.97
  EFFECTIVE AREA(ACRES) =    214.73   AREA-AVERAGED Fm(INCH/HR) =  0.63
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.97
  TOTAL AREA(ACRES) =      214.7       PEAK FLOW RATE(CFS) =     321.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20147.00 TO NODE  20148.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1925.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   934.91   CHANNEL SLOPE =  0.0588
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     321.65
  FLOW VELOCITY(FEET/SEC.) =  11.24   FLOW DEPTH(FEET) =   2.73
  TRAVEL TIME(MIN.) =   1.39   Tc(MIN.) =   23.12
  LONGEST FLOWPATH FROM NODE  20140.00 TO NODE  20148.00 =    7827.51 FEET.

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



```
  FLOW PROCESS FROM NODE  20148.00 TO NODE  20148.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.12
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.215
  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       14.97      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  SUBAREA AREA(ACRES) =   14.97      SUBAREA RUNOFF(CFS) =   20.77
  EFFECTIVE AREA(ACRES) =    229.70   AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.96
  TOTAL AREA(ACRES) =      229.7       PEAK FLOW RATE(CFS) =     326.24

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20148.00 TO NODE  20148.00 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.) =   23.12
  RAINFALL INTENSITY(INCH/HR) =   2.21
  AREA-AVERAGED Fm(INCH/HR) =  0.64
  AREA-AVERAGED Fp(INCH/HR) =  0.66
  AREA-AVERAGED Ap =  0.96
  EFFECTIVE STREAM AREA(ACRES) =     229.70
  TOTAL STREAM AREA(ACRES) =     229.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     326.24

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      426.43   32.29    1.813  0.64( 0.61) 0.95     388.8   20120.00
      2      326.24   23.12    2.215  0.66( 0.64) 0.96     229.7   20140.00

  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      733.66   23.12    2.215  0.65( 0.62) 0.95     508.1   20140.00
      2      669.52   32.29    1.813  0.65( 0.62) 0.95     618.5   20120.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     733.66    Tc(MIN.) =    23.12
  EFFECTIVE AREA(ACRES) =     508.11   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =      618.5
```

```
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20148.00 =   11707.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20148.00 TO NODE  20149.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1925.00  DOWNSTREAM(FEET) =   1900.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   764.60   CHANNEL SLOPE =  0.0327
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     733.66
  FLOW VELOCITY(FEET/SEC.) =  10.95   FLOW DEPTH(FEET) =   3.80
  TRAVEL TIME(MIN.) =   1.16   Tc(MIN.) =   24.29
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20149.00 =   12471.84 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20149.00 TO NODE  20149.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.151
  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       20.34      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.62      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.891
  SUBAREA AREA(ACRES) =   20.96      SUBAREA RUNOFF(CFS) =   28.00
  EFFECTIVE AREA(ACRES) =    529.07   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =      639.5       PEAK FLOW RATE(CFS) =     733.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20149.00 TO NODE  20150.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1900.00  DOWNSTREAM(FEET) =   1850.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1212.57   CHANNEL SLOPE =  0.0412
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     733.66
  FLOW VELOCITY(FEET/SEC.) =  11.90   FLOW DEPTH(FEET) =   3.59
  TRAVEL TIME(MIN.) =   1.70   Tc(MIN.) =   25.99
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 =   13684.41 FEET.

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



```
  FLOW PROCESS FROM NODE  20150.00 TO NODE  20150.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.99
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.065
  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        8.58      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.10      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.897
  SUBAREA AREA(ACRES) =    8.68      SUBAREA RUNOFF(CFS) =   10.89
  EFFECTIVE AREA(ACRES) =    537.75   AREA-AVERAGED Fm(INCH/HR) =  0.62
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.95
  TOTAL AREA(ACRES) =      648.2       PEAK FLOW RATE(CFS) =     733.66
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20150.00 TO NODE  20150.00 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.24;3H= 2.14;6H= 3.00;24H= 7.46
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.62; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      648.2
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 =   13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0489; Lca/L=0.4,n=.0438; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     197.89
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    747.48
  TOTAL PEAK FLOW RATE(CFS) =    747.48 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    733.66
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    733.66)
  PEAK FLOW RATE(CFS) USED =    747.48

****************************************************************************
  FLOW PROCESS FROM NODE  20150.00 TO NODE  20150.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      747.48    Tc(MIN.) =   35.23
  AREA-AVERAGED Fm(INCH/HR) =  0.62    Ybar = 0.54
```

```
  TOTAL AREA(ACRES) =      648.2
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 =   13684.41 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1525.78    Tc(MIN.) =   24.67
  AREA-AVERAGED Fm(INCH/HR) =  0.60    Ybar = 0.53
  TOTAL AREA(ACRES) =     1052.3
  LONGEST FLOWPATH FROM NODE  20100.00 TO NODE  20150.00 =   13659.16 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.19;6H= 3.11;24H= 7.51
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.61; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     1700.5
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20150.00 =   13684.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0489; Lca/L=0.4,n=.0438; Lca/L=0.5,n=.0402;Lca/L=0.6,n=.0375
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     524.96
  PEAK FLOW RATE(CFS) =    1868.80

****************************************************************************
  FLOW PROCESS FROM NODE  20150.00 TO NODE  20150.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  20150.00 TO NODE  20151.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1850.00  DOWNSTREAM(FEET) =   1785.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1753.77   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1868.80
  FLOW VELOCITY(FEET/SEC.) =  17.69   FLOW DEPTH(FEET) =   5.19
  TRAVEL TIME(MIN.) =   1.65   Tc(MIN.) =   36.88
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 =   15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20151.00 TO NODE  20151.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   36.88
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.674
  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       24.58      0.75     0.900    56
```



```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.900
  SUBAREA AREA(ACRES) =   24.58
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.18;6H= 3.11;24H= 7.51
  S-GRAPH: VALLEY(DEV.)=100.0%;VALLEY(UNDEV.)/DESERT=  0.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.61; LAG(HR) = 0.49; Fm(INCH/HR) = 0.61; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     1725.0
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 =   15438.18 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0460; Lca/L=0.4,n=.0413; Lca/L=0.5,n=.0379;Lca/L=0.6,n=.0354
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     531.22
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    1822.13
  TOTAL AREA(ACRES) =     1725.0       PEAK FLOW RATE(CFS) =    1868.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.33

****************************************************************************
  FLOW PROCESS FROM NODE  20151.00 TO NODE  20151.00 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20151.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     1725.0  TC(MIN.) =     36.88
  AREA-AVERAGED Fm(INCH/HR)=  0.61   Ybar =  0.53
  PEAK FLOW RATE(CFS)   =   1868.80
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

```
 ************************************************************************
             RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
          (Reference: 1986 SAN BERNARDINO CO. HYDROLOGY CRITERION)
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             Ver. 20.0  Release Date: 06/01/2013  License ID 1264

                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* REDLANDS MPD  - UPDATE                                                *
* REVISED RATIONAL METHOD HYDROLOGY - TO NODE 20274                     *
* BY TMULI    SEPT 2013                                                 *
 ************************************************************************

  FILE NAME: LR0202.DAT
  TIME/DATE OF STUDY: 15:31 09/24/2013
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2500

  *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   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 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

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


************************************************************************
  FLOW PROCESS FROM NODE  20200.00 TO NODE  20201.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   508.83
  ELEVATION DATA: UPSTREAM(FEET) =   1945.00  DOWNSTREAM(FEET) =   1935.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   10.936
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.471
  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
  "3-4 DWELLINGS/ACRE"       A        4.64      0.98     0.600    32   10.94
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     12.05
  TOTAL AREA(ACRES) =      4.64   PEAK FLOW RATE(CFS) =     12.05

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.12; 6HR = 2.96; 24HR = 7.50

************************************************************************
  FLOW PROCESS FROM NODE  20201.00 TO NODE  20202.00 IS CODE =  92
------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
========================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1935.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1930.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.72
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
```

```
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.961
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.32      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.81
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.12
  AVERAGE FLOW DEPTH(FEET) =   0.63   FLOOD WIDTH(FEET) =   35.63
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   3.32   Tc(MIN.) =   14.25
  SUBAREA AREA(ACRES) =    6.32       SUBAREA RUNOFF(CFS) =   13.51
  EFFECTIVE AREA(ACRES) =   10.96     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =       11.0          PEAK FLOW RATE(CFS) =      23.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.76; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.66   FLOOD WIDTH(FEET) =   39.52
  FLOW VELOCITY(FEET/SEC.) =   3.22   DEPTH*VELOCITY(FT*FT/SEC) =   2.13
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20202.00 =    1129.55 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20202.00 TO NODE  20203.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1930.00  DOWNSTREAM ELEVATION(FEET) = 1910.00
  STREET LENGTH(FEET) =   369.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.88
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   16.57
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.91
  STREET FLOW TRAVEL TIME(MIN.) =   1.04   Tc(MIN.) =   15.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.839
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.02      0.98     0.600    32
```



```
  MOBILE HOME PARK           A        0.23      0.98     0.250    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.593
  SUBAREA AREA(ACRES) =   11.25      SUBAREA RUNOFF(CFS) =   22.89
  EFFECTIVE AREA(ACRES) =     22.21    AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =       22.2        PEAK FLOW RATE(CFS) =      45.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  18.37
  FLOW VELOCITY(FEET/SEC.) =  6.33   DEPTH*VELOCITY(FT*FT/SEC.) =   3.33
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20203.00 =    1499.05 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20203.00 TO NODE  20204.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1910.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
  STREET LENGTH(FEET) =   418.06   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      58.61
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.60
    HALFSTREET FLOOD WIDTH(FEET) =   22.12
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.77
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.46
  STREET FLOW TRAVEL TIME(MIN.) =   1.21   Tc(MIN.) =   16.50
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.712
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        6.00      0.98     0.600    32
  MOBILE HOME PARK           A        6.97      0.98     0.250    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.412
  SUBAREA AREA(ACRES) =   12.97      SUBAREA RUNOFF(CFS) =   26.97
  EFFECTIVE AREA(ACRES) =     35.18    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =       35.2        PEAK FLOW RATE(CFS) =      69.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  23.68
  FLOW VELOCITY(FEET/SEC.) =  6.00   DEPTH*VELOCITY(FT*FT/SEC.) =   3.79
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20204.00 =    1917.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20204.00 TO NODE  20205.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
  STREET LENGTH(FEET) =   555.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      86.00
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.32
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.25
  STREET FLOW TRAVEL TIME(MIN.) =   1.46   Tc(MIN.) =   17.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.577
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        8.31      0.98     0.600    32
  MOBILE HOME PARK           A        8.55      0.98     0.250    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.423
  SUBAREA AREA(ACRES) =   16.86      SUBAREA RUNOFF(CFS) =   32.86
  EFFECTIVE AREA(ACRES) =     52.04    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =       52.0        PEAK FLOW RATE(CFS) =      98.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.66
  FLOW VELOCITY(FEET/SEC.) =  6.52   DEPTH*VELOCITY(FT*FT/SEC.) =   4.56
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20205.00 =    2472.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20205.00 TO NODE  20206.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
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  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1855.00
  STREET LENGTH(FEET) =   568.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     104.12
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   30.06
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.68
  STREET FLOW TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =   19.41
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.461
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        4.58      0.98     0.250    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.65      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.343
  SUBAREA AREA(ACRES) =    6.23      SUBAREA RUNOFF(CFS) =   11.92
  EFFECTIVE AREA(ACRES) =     58.27    AREA-AVERAGED Fm(INCH/HR) =  0.47
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
  TOTAL AREA(ACRES) =       58.3        PEAK FLOW RATE(CFS) =     104.61

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  30.22
  FLOW VELOCITY(FEET/SEC.) =  6.55   DEPTH*VELOCITY(FT*FT/SEC.) =   4.68
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20206.00 =    3040.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20206.00 TO NODE  20214.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1855.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   411.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020
```

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  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     106.73
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   30.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.68
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.77
  STREET FLOW TRAVEL TIME(MIN.) =   1.03   Tc(MIN.) =   20.43
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.386
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        1.68      0.98     0.250    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.62      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.344
  SUBAREA AREA(ACRES) =    2.30      SUBAREA RUNOFF(CFS) =    4.24
  EFFECTIVE AREA(ACRES) =     60.57    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =       60.6        PEAK FLOW RATE(CFS) =     104.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  29.91
  FLOW VELOCITY(FEET/SEC.) =  6.65   DEPTH*VELOCITY(FT*FT/SEC.) =   4.73
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =    3451.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20214.00 TO NODE  20214.00 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.) =   20.43
  RAINFALL INTENSITY(INCH/HR) =   2.39
  AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =      60.57
  TOTAL STREAM AREA(ACRES) =      60.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     104.93

****************************************************************************
  FLOW PROCESS FROM NODE  20210.00 TO NODE  20211.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   940.61
  ELEVATION DATA: UPSTREAM(FEET) =   1875.00  DOWNSTREAM(FEET) =   1850.00
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  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   13.163
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.106
  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
  "3-4 DWELLINGS/ACRE"       A        7.95      0.98     0.600    32   13.16
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     18.04
  TOTAL AREA(ACRES) =      7.95   PEAK FLOW RATE(CFS) =     18.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.29

****************************************************************************
  FLOW PROCESS FROM NODE  20211.00 TO NODE  20212.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1850.00  DOWNSTREAM ELEVATION(FEET) = 1846.00
  STREET LENGTH(FEET) =   247.17   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.83
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.49
    HALFSTREET FLOOD WIDTH(FEET) =   18.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.43
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.69
  STREET FLOW TRAVEL TIME(MIN.) =   1.20   Tc(MIN.) =   14.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.947
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        4.82      0.98     0.600    32
  MOBILE HOME PARK           A        0.55      0.98     0.250    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.564
  SUBAREA AREA(ACRES) =    5.37      SUBAREA RUNOFF(CFS) =   11.59
  EFFECTIVE AREA(ACRES) =     13.32    AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.59
  TOTAL AREA(ACRES) =       13.3        PEAK FLOW RATE(CFS) =      28.49
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  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.30

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  18.68
  FLOW VELOCITY(FEET/SEC.) =  3.69   DEPTH*VELOCITY(FT*FT/SEC.) =   1.90
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20212.00 =    1187.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20212.00 TO NODE  20213.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1846.00  DOWNSTREAM ELEVATION(FEET) = 1843.00
  STREET LENGTH(FEET) =   253.21   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.57
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   21.19
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.56
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.01
  STREET FLOW TRAVEL TIME(MIN.) =   1.19   Tc(MIN.) =   15.55
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.810
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.35      0.98     0.600    32
  MOBILE HOME PARK           A        3.23      0.98     0.250    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.397
  SUBAREA AREA(ACRES) =    5.58      SUBAREA RUNOFF(CFS) =   12.17
  EFFECTIVE AREA(ACRES) =     18.90    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.53
  TOTAL AREA(ACRES) =       18.9        PEAK FLOW RATE(CFS) =      39.01

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.33

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  3.70   DEPTH*VELOCITY(FT*FT/SEC.) =   2.16
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20213.00 =    1440.99 FEET.

****************************************************************************
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  FLOW PROCESS FROM NODE  20213.00 TO NODE  20214.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1843.00  DOWNSTREAM ELEVATION(FEET) = 1840.00
  STREET LENGTH(FEET) =   294.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.61
    HALFSTREET FLOOD WIDTH(FEET) =   23.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.17
  STREET FLOW TRAVEL TIME(MIN.) =   1.37   Tc(MIN.) =   16.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.63      0.98     0.600    32
  MOBILE HOME PARK           A        1.65      0.98     0.250    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.347
  SUBAREA AREA(ACRES) =    2.28      SUBAREA RUNOFF(CFS) =    4.79
  EFFECTIVE AREA(ACRES) =     21.18    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
  TOTAL AREA(ACRES) =       21.2        PEAK FLOW RATE(CFS) =      41.44

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.99

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.26
  FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   2.17
  LONGEST FLOWPATH FROM NODE  20210.00 TO NODE  20214.00 =    1735.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20214.00 TO NODE  20214.00 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.) =   16.92
  RAINFALL INTENSITY(INCH/HR) =   2.67
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 AREA-AVERAGED Fm(INCH/HR) =  0.50
 AREA-AVERAGED Fp(INCH/HR) =  0.98
 AREA-AVERAGED Ap =  0.51
 EFFECTIVE STREAM AREA(ACRES) =      21.18
 TOTAL STREAM AREA(ACRES) =      21.18
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      41.44

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      104.93   20.43    2.386  0.97( 0.46) 0.47      60.6   20200.00
     2       41.44   16.92    2.672  0.98( 0.50) 0.51      21.2   20210.00

 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      141.24   16.92    2.672  0.97( 0.47) 0.48      71.3   20210.00
     2      140.92   20.43    2.386  0.97( 0.47) 0.48      81.8   20200.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     141.24    Tc(MIN.) =    16.92
 EFFECTIVE AREA(ACRES) =      71.34   AREA-AVERAGED Fm(INCH/HR) =  0.47
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.48
 TOTAL AREA(ACRES) =       81.8
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20214.00 =    3451.11 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20214.00 TO NODE  20215.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1793.00
 STREET LENGTH(FEET) =  1205.58   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     176.89
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.82
   HALFSTREET FLOOD WIDTH(FEET) =   39.52
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.62
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.23
 STREET FLOW TRAVEL TIME(MIN.) =   2.64   Tc(MIN.) =   19.56
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.449
 SUBAREA LOSS RATE DATA(AMC  II):
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  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       18.86      0.98     0.600    32
 MOBILE HOME PARK           A       19.95      0.98     0.250    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.420
 SUBAREA AREA(ACRES) =   38.81      SUBAREA RUNOFF(CFS) =   71.25
 EFFECTIVE AREA(ACRES) =    110.15    AREA-AVERAGED Fm(INCH/HR) =  0.45
 AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.46
 TOTAL AREA(ACRES) =      120.6         PEAK FLOW RATE(CFS) =     198.21

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  40.68
 FLOW VELOCITY(FEET/SEC.) =  7.91   DEPTH*VELOCITY(FT*FT/SEC.) =   6.65
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1205.6 FT WITH ELEVATION-DROP =  47.0 FT, IS  106.6 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20215.00
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20215.00 =    4656.69 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20215.00 TO NODE  20216.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1793.00  DOWNSTREAM ELEVATION(FEET) = 1740.00
 STREET LENGTH(FEET) =  1725.28   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 32.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     237.31
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.91
   HALFSTREET FLOOD WIDTH(FEET) =   44.04
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.72
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.00
 STREET FLOW TRAVEL TIME(MIN.) =   3.73   Tc(MIN.) =   23.28
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.206
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A       24.17      0.98     0.600    32
 SCHOOL                     A        9.62      0.98     0.600    32
 MOBILE HOME PARK           A       14.92      0.98     0.250    32
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  COMMERCIAL                  A        0.89      0.98     0.100    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        0.13      0.75     0.600    56
  COMMERCIAL                  B        0.31      0.75     0.100    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.484
  SUBAREA AREA(ACRES) =   50.04      SUBAREA RUNOFF(CFS) =   78.13
  EFFECTIVE AREA(ACRES) =    160.19    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.97  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =      170.6        PEAK FLOW RATE(CFS) =     252.22

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.92   HALFSTREET FLOOD WIDTH(FEET) =  44.77
  FLOW VELOCITY(FEET/SEC.) =  7.87   DEPTH*VELOCITY(FT*FT/SEC.) =   7.26
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1725.3 FT WITH ELEVATION-DROP =  53.0 FT, IS  126.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20216.00
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20216.00 =    6381.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20216.00 TO NODE  20232.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1740.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
  STREET LENGTH(FEET) =  1052.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     260.11
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.61
    HALFSTREET FLOOD WIDTH(FEET) =   79.07
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.22
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.57
  STREET FLOW TRAVEL TIME(MIN.) =   7.89   Tc(MIN.) =   31.17
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.852
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.63      0.98     0.250    32
  COMMERCIAL                 B        1.46      0.75     0.100    56
  MOBILE HOME PARK           B        4.91      0.75     0.250    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.10      0.75     0.600    56
```



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  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.76
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.360
  SUBAREA AREA(ACRES) =   11.10      SUBAREA RUNOFF(CFS) =   15.78
  EFFECTIVE AREA(ACRES) =    171.29    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.46
  TOTAL AREA(ACRES) =      181.7        PEAK FLOW RATE(CFS) =     252.22
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.59   HALFSTREET FLOOD WIDTH(FEET) =  78.22
  FLOW VELOCITY(FEET/SEC.) =  2.21   DEPTH*VELOCITY(FT*FT/SEC.) =   3.51
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1052.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   21.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20232.00
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =    7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20232.00 TO NODE  20232.00 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.) =   31.17
  RAINFALL INTENSITY(INCH/HR) =   1.85
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.96
  AREA-AVERAGED Ap =  0.46
  EFFECTIVE STREAM AREA(ACRES) =     171.29
  TOTAL STREAM AREA(ACRES) =     181.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     252.22

****************************************************************************
  FLOW PROCESS FROM NODE  20220.00 TO NODE  20221.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   598.74
  ELEVATION DATA: UPSTREAM(FEET) =   1935.00  DOWNSTREAM(FEET) =   1925.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.057
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.274
  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
  "3-4 DWELLINGS/ACRE"       A        5.11      0.98     0.600    32   12.06
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     12.37
  TOTAL AREA(ACRES) =      5.11   PEAK FLOW RATE(CFS) =     12.37

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
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  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20221.00 TO NODE  20222.00 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1925.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1915.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   551.44
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.978
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        5.86      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     18.67
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.46
  AVERAGE FLOW DEPTH(FEET) =   0.57   FLOOD WIDTH(FEET) =   28.91
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.06   Tc(MIN.) =   14.12
  SUBAREA AREA(ACRES) =    5.86       SUBAREA RUNOFF(CFS) =   12.62
  EFFECTIVE AREA(ACRES) =   10.97     AREA-AVERAGED Fm(INCH/HR) =   0.59
  AREA-AVERAGED Fp(INCH/HR) =   0.98  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =       11.0         PEAK FLOW RATE(CFS) =      23.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.60   FLOOD WIDTH(FEET) =   32.65
  FLOW VELOCITY(FEET/SEC.) =   4.57   DEPTH*VELOCITY(FT*FT/SEC) =   2.75
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20222.00 =    1150.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20222.00 TO NODE  20223.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1915.00  DOWNSTREAM ELEVATION(FEET) = 1905.00
  STREET LENGTH(FEET) =   354.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.51
    HALFSTREET FLOOD WIDTH(FEET) =   18.26
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.38
  STREET FLOW TRAVEL TIME(MIN.) =   1.25   Tc(MIN.) =   15.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.830
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A       11.15      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA AREA(ACRES) =   11.15      SUBAREA RUNOFF(CFS) =   22.53
  EFFECTIVE AREA(ACRES) =     22.12    AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.60
  TOTAL AREA(ACRES) =       22.1        PEAK FLOW RATE(CFS) =      44.69

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  19.84
  FLOW VELOCITY(FEET/SEC.) =  5.19   DEPTH*VELOCITY(FT*FT/SEC.) =   2.79
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20223.00 =    1504.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20223.00 TO NODE  20224.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1905.00  DOWNSTREAM ELEVATION(FEET) = 1895.00
  STREET LENGTH(FEET) =   253.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      52.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.54
    HALFSTREET FLOOD WIDTH(FEET) =   19.78
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.11
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.27
  STREET FLOW TRAVEL TIME(MIN.) =   0.69   Tc(MIN.) =   16.06
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.756
  SUBAREA LOSS RATE DATA(AMC  II):
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 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
MOBILE HOME PARK            A        2.51      0.98      0.250    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        A        4.90      0.98      0.600    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.481
SUBAREA AREA(ACRES) =    7.41      SUBAREA RUNOFF(CFS) =   15.25
EFFECTIVE AREA(ACRES) =     29.53    AREA-AVERAGED Fm(INCH/HR) =  0.56
AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.57
TOTAL AREA(ACRES) =       29.5        PEAK FLOW RATE(CFS) =      58.48

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.55   HALFSTREET FLOOD WIDTH(FEET) =  20.58
FLOW VELOCITY(FEET/SEC.) =  6.36   DEPTH*VELOCITY(FT*FT/SEC.) =   3.51
LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20224.00 =    1757.18 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  20224.00 TO NODE  20225.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1895.00  DOWNSTREAM ELEVATION(FEET) = 1885.00
STREET LENGTH(FEET) =   323.50   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      68.27
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.60
  HALFSTREET FLOOD WIDTH(FEET) =   22.77
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.15
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.66
STREET FLOW TRAVEL TIME(MIN.) =   0.88   Tc(MIN.) =   16.94
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.670
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
MOBILE HOME PARK            A        3.70      0.98      0.250    32
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        A        6.13      0.98      0.600    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.468
SUBAREA AREA(ACRES) =    9.83      SUBAREA RUNOFF(CFS) =   19.58
EFFECTIVE AREA(ACRES) =     39.36    AREA-AVERAGED Fm(INCH/HR) =  0.53
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AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.54
TOTAL AREA(ACRES) =       39.4        PEAK FLOW RATE(CFS) =      75.76

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.61   HALFSTREET FLOOD WIDTH(FEET) =  23.69
FLOW VELOCITY(FEET/SEC.) =  6.34   DEPTH*VELOCITY(FT*FT/SEC.) =   3.89
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  323.5 FT WITH ELEVATION-DROP =  10.0 FT, IS   36.8 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20225.00
LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20225.00 =    2080.68 FEET.

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FLOW PROCESS FROM NODE  20225.00 TO NODE  20226.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 1885.00  DOWNSTREAM ELEVATION(FEET) = 1875.00
STREET LENGTH(FEET) =   288.50   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      84.85
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.62
  HALFSTREET FLOOD WIDTH(FEET) =   24.24
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.25
STREET FLOW TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =   17.64
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.605
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
     LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"3-4 DWELLINGS/ACRE"        A        2.52      0.98      0.600    32
MOBILE HOME PARK            A        6.40      0.98      0.250    32
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.349
SUBAREA AREA(ACRES) =    8.92      SUBAREA RUNOFF(CFS) =   18.18
EFFECTIVE AREA(ACRES) =     48.28    AREA-AVERAGED Fm(INCH/HR) =  0.50
AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.51
TOTAL AREA(ACRES) =       48.3        PEAK FLOW RATE(CFS) =      91.65

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
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  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.91
  FLOW VELOCITY(FEET/SEC.) =  6.97   DEPTH*VELOCITY(FT*FT/SEC.) =   4.45
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20226.00 =    2369.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20226.00 TO NODE  20227.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1875.00  DOWNSTREAM ELEVATION(FEET) = 1863.00
  STREET LENGTH(FEET) =   404.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     104.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.98
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.81
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.63
  STREET FLOW TRAVEL TIME(MIN.) =   0.99   Tc(MIN.) =   18.63
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.521
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        9.70      0.98     0.250    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.00      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.333
  SUBAREA AREA(ACRES) =   12.70      SUBAREA RUNOFF(CFS) =   25.11
  EFFECTIVE AREA(ACRES) =     60.98    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =       61.0        PEAK FLOW RATE(CFS) =     113.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.84
  FLOW VELOCITY(FEET/SEC.) =  6.97   DEPTH*VELOCITY(FT*FT/SEC.) =   4.86
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  404.5 FT WITH ELEVATION-DROP =  12.0 FT, IS   46.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20227.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20227.00 =    2773.68 FEET.

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  FLOW PROCESS FROM NODE  20227.00 TO NODE  20228.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1863.00  DOWNSTREAM ELEVATION(FEET) = 1848.00
  STREET LENGTH(FEET) =   374.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     122.87
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.93
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.42
  STREET FLOW TRAVEL TIME(MIN.) =   0.79   Tc(MIN.) =   19.42
  * 100 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
  MOBILE HOME PARK           A        4.46      0.98     0.250    32
  PUBLIC PARK                A        4.98      0.98     0.850    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.96      0.98     0.600    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.572
  SUBAREA AREA(ACRES) =   11.40      SUBAREA RUNOFF(CFS) =   19.51
  EFFECTIVE AREA(ACRES) =     72.38    AREA-AVERAGED Fm(INCH/HR) =  0.48
  AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.49
  TOTAL AREA(ACRES) =       72.4        PEAK FLOW RATE(CFS) =     129.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.66
  FLOW VELOCITY(FEET/SEC.) =  8.06   DEPTH*VELOCITY(FT*FT/SEC.) =   5.59
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  374.5 FT WITH ELEVATION-DROP =  15.0 FT, IS   41.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20228.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20228.00 =    3148.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20228.00 TO NODE  20229.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
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 UPSTREAM ELEVATION(FEET) = 1848.00  DOWNSTREAM ELEVATION(FEET) = 1826.00
 STREET LENGTH(FEET) =   510.53   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     142.27
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.71
   HALFSTREET FLOOD WIDTH(FEET) =   28.33
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.48
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.99
 STREET FLOW TRAVEL TIME(MIN.) =   1.00   Tc(MIN.) =   20.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.386
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A        5.30      0.98     0.250    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        4.30      0.98     0.600    32
 PUBLIC PARK                A        6.33      0.98     0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.97
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.583
 SUBAREA AREA(ACRES) =   15.93      SUBAREA RUNOFF(CFS) =   26.06
 EFFECTIVE AREA(ACRES) =     88.31    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =       88.3        PEAK FLOW RATE(CFS) =     150.53

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.16

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.72   HALFSTREET FLOOD WIDTH(FEET) =  28.94
 FLOW VELOCITY(FEET/SEC.) =  8.61   DEPTH*VELOCITY(FT*FT/SEC.) =   6.19
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  510.5 FT WITH ELEVATION-DROP =  22.0 FT, IS   53.6 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20229.00
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20229.00 =    3658.71 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20229.00 TO NODE  20230.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1826.00  DOWNSTREAM ELEVATION(FEET) = 1800.00
 STREET LENGTH(FEET) =   713.66   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
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 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     168.36
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.77
   HALFSTREET FLOOD WIDTH(FEET) =   31.26
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.31
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.35
 STREET FLOW TRAVEL TIME(MIN.) =   1.43   Tc(MIN.) =   21.86
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.291
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 MOBILE HOME PARK           A       11.14      0.98     0.250    32
 PUBLIC PARK                A        6.85      0.98     0.850    32
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        3.99      0.98     0.600    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.98
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.501
 SUBAREA AREA(ACRES) =   21.98      SUBAREA RUNOFF(CFS) =   35.67
 EFFECTIVE AREA(ACRES) =    110.29    AREA-AVERAGED Fm(INCH/HR) =  0.49
 AREA-AVERAGED Fp(INCH/HR) =  0.98  AREA-AVERAGED Ap =  0.50
 TOTAL AREA(ACRES) =      110.3        PEAK FLOW RATE(CFS) =     178.64

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.16

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.99
 FLOW VELOCITY(FEET/SEC.) =  8.43   DEPTH*VELOCITY(FT*FT/SEC.) =   6.57
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L =  713.7 FT WITH ELEVATION-DROP =  26.0 FT, IS   67.4 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20230.00
 LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20230.00 =    4372.37 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20230.00 TO NODE  20231.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1800.00  DOWNSTREAM ELEVATION(FEET) = 1769.00
 STREET LENGTH(FEET) =   900.35   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     202.74
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.82
    HALFSTREET FLOOD WIDTH(FEET) =   34.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.97
  STREET FLOW TRAVEL TIME(MIN.) =   1.77   Tc(MIN.) =   23.62
  * 100 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
  MOBILE HOME PARK           A       14.01      0.98     0.250    32
  MOBILE HOME PARK           B        8.21      0.75     0.250    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.69      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.23      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.324
  SUBAREA AREA(ACRES) =   28.14      SUBAREA RUNOFF(CFS) =   48.21
  EFFECTIVE AREA(ACRES) =    138.43    AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.96  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =      138.4        PEAK FLOW RATE(CFS) =     216.49

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.84   HALFSTREET FLOOD WIDTH(FEET) =  34.92
  FLOW VELOCITY(FEET/SEC.) =  8.62   DEPTH*VELOCITY(FT*FT/SEC.) =   7.23
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  900.3 FT WITH ELEVATION-DROP =  31.0 FT, IS   85.5 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20231.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20231.00 =    5272.72 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20231.00 TO NODE  20232.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1769.00  DOWNSTREAM ELEVATION(FEET) = 1739.00
  STREET LENGTH(FEET) =   905.39   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```



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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     229.79
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.86
    HALFSTREET FLOOD WIDTH(FEET) =   36.02
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.61
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.75   Tc(MIN.) =   25.37
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.095
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  MOBILE HOME PARK           A        0.17      0.98     0.250    32
  MOBILE HOME PARK           B        5.75      0.75     0.250    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.10      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.478
  SUBAREA AREA(ACRES) =   17.02      SUBAREA RUNOFF(CFS) =   26.60
  EFFECTIVE AREA(ACRES) =    155.45    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =      155.4        PEAK FLOW RATE(CFS) =     231.64

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.86   HALFSTREET FLOOD WIDTH(FEET) =  36.08
  FLOW VELOCITY(FEET/SEC.) =  8.65   DEPTH*VELOCITY(FT*FT/SEC.) =   7.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  905.4 FT WITH ELEVATION-DROP =  30.0 FT, IS   50.2 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20232.00
  LONGEST FLOWPATH FROM NODE  20220.00 TO NODE  20232.00 =    6178.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20232.00 TO NODE  20232.00 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.) =   25.37
  RAINFALL INTENSITY(INCH/HR) =   2.09
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.94
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =     155.45
  TOTAL STREAM AREA(ACRES) =     155.45
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     231.64

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1      252.22   31.17    1.852  0.96( 0.44) 0.46     171.3   20210.00
      1      240.67   34.86    1.731  0.96( 0.45) 0.46     181.7   20200.00
      2      231.64   25.37    2.095  0.94( 0.44) 0.47     155.4   20220.00
```

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  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      472.47   25.37    2.095  0.95( 0.44) 0.47     294.9   20220.00
      2      449.84   31.17    1.852  0.95( 0.44) 0.46     326.7   20210.00
      3      421.47   34.86    1.731  0.95( 0.44) 0.47     337.2   20200.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     472.47    Tc(MIN.) =    25.37
  EFFECTIVE AREA(ACRES) =     294.90   AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.95  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =      337.2
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20232.00 =    7433.97 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20232.00 TO NODE  20249.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1739.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1274.82   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     484.25
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.62
    HALFSTREET FLOOD WIDTH(FEET) =   79.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.06
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.58
  STREET FLOW TRAVEL TIME(MIN.) =   5.24   Tc(MIN.) =   30.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.872
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.11      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       18.30      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA AREA(ACRES) =   18.41      SUBAREA RUNOFF(CFS) =   23.57
  EFFECTIVE AREA(ACRES) =    313.31    AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.93  AREA-AVERAGED Ap =  0.47
  TOTAL AREA(ACRES) =      355.6        PEAK FLOW RATE(CFS) =     472.47
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  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.00

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.61   HALFSTREET FLOOD WIDTH(FEET) =  79.07
  FLOW VELOCITY(FEET/SEC.) =  4.04   DEPTH*VELOCITY(FT*FT/SEC.) =   6.49
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1274.8 FT WITH ELEVATION-DROP =   4.0 FT, IS   29.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20249.00
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =    8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20249.00 TO NODE  20249.00 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.) =   30.61
  RAINFALL INTENSITY(INCH/HR) =   1.87
  AREA-AVERAGED Fm(INCH/HR) =  0.44
  AREA-AVERAGED Fp(INCH/HR) =  0.93
  AREA-AVERAGED Ap =  0.47
  EFFECTIVE STREAM AREA(ACRES) =     313.31
  TOTAL STREAM AREA(ACRES) =     355.56
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     472.47

****************************************************************************
  FLOW PROCESS FROM NODE  20240.00 TO NODE  20241.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   916.98
  ELEVATION DATA: UPSTREAM(FEET) =   1880.00  DOWNSTREAM(FEET) =   1855.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.964
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.134
  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
  "3-4 DWELLINGS/ACRE"       A        4.79      0.98     0.600    32   12.96
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.77      0.75     0.600    56   12.96
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.88
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  SUBAREA RUNOFF(CFS) =     20.10
  TOTAL AREA(ACRES) =      8.56   PEAK FLOW RATE(CFS) =     20.10

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20241.00 TO NODE  20242.00 IS CODE =  92
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--------------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
================================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1855.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1848.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   207.39
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.055
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.59      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.06      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.85
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.600
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     24.29
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.06
  AVERAGE FLOW DEPTH(FEET) =   0.56   FLOOD WIDTH(FEET) =   28.17
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.57   Tc(MIN.) =   13.53
  SUBAREA AREA(ACRES) =    3.65       SUBAREA RUNOFF(CFS) =    8.36
  EFFECTIVE AREA(ACRES) =   12.21     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.87  AREA-AVERAGED Ap =   0.60
  TOTAL AREA(ACRES) =       12.2         PEAK FLOW RATE(CFS) =      27.85

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.58   FLOOD WIDTH(FEET) =   30.41
  FLOW VELOCITY(FEET/SEC.) =   6.10   DEPTH*VELOCITY(FT*FT/SEC) =   3.56
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20242.00 =    1124.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20242.00 TO NODE  20243.00 IS CODE =  92
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   1848.00
  DOWNSTREAM NODE ELEVATION(FEET) =   1840.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   276.91
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.250
  PAVEMENT LIP(FEET) =  0.100   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01700
  MAXIMUM DEPTH(FEET) =   1.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.953
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.48      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        3.59      0.75     0.600    56
  RESIDENTIAL
```



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  ".4 DWELLING/ACRE"         B        0.59      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.627
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     35.14
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   5.91
  AVERAGE FLOW DEPTH(FEET) =   0.62   FLOOD WIDTH(FEET) =   35.34
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   0.78   Tc(MIN.) =   14.31
  SUBAREA AREA(ACRES) =    6.66       SUBAREA RUNOFF(CFS) =   14.59
  EFFECTIVE AREA(ACRES) =   18.87     AREA-AVERAGED Fm(INCH/HR) =   0.52
  AREA-AVERAGED Fp(INCH/HR) =   0.85  AREA-AVERAGED Ap =   0.61
  TOTAL AREA(ACRES) =       18.9         PEAK FLOW RATE(CFS) =      41.33

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOOD WIDTH(FEET) =   38.17
  FLOW VELOCITY(FEET/SEC.) =   6.05   DEPTH*VELOCITY(FT*FT/SEC) =   3.93
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20243.00 =    1401.28 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20243.00 TO NODE  20244.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1840.00  DOWNSTREAM ELEVATION(FEET) = 1830.00
  STREET LENGTH(FEET) =   293.50   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      50.29
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.44
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.15
  STREET FLOW TRAVEL TIME(MIN.) =   0.90   Tc(MIN.) =   15.21
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.848
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.29      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.18      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.12      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.639
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  SUBAREA AREA(ACRES) =    8.59      SUBAREA RUNOFF(CFS) =   17.92
  EFFECTIVE AREA(ACRES) =     27.46    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.85  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =       27.5        PEAK FLOW RATE(CFS) =      57.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  22.16
  FLOW VELOCITY(FEET/SEC.) =  5.63   DEPTH*VELOCITY(FT*FT/SEC.) =   3.39
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20244.00 =    1694.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20244.00 TO NODE  20245.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1830.00  DOWNSTREAM ELEVATION(FEET) = 1815.00
  STREET LENGTH(FEET) =   273.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.28
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   21.22
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.05
  STREET FLOW TRAVEL TIME(MIN.) =   0.65   Tc(MIN.) =   15.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.776
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        2.55      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.04      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        1.15      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.82
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.645
  SUBAREA AREA(ACRES) =    7.74      SUBAREA RUNOFF(CFS) =   15.67
  EFFECTIVE AREA(ACRES) =     35.20    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =       35.2        PEAK FLOW RATE(CFS) =      71.36

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50
```



```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.60   HALFSTREET FLOOD WIDTH(FEET) =  21.99
  FLOW VELOCITY(FEET/SEC.) =  7.10   DEPTH*VELOCITY(FT*FT/SEC.) =   4.25
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20245.00 =    1967.78 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20245.00 TO NODE  20246.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1815.00  DOWNSTREAM ELEVATION(FEET) = 1805.00
  STREET LENGTH(FEET) =   359.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      81.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.91
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.69
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.90
  STREET FLOW TRAVEL TIME(MIN.) =   1.05   Tc(MIN.) =   16.92
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.672
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.90      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.36      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.93      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.627
  SUBAREA AREA(ACRES) =   10.19      SUBAREA RUNOFF(CFS) =   19.72
  EFFECTIVE AREA(ACRES) =     45.39    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.63
  TOTAL AREA(ACRES) =       45.4        PEAK FLOW RATE(CFS) =      87.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.81

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  27.52
  FLOW VELOCITY(FEET/SEC.) =  5.88   DEPTH*VELOCITY(FT*FT/SEC.) =   4.10
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20246.00 =    2326.78 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE  20246.00 TO NODE  20247.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1805.00  DOWNSTREAM ELEVATION(FEET) = 1795.00
  STREET LENGTH(FEET) =   324.04   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      95.67
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.83
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.27
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.41
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =   17.78
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.593
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        3.02      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        4.88      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.55      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.83
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.620
  SUBAREA AREA(ACRES) =    8.45      SUBAREA RUNOFF(CFS) =   15.83
  EFFECTIVE AREA(ACRES) =     53.84    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.84  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =       53.8        PEAK FLOW RATE(CFS) =     100.38

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.71   HALFSTREET FLOOD WIDTH(FEET) =  28.26
  FLOW VELOCITY(FEET/SEC.) =  6.38   DEPTH*VELOCITY(FT*FT/SEC.) =   4.54
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20247.00 =    2650.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20247.00 TO NODE  20248.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
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```
  UPSTREAM ELEVATION(FEET) = 1795.00  DOWNSTREAM ELEVATION(FEET) = 1782.00
  STREET LENGTH(FEET) =   263.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     107.22
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.55
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.16
  STREET FLOW TRAVEL TIME(MIN.) =   0.58   Tc(MIN.) =   18.36
  * 100 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
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        1.94      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.00      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.49      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.81
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.620
  SUBAREA AREA(ACRES) =    7.43      SUBAREA RUNOFF(CFS) =   13.67
  EFFECTIVE AREA(ACRES) =     61.27    AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.83  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =       61.3        PEAK FLOW RATE(CFS) =     111.66

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.16
  FLOW VELOCITY(FEET/SEC.) =  7.69   DEPTH*VELOCITY(FT*FT/SEC.) =   5.30
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20248.00 =    2913.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20248.00 TO NODE  20249.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1782.00  DOWNSTREAM ELEVATION(FEET) = 1735.00
  STREET LENGTH(FEET) =  1589.51   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
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  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   30.94
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.86
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.25
  STREET FLOW TRAVEL TIME(MIN.) =   3.86   Tc(MIN.) =   22.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.268
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       A        0.28      0.98     0.600    32
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       21.09      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.85      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.611
  SUBAREA AREA(ACRES) =   22.22      SUBAREA RUNOFF(CFS) =   36.18
  EFFECTIVE AREA(ACRES) =     83.49    AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.81  AREA-AVERAGED Ap =  0.62
  TOTAL AREA(ACRES) =       83.5        PEAK FLOW RATE(CFS) =     132.65

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.77   HALFSTREET FLOOD WIDTH(FEET) =  31.19
  FLOW VELOCITY(FEET/SEC.) =  6.90   DEPTH*VELOCITY(FT*FT/SEC.) =   5.31
  LONGEST FLOWPATH FROM NODE  20240.00 TO NODE  20249.00 =    4503.33 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20249.00 TO NODE  20249.00 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.) =   22.22
  RAINFALL INTENSITY(INCH/HR) =   2.27
  AREA-AVERAGED Fm(INCH/HR) =  0.50
  AREA-AVERAGED Fp(INCH/HR) =  0.81
  AREA-AVERAGED Ap =  0.62
  EFFECTIVE STREAM AREA(ACRES) =      83.49
  TOTAL STREAM AREA(ACRES) =      83.49
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     132.65

  ** CONFLUENCE DATA **
```



```
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1      472.47   30.61    1.872  0.93( 0.44) 0.47      313.3   20220.00
      1      449.84   36.47    1.685  0.94( 0.44) 0.47      345.2   20210.00
      1      421.47   40.24    1.588  0.94( 0.44) 0.47      355.6   20200.00
      2      132.65   22.22    2.268  0.81( 0.50) 0.62       83.5   20240.00

  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      570.79   22.22    2.268  0.89( 0.46) 0.51      311.0   20240.00
      2      575.33   30.61    1.872  0.90( 0.45) 0.50      396.8   20220.00
      3      538.68   36.47    1.685  0.91( 0.45) 0.50      428.6   20210.00
      4      503.03   40.24    1.588  0.91( 0.45) 0.50      439.1   20200.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     575.33    Tc(MIN.) =    30.61
  EFFECTIVE AREA(ACRES) =     396.80   AREA-AVERAGED Fm(INCH/HR) =  0.45
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      439.1
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20249.00 =    8708.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20249.00 TO NODE  20250.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1735.00  DOWNSTREAM ELEVATION(FEET) = 1733.00
  STREET LENGTH(FEET) =   391.69   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     575.90
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.58
    HALFSTREET FLOOD WIDTH(FEET) =   77.85
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.09
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.06
  STREET FLOW TRAVEL TIME(MIN.) =   1.28   Tc(MIN.) =   31.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.826
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.58      0.75     0.600    56
```

```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.42      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.726
  SUBAREA AREA(ACRES) =    1.00      SUBAREA RUNOFF(CFS) =    1.15
  EFFECTIVE AREA(ACRES) =    397.80    AREA-AVERAGED Fm(INCH/HR) =  0.46
  AREA-AVERAGED Fp(INCH/HR) =  0.90  AREA-AVERAGED Ap =  0.50
  TOTAL AREA(ACRES) =      440.1        PEAK FLOW RATE(CFS) =     575.33
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.58   HALFSTREET FLOOD WIDTH(FEET) =  77.79
  FLOW VELOCITY(FEET/SEC.) =  5.09   DEPTH*VELOCITY(FT*FT/SEC.) =   8.06
  LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =    9100.48 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20250.00 TO NODE  20250.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  20151.00 TO NODE  20151.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20151.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1868.80    Tc(MIN.) =   36.88
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.53
  TOTAL AREA(ACRES) =     1725.0
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 =   15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20151.00 TO NODE  20151.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     1868.80    Tc(MIN.) =   36.88
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.53
  TOTAL AREA(ACRES) =     1725.0
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20151.00 =   15438.18 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20151.00 TO NODE  20151.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  20151.00 TO NODE  20250.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```



```
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1785.00  DOWNSTREAM(FEET) =   1733.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1656.68   CHANNEL SLOPE =  0.0314
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    1868.80
  FLOW VELOCITY(FEET/SEC.) =  16.64   FLOW DEPTH(FEET) =   5.40
  TRAVEL TIME(MIN.) =   1.66   Tc(MIN.) =   38.54
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 =   17094.86 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20250.00 TO NODE  20250.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.54
  * 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
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.58      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       54.48      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.892
  SUBAREA AREA(ACRES) =   56.06
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.18;6H= 3.09;24H= 7.48
  S-GRAPH: VALLEY(DEV.)= 23.5%;VALLEY(UNDEV.)/DESERT= 76.5%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.61; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.92; 30M = 0.92; 1HR = 0.92;
  3HR = 0.99; 6HR = 0.99; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     1781.1
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 =   17094.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0440; Lca/L=0.4,n=.0394; Lca/L=0.5,n=.0362;Lca/L=0.6,n=.0338
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     543.57
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    1643.88
  TOTAL AREA(ACRES) =     1781.1       PEAK FLOW RATE(CFS) =    1868.80
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.71

****************************************************************************
  FLOW PROCESS FROM NODE  20250.00 TO NODE  20250.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     1868.80    Tc(MIN.) =   38.54
  AREA-AVERAGED Fm(INCH/HR) =  0.61    Ybar = 0.54
  TOTAL AREA(ACRES) =     1781.1
```

```
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 =   17094.86 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      570.79   23.51    2.193  0.89( 0.46) 0.51     312.0   20240.00
     2      575.33   31.89    1.826  0.90( 0.46) 0.50     397.8   20220.00
     3      538.68   37.77    1.650  0.91( 0.45) 0.50     429.6   20210.00
     4      503.03   41.57    1.558  0.91( 0.45) 0.50     440.1   20200.00
 LONGEST FLOWPATH FROM NODE  20200.00 TO NODE  20250.00 =    9100.48 FEET.

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.14;6H= 3.02;24H= 7.36
 S-GRAPH: VALLEY(DEV.)= 38.4%;VALLEY(UNDEV.)/DESERT= 61.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.64; LAG(HR) = 0.51; Fm(INCH/HR) = 0.58; Ybar = 0.52
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
 3HR = 0.99; 6HR = 0.99; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     2221.2
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20250.00 =   17094.86 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0440; Lca/L=0.4,n=.0394; Lca/L=0.5,n=.0362;Lca/L=0.6,n=.0338
 TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     683.26
 PEAK FLOW RATE(CFS) =    2050.54

****************************************************************************
 FLOW PROCESS FROM NODE  20250.00 TO NODE  20250.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE  20250.00 TO NODE  20274.00 IS CODE =  54
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   1733.00  DOWNSTREAM(FEET) =   1670.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =  2379.03   CHANNEL SLOPE =  0.0265
 CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
 CHANNEL FLOW THRU SUBAREA(CFS) =    2050.54
 FLOW VELOCITY(FEET/SEC.) =  16.00   FLOW DEPTH(FEET) =   5.89
 TRAVEL TIME(MIN.) =   2.48   Tc(MIN.) =   41.02
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 =   19473.89 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =   41.02
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.570
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        3.23      0.75     0.600    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       A        0.07      0.98     0.600    32
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        9.49      0.75     0.900    56
 SCHOOL                     B       24.91      0.75     0.600    56
 SCHOOL                     A        0.90      0.98     0.600    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.674
 SUBAREA AREA(ACRES) =   38.60
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.46;30M= 0.95;1H= 1.25;3H= 2.14;6H= 3.01;24H= 7.35
 S-GRAPH: VALLEY(DEV.)= 39.0%;VALLEY(UNDEV.)/DESERT= 61.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.68; LAG(HR) = 0.55; Fm(INCH/HR) = 0.58; Ybar = 0.52
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.90; 30M = 0.90; 1HR = 0.90;
 3HR = 0.98; 6HR = 0.99; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     2259.8
 LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 =   19473.89 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0417; Lca/L=0.4,n=.0374; Lca/L=0.5,n=.0343;Lca/L=0.6,n=.0320
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     694.27
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    2005.21
 TOTAL AREA(ACRES) =     2259.8       PEAK FLOW RATE(CFS) =    2050.54
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 PEAK FLOW RATE(CFS) =    2050.54    Tc(MIN.) =   41.02
 AREA-AVERAGED Fm(INCH/HR) =  0.58   Ybar = 0.52
 TOTAL AREA(ACRES) =     2259.8

****************************************************************************
 FLOW PROCESS FROM NODE  20260.00 TO NODE  20261.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   680.83
 ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2360.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.333
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.412
 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"               B        4.43      0.61     1.000    66   11.82
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.14      0.75     0.700    56    7.33
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.902
  SUBAREA RUNOFF(CFS) =     22.63
  TOTAL AREA(ACRES) =      6.57   PEAK FLOW RATE(CFS) =     22.63

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20261.00 TO NODE  20262.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2360.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   583.76   CHANNEL SLOPE =  0.1370
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      22.63
  FLOW VELOCITY(FEET/SEC.) =   3.78   FLOW DEPTH(FEET) =   0.35
  TRAVEL TIME(MIN.) =   2.58   Tc(MIN.) =    9.91
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20262.00 =    1264.59 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20262.00 TO NODE  20262.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    9.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.683
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.44      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       15.90      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.64
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.935
  SUBAREA AREA(ACRES) =   20.34      SUBAREA RUNOFF(CFS) =   56.54
  EFFECTIVE AREA(ACRES) =     26.91   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.93
  TOTAL AREA(ACRES) =       26.9       PEAK FLOW RATE(CFS) =      74.86

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20262.00 TO NODE  20263.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2170.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   994.37   CHANNEL SLOPE =  0.1106
```



```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      74.86
  FLOW VELOCITY(FEET/SEC.) =   4.75   FLOW DEPTH(FEET) =   0.56
  TRAVEL TIME(MIN.) =   3.49   Tc(MIN.) =   13.40
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20263.00 =    2258.96 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20263.00 TO NODE  20263.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   13.40
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.073
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        8.82      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.700
  SUBAREA AREA(ACRES) =    8.82      SUBAREA RUNOFF(CFS) =   20.23
  EFFECTIVE AREA(ACRES) =     35.73   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =       35.7       PEAK FLOW RATE(CFS) =      80.32

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20263.00 TO NODE  20264.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2170.00  DOWNSTREAM(FEET) =   2110.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   784.49   CHANNEL SLOPE =  0.0765
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      80.32
  FLOW VELOCITY(FEET/SEC.) =   4.17   FLOW DEPTH(FEET) =   0.62
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =   16.54
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20264.00 =    3043.45 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20264.00 TO NODE  20264.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   16.54
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.708
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       17.48      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        7.48      0.61     1.000    66
```

```
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.790
  SUBAREA AREA(ACRES) =   24.96      SUBAREA RUNOFF(CFS) =   48.47
  EFFECTIVE AREA(ACRES) =     60.69   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =       60.7       PEAK FLOW RATE(CFS) =     117.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20264.00 TO NODE  20265.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2110.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   660.96   CHANNEL SLOPE =  0.0454
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     117.07
  FLOW VELOCITY(FEET/SEC.) =   3.76   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   2.93   Tc(MIN.) =   19.46
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20265.00 =    3704.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20265.00 TO NODE  20265.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   19.46
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.456
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.85      0.75     0.700    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.71      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       59.45      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.968
  SUBAREA AREA(ACRES) =   67.01      SUBAREA RUNOFF(CFS) =  111.62
  EFFECTIVE AREA(ACRES) =    127.70   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.91
  TOTAL AREA(ACRES) =      127.7       PEAK FLOW RATE(CFS) =     214.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20265.00 TO NODE  20266.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2010.00
```



```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   947.22   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     214.91
  FLOW VELOCITY(FEET/SEC.) =   5.27   FLOW DEPTH(FEET) =   0.90
  TRAVEL TIME(MIN.) =   3.00   Tc(MIN.) =   22.46
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20266.00 =    4651.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20266.00 TO NODE  20266.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   22.46
  * 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
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.89      0.75     0.700    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       11.99      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.30      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.836
  SUBAREA AREA(ACRES) =   27.18      SUBAREA RUNOFF(CFS) =   40.36
  EFFECTIVE AREA(ACRES) =    154.88   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =      154.9       PEAK FLOW RATE(CFS) =     232.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20266.00 TO NODE  20267.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2010.00  DOWNSTREAM(FEET) =   1960.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   906.98   CHANNEL SLOPE =  0.0551
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     232.04
  FLOW VELOCITY(FEET/SEC.) =   4.82   FLOW DEPTH(FEET) =   0.98
  TRAVEL TIME(MIN.) =   3.14   Tc(MIN.) =   25.60
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20267.00 =    5558.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20267.00 TO NODE  20267.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   25.60
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.084
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```

```
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       53.81      0.75     0.700    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       46.51      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       68.77      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.877
  SUBAREA AREA(ACRES) =  169.09      SUBAREA RUNOFF(CFS) =  225.60
  EFFECTIVE AREA(ACRES) =    323.97   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =      324.0       PEAK FLOW RATE(CFS) =     433.93

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20267.00 TO NODE  20268.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1960.00  DOWNSTREAM(FEET) =   1890.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1268.00   CHANNEL SLOPE =  0.0552
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     433.93
  FLOW VELOCITY(FEET/SEC.) =  11.43   FLOW DEPTH(FEET) =   2.52
  TRAVEL TIME(MIN.) =   1.85   Tc(MIN.) =   27.45
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20268.00 =    6826.61 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20268.00 TO NODE  20268.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   27.45
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.999
  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       30.11      0.75     0.900    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.46      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.897
  SUBAREA AREA(ACRES) =   30.57      SUBAREA RUNOFF(CFS) =   36.53
  EFFECTIVE AREA(ACRES) =    354.54   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.89
  TOTAL AREA(ACRES) =      354.5       PEAK FLOW RATE(CFS) =     445.57

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20268.00 TO NODE  20269.00 IS CODE =  54
```



```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1890.00  DOWNSTREAM(FEET) =   1870.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   379.58   CHANNEL SLOPE =  0.0527
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     445.57
  FLOW VELOCITY(FEET/SEC.) =  11.33   FLOW DEPTH(FEET) =   2.59
  TRAVEL TIME(MIN.) =   0.56   Tc(MIN.) =   28.00
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20269.00 =    7206.19 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20269.00 TO NODE  20269.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.00
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.975
  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       17.99      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.04      0.75     0.600    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.04      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       16.31      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.872
  SUBAREA AREA(ACRES) =   52.38      SUBAREA RUNOFF(CFS) =   64.51
  EFFECTIVE AREA(ACRES) =    406.92   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.88
  TOTAL AREA(ACRES) =      406.9       PEAK FLOW RATE(CFS) =     502.42

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20269.00 TO NODE  20270.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1870.00  DOWNSTREAM(FEET) =   1770.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2346.89   CHANNEL SLOPE =  0.0426
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     502.42
  FLOW VELOCITY(FEET/SEC.) =  10.84   FLOW DEPTH(FEET) =   2.92
  TRAVEL TIME(MIN.) =   3.61   Tc(MIN.) =   31.61
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20270.00 =    9553.08 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20270.00 TO NODE  20270.00 IS CODE =  81
```

```
------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
  MAINLINE Tc(MIN.) =   31.61
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.836
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        5.45      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       71.00      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.28      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       40.34      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.74
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.825
  SUBAREA AREA(ACRES) =  122.07      SUBAREA RUNOFF(CFS) =  134.56
  EFFECTIVE AREA(ACRES) =    528.99   AREA-AVERAGED Fm(INCH/HR) =  0.60
  AREA-AVERAGED Fp(INCH/HR) =  0.69  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =      529.0       PEAK FLOW RATE(CFS) =     586.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.39; 6HR = 1.90; 24HR = 4.17

******************************************************************************
  FLOW PROCESS FROM NODE  20270.00 TO NODE  20271.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
==============================================================================
  UPSTREAM ELEVATION(FEET) = 1770.00  DOWNSTREAM ELEVATION(FEET) = 1755.00
  STREET LENGTH(FEET) =   692.85   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 32.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     667.58
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.30
    HALFSTREET FLOOD WIDTH(FEET) =   63.88
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.07
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   11.84
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =   32.89
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.793
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL

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  ".4 DWELLING/ACRE"         B      100.00      0.75     0.900    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       27.18      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B       11.00      0.75     0.600    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       18.36      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.17      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.856
  SUBAREA AREA(ACRES) =  156.71      SUBAREA RUNOFF(CFS) =  162.65
  EFFECTIVE AREA(ACRES) =    685.70    AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =      685.7        PEAK FLOW RATE(CFS) =     728.45

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.31; 30M = 0.64; 1HR = 0.85; 3HR = 1.40; 6HR = 1.91; 24HR = 4.34

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.34   HALFSTREET FLOOD WIDTH(FEET) =  65.77
  FLOW VELOCITY(FEET/SEC.) =  9.28   DEPTH*VELOCITY(FT*FT/SEC.) =  12.46
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  692.8 FT WITH ELEVATION-DROP =  15.0 FT, IS  369.7 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20271.00
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 =   10245.93 FEET.

******************************************************************************
  FLOW PROCESS FROM NODE  20270.00 TO NODE  20271.00 IS CODE =  71
------------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
==============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.40;30M= 0.82;1H= 1.09;3H= 1.77;6H= 2.41;24H= 6.18
  S-GRAPH: VALLEY(DEV.)= 28.6%;VALLEY(UNDEV.)/DESERT= 71.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.55; LAG(HR) = 0.44; Fm(INCH/HR) = 0.61; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      685.7
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20271.00 =   10245.93 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0553; Lca/L=0.4,n=.0496; Lca/L=0.5,n=.0456;Lca/L=0.6,n=.0425
  TIME OF PEAK FLOW(HR) = 16.42  RUNOFF VOLUME(AF) =     154.43
  UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    606.38
  TOTAL PEAK FLOW RATE(CFS) =    606.38 (SOURCE FLOW INCLUDED)
  RATIONAL METHOD PEAK FLOW RATE(CFS) =    728.45
   (UPSTREAM NODE PEAK FLOW RATE(CFS) =    728.45)
  PEAK FLOW RATE(CFS) USED =    728.45

******************************************************************************
  FLOW PROCESS FROM NODE  20271.00 TO NODE  20272.00 IS CODE =  62
------------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 13 USED)<<<<<
==============================================================================
```

```
UPSTREAM ELEVATION(FEET) = 1755.00  DOWNSTREAM ELEVATION(FEET) = 1730.00
STREET LENGTH(FEET) =  1359.40   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 32.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     774.87
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.41
  HALFSTREET FLOOD WIDTH(FEET) =   69.06
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.87
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   12.49
STREET FLOW TRAVEL TIME(MIN.) =   2.55   Tc(MIN.) =   35.44
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.714
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       92.29      0.75     0.900    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        5.58      0.75     0.600    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.883
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.41;30M= 0.84;1H= 1.11;3H= 1.80;6H= 2.45;24H= 6.28
S-GRAPH: VALLEY(DEV.)= 25.8%;VALLEY(UNDEV.)/DESERT= 74.2%
         MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
Tc(HR) = 0.59; LAG(HR) = 0.47; Fm(INCH/HR) = 0.62; Ybar = 0.60
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
3HR = 0.99; 6HR = 1.00; 24HR= 1.00
UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      783.6
LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20272.00 =   11605.33 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0533; Lca/L=0.4,n=.0478; Lca/L=0.5,n=.0439;Lca/L=0.6,n=.0409
TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     178.37
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =     667.31
TOTAL AREA(ACRES) =      783.6        PEAK FLOW RATE(CFS) =     728.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.91

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 1.38   HALFSTREET FLOOD WIDTH(FEET) =  67.66
FLOW VELOCITY(FEET/SEC.) =  8.72   DEPTH*VELOCITY(FT*FT/SEC.) =  12.04
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L = 1359.4 FT WITH ELEVATION-DROP =  25.0 FT, IS  181.4 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20272.00
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****************************************************************************
  FLOW PROCESS FROM NODE  20272.00 TO NODE  20273.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1730.00  DOWNSTREAM ELEVATION(FEET) = 1695.00
  STREET LENGTH(FEET) =  1247.53   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     753.41
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.33
    HALFSTREET FLOOD WIDTH(FEET) =   59.58
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.50
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   13.99
  STREET FLOW TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   37.42
  * 100 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
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        2.91      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B       52.68      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.884
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 6.29
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.62; LAG(HR) = 0.50; Fm(INCH/HR) = 0.62; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      839.2
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20273.00 =   12852.86 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0514; Lca/L=0.4,n=.0461; Lca/L=0.5,n=.0424;Lca/L=0.6,n=.0395
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     190.65
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =     694.76
  TOTAL AREA(ACRES) =      839.2        PEAK FLOW RATE(CFS) =     728.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
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  DEPTH(FEET) = 1.32   HALFSTREET FLOOD WIDTH(FEET) =  58.78
  FLOW VELOCITY(FEET/SEC.) = 10.43   DEPTH*VELOCITY(FT*FT/SEC.) =  13.72
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1247.5 FT WITH ELEVATION-DROP =  35.0 FT, IS  113.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20273.00

****************************************************************************
  FLOW PROCESS FROM NODE  20273.00 TO NODE  20274.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1695.00  DOWNSTREAM ELEVATION(FEET) = 1670.00
  STREET LENGTH(FEET) =   797.55   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     729.84
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.29
    HALFSTREET FLOOD WIDTH(FEET) =   57.56
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.89
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   14.07
  STREET FLOW TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =   38.64
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.628
  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        2.08      0.75     0.900    56
  SCHOOL                     B        0.94      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.807
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.41;30M= 0.85;1H= 1.12;3H= 1.82;6H= 2.47;24H= 6.29
  S-GRAPH: VALLEY(DEV.)= 24.4%;VALLEY(UNDEV.)/DESERT= 75.6%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.64; LAG(HR) = 0.52; Fm(INCH/HR) = 0.62; Ybar = 0.60
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      842.2
  LONGEST FLOWPATH FROM NODE  20260.00 TO NODE  20274.00 =   13650.41 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0504; Lca/L=0.4,n=.0452; Lca/L=0.5,n=.0415;Lca/L=0.6,n=.0387
  TIME OF PEAK FLOW(HR) = 16.50  RUNOFF VOLUME(AF) =     191.40
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =     681.73
  TOTAL AREA(ACRES) =      842.2        PEAK FLOW RATE(CFS) =     728.45
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
```



```
  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.29   HALFSTREET FLOOD WIDTH(FEET) =  57.50
  FLOW VELOCITY(FEET/SEC.) = 10.89   DEPTH*VELOCITY(FT*FT/SEC.) =  14.05

****************************************************************************
  FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 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:
  PEAK FLOW RATE(CFS) =     728.45    Tc(MIN.) =   38.64
  AREA-AVERAGED Fm(INCH/HR) =  0.62   Ybar = 0.60
  TOTAL AREA(ACRES) =      842.2
  ** CONFLUENCE DATA **
  STREAM      Q        Tc      AREA      HEADWATER
  NUMBER    (CFS)    (MIN.)   (ACRES)      NODE
     1      2050.54   41.02     2259.75    20120.00
     2       728.45   38.64      842.18    20260.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.21;3H= 2.06;6H= 2.87;24H= 7.06
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.68; LAG(HR) = 0.55; Fm(INCH/HR) = 0.59; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     3101.9
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 =   19473.89 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0417; Lca/L=0.4,n=.0374; Lca/L=0.5,n=.0343;Lca/L=0.6,n=.0320
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     876.23
  PEAK FLOW RATE(CFS) =    2478.03

****************************************************************************
  FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 IS CODE = 152
----------------------------------------------------------------------------
  >>>>>STORE PEAK FLOWRATE TABLE TO A FILE<<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.DNA
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =     3101.9  TC(MIN.) =     41.02
  AREA-AVERAGED Fm(INCH/HR)=  0.59   Ybar =  0.54
  PEAK FLOW RATE(CFS)   =   2478.03
============================================================================
============================================================================
  END OF INTEGRATED RATIONAL/UNIT-HYDROGRAPH METHOD ANALYSIS
```

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

                          Analysis prepared by:




 ************************ DESCRIPTION OF STUDY ************************
* REDLANDS MPD  - UPDATE                                              *
* REVISED RATIONAL METHOD HYDROLOGY - TO NODE 20353                   *
* BY TMULI   SEPT 2013                                                *
 **********************************************************************

  FILE NAME: LR0203.DAT
  TIME/DATE OF STUDY: 15:32 09/24/2013
==============================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==============================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =  24.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.85
  *USER-DEFINED LOGARITHMIC INTERPOLATION USED FOR RAINFALL*

  SLOPE OF INTENSITY DURATION CURVE(LOG(I;IN/HR) vs. LOG(Tc;MIN)) = 0.6000
  USER SPECIFIED 1-HOUR INTENSITY(INCH/HOUR) = 1.2340

  *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   18.0     12.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  2   20.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  3   22.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  4   15.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  5   18.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  6   15.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  7   16.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
  8   16.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
  9   17.0     10.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 10   30.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 11   24.0     15.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 12   24.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 13   32.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 14   39.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 15   36.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 16   12.5      5.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
```



```
 17   20.0     10.0    0.020/0.020/0.020   0.50    1.50 0.0312 0.125 0.0180
 18   26.0     15.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180
 19   52.0     20.0    0.020/0.020/0.020   0.67    2.00 0.0312 0.167 0.0180

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.20 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

  UNIT-HYDROGRAPH MODEL SELECTIONS/PARAMETERS:
    WATERSHED LAG = 0.80 * Tc
    USED "VALLEY UNDEVELOPED" S-GRAPH FOR DEVELOPMENTS OF
    1 UNITS/ACRE AND LESS; AND "VALLEY DEVELOPED" S-GRAPH
    FOR DEVELOPMENTS OF 2 UNITS/ACRE AND MORE.
    PRECIPITATION DATA ENTERED ON SUBAREA BASIS.
    SIERRA MADRE DEPTH-AREA FACTORS USED.
 *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR UNIT HYDROGRAPH METHOD*


******************************************************************************
  FLOW PROCESS FROM NODE  20300.00 TO NODE  20301.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   658.37
  ELEVATION DATA: UPSTREAM(FEET) =   2600.00  DOWNSTREAM(FEET) =   2400.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.287
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  4.047
  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"               B        6.22      0.61     1.000    66   12.01
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.99      0.75     0.900    56    8.29
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.986
  SUBAREA RUNOFF(CFS) =     22.23
  TOTAL AREA(ACRES) =      7.21   PEAK FLOW RATE(CFS) =     22.23

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

******************************************************************************
  FLOW PROCESS FROM NODE  20301.00 TO NODE  20302.00 IS CODE =  54
------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2380.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   422.45   CHANNEL SLOPE =  0.0473
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
```

```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      22.23
  FLOW VELOCITY(FEET/SEC.) =   2.56   FLOW DEPTH(FEET) =   0.42
  TRAVEL TIME(MIN.) =   2.75   Tc(MIN.) =   11.04
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20302.00 =    1080.82 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20302.00 TO NODE  20302.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   11.04
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.408
  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        0.12      0.75     0.900    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        4.14      0.61     1.000    66
  SCHOOL                     B        3.66      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.814
  SUBAREA AREA(ACRES) =    7.92      SUBAREA RUNOFF(CFS) =   20.45
  EFFECTIVE AREA(ACRES) =     15.13   AREA-AVERAGED Fm(INCH/HR) =  0.58
  AREA-AVERAGED Fp(INCH/HR) =  0.65  AREA-AVERAGED Ap =  0.90
  TOTAL AREA(ACRES) =       15.1       PEAK FLOW RATE(CFS) =      38.53

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20302.00 TO NODE  20303.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2380.00  DOWNSTREAM(FEET) =   2320.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   870.68   CHANNEL SLOPE =  0.0689
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      38.53
  FLOW VELOCITY(FEET/SEC.) =   3.38   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   4.30   Tc(MIN.) =   15.34
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20303.00 =    1951.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20303.00 TO NODE  20303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   15.34
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.797
  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        4.15      0.61     1.000    66
```



```
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.80      0.75     0.900    56
  SCHOOL                     B       20.38      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.675
  SUBAREA AREA(ACRES) =   25.33      SUBAREA RUNOFF(CFS) =   52.76
  EFFECTIVE AREA(ACRES) =     40.46   AREA-AVERAGED Fm(INCH/HR) =  0.52
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =       40.5       PEAK FLOW RATE(CFS) =      82.98

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20303.00 TO NODE  20304.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2320.00  DOWNSTREAM(FEET) =   2280.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   981.07   CHANNEL SLOPE =  0.0408
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      82.98
  FLOW VELOCITY(FEET/SEC.) =   3.32   FLOW DEPTH(FEET) =   0.71
  TRAVEL TIME(MIN.) =   4.92   Tc(MIN.) =   20.26
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20304.00 =    2932.57 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20304.00 TO NODE  20304.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.26
  * 100 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
  "OPEN BRUSH"               B       18.37      0.61     1.000    66
  SCHOOL                     B       15.66      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.816
  SUBAREA AREA(ACRES) =   34.03      SUBAREA RUNOFF(CFS) =   56.03
  EFFECTIVE AREA(ACRES) =     74.49   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =       74.5       PEAK FLOW RATE(CFS) =     123.34

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20304.00 TO NODE  20305.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2280.00  DOWNSTREAM(FEET) =   2220.00
```

```
  CHANNEL LENGTH THRU SUBAREA(FEET) =   823.37   CHANNEL SLOPE =  0.0729
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     123.34
  FLOW VELOCITY(FEET/SEC.) =   4.56   FLOW DEPTH(FEET) =   0.74
  TRAVEL TIME(MIN.) =   3.01   Tc(MIN.) =   23.27
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20305.00 =    3755.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20305.00 TO NODE  20305.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.27
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.179
  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        9.94      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        0.01      0.75     0.700    56
  SCHOOL                     B        7.91      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.66
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.823
  SUBAREA AREA(ACRES) =   17.86      SUBAREA RUNOFF(CFS) =   26.33
  EFFECTIVE AREA(ACRES) =     92.35   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =       92.3       PEAK FLOW RATE(CFS) =     137.02

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20305.00 TO NODE  20306.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2220.00  DOWNSTREAM(FEET) =   2190.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   801.97   CHANNEL SLOPE =  0.0374
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     137.02
  FLOW VELOCITY(FEET/SEC.) =   3.66   FLOW DEPTH(FEET) =   0.86
  TRAVEL TIME(MIN.) =   3.65   Tc(MIN.) =   26.91
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20306.00 =    4557.91 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20306.00 TO NODE  20306.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.91
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.996
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```



```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.66      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       13.33      0.61     1.000    66
  SCHOOL                     B        2.17      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.63
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.920
  SUBAREA AREA(ACRES) =   17.16      SUBAREA RUNOFF(CFS) =   21.81
  EFFECTIVE AREA(ACRES) =    109.51   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =      109.5       PEAK FLOW RATE(CFS) =     143.67

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20306.00 TO NODE  20307.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2190.00  DOWNSTREAM(FEET) =   2185.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   181.13   CHANNEL SLOPE =  0.0276
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     143.67
  FLOW VELOCITY(FEET/SEC.) =   3.30   FLOW DEPTH(FEET) =   0.93
  TRAVEL TIME(MIN.) =   0.92   Tc(MIN.) =   27.83
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20307.00 =    4739.04 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20307.00 TO NODE  20307.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   27.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.957
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        1.33      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.26      0.75     0.600    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        3.26      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.65
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.896
  SUBAREA AREA(ACRES) =    4.85      SUBAREA RUNOFF(CFS) =    6.01
  EFFECTIVE AREA(ACRES) =    114.36   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.82
  TOTAL AREA(ACRES) =      114.4       PEAK FLOW RATE(CFS) =     145.77

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20307.00 TO NODE  20308.00 IS CODE =  54
```

```
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2185.00  DOWNSTREAM(FEET) =   2175.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   269.83   CHANNEL SLOPE =  0.0371
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   4.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     145.77
  FLOW VELOCITY(FEET/SEC.) =   3.70   FLOW DEPTH(FEET) =   0.89
  TRAVEL TIME(MIN.) =   1.22   Tc(MIN.) =   29.05
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20308.00 =    5008.87 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20308.00 TO NODE  20308.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   29.05
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.907
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.10      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.65      0.75     0.600    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.26      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.778
  SUBAREA AREA(ACRES) =    4.01      SUBAREA RUNOFF(CFS) =    4.93
  EFFECTIVE AREA(ACRES) =    118.37   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =      118.4       PEAK FLOW RATE(CFS) =     145.77
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20308.00 TO NODE  20309.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2175.00  DOWNSTREAM ELEVATION(FEET) = 2150.00
  STREET LENGTH(FEET) =   430.92   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
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    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.09
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   27.23
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.58
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.56
  STREET FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =   29.80
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.878
  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        1.71      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.80      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.00      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.775
  SUBAREA AREA(ACRES) =    5.51      SUBAREA RUNOFF(CFS) =    6.65
  EFFECTIVE AREA(ACRES) =    123.88    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =      123.9       PEAK FLOW RATE(CFS) =     149.16

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  27.23
  FLOW VELOCITY(FEET/SEC.) =  9.59   DEPTH*VELOCITY(FT*FT/SEC.) =   6.56
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20309.00 =    5439.79 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20309.00 TO NODE  20310.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2150.00  DOWNSTREAM ELEVATION(FEET) = 2140.00
  STREET LENGTH(FEET) =   330.10   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     152.34
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.76
    HALFSTREET FLOOD WIDTH(FEET) =   31.13
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    AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.57
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.77
  STREET FLOW TRAVEL TIME(MIN.) =   0.73   Tc(MIN.) =   30.52
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.851
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        3.69      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        0.85      0.61     1.000    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.79      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.72
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.733
  SUBAREA AREA(ACRES) =    5.33      SUBAREA RUNOFF(CFS) =    6.35
  EFFECTIVE AREA(ACRES) =    129.21    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =      129.2        PEAK FLOW RATE(CFS) =     152.51

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  31.20
  FLOW VELOCITY(FEET/SEC.) =  7.55   DEPTH*VELOCITY(FT*FT/SEC.) =   5.77
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20310.00 =    5769.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20310.00 TO NODE  20311.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2140.00  DOWNSTREAM ELEVATION(FEET) = 2100.00
  STREET LENGTH(FEET) =   329.50   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     155.51
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.62
    HALFSTREET FLOOD WIDTH(FEET) =   24.05
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   12.64
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.85
  STREET FLOW TRAVEL TIME(MIN.) =   0.43   Tc(MIN.) =   30.96
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.835
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
```



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       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.87      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.50      0.61     1.000    66
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.78      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.772
  SUBAREA AREA(ACRES) =    5.15      SUBAREA RUNOFF(CFS) =    6.01
  EFFECTIVE AREA(ACRES) =    134.36    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
  TOTAL AREA(ACRES) =      134.4        PEAK FLOW RATE(CFS) =     156.70

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  24.12
  FLOW VELOCITY(FEET/SEC.) = 12.67   DEPTH*VELOCITY(FT*FT/SEC.) =   7.89
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20311.00 =    6099.39 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20311.00 TO NODE  20312.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2100.00  DOWNSTREAM ELEVATION(FEET) = 2060.00
  STREET LENGTH(FEET) =   476.59   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     162.69
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.67
    HALFSTREET FLOOD WIDTH(FEET) =   26.25
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.21
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.45
  STREET FLOW TRAVEL TIME(MIN.) =   0.71   Tc(MIN.) =   31.67
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.811
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.27      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        5.25      0.61     1.000    66
  RESIDENTIAL
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"3-4 DWELLINGS/ACRE"       B        1.13      0.75     0.600    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.67
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.837
SUBAREA AREA(ACRES) =   10.65      SUBAREA RUNOFF(CFS) =   11.99
EFFECTIVE AREA(ACRES) =    145.01    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
TOTAL AREA(ACRES) =      145.0        PEAK FLOW RATE(CFS) =     165.69

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.67   HALFSTREET FLOOD WIDTH(FEET) =  26.43
FLOW VELOCITY(FEET/SEC.) = 11.26   DEPTH*VELOCITY(FT*FT/SEC.) =   7.53
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20312.00 =    6575.98 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  20312.00 TO NODE  20313.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2060.00  DOWNSTREAM ELEVATION(FEET) = 2040.00
STREET LENGTH(FEET) =   500.29   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     171.52
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.76
  HALFSTREET FLOOD WIDTH(FEET) =   30.89
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.66
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.56
STREET FLOW TRAVEL TIME(MIN.) =   0.96   Tc(MIN.) =   32.63
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.778
SUBAREA LOSS RATE DATA(AMC  II):
 DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
     LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        6.45      0.75     0.700    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.19      0.75     0.600    56
NATURAL FAIR COVER
"OPEN BRUSH"               B        2.82      0.61     1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.70
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.770
SUBAREA AREA(ACRES) =   10.46      SUBAREA RUNOFF(CFS) =   11.66
EFFECTIVE AREA(ACRES) =    155.47    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
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TOTAL AREA(ACRES) =      155.5        PEAK FLOW RATE(CFS) =     173.14

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  31.01
FLOW VELOCITY(FEET/SEC.) =  8.67   DEPTH*VELOCITY(FT*FT/SEC.) =   6.59
LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20313.00 =    7076.27 FEET.

****************************************************************************
FLOW PROCESS FROM NODE  20313.00 TO NODE  20314.00 IS CODE =  62
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2040.00  DOWNSTREAM ELEVATION(FEET) = 2020.00
STREET LENGTH(FEET) =   462.82   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     178.90
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.76
  HALFSTREET FLOOD WIDTH(FEET) =   30.95
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.99
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.83
STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =   33.49
* 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.751
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        3.76      0.61     1.000    66
RESIDENTIAL
"2 DWELLINGS/ACRE"         B        5.77      0.75     0.700    56
RESIDENTIAL
"3-4 DWELLINGS/ACRE"       B        1.10      0.75     0.600    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.69
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.796
SUBAREA AREA(ACRES) =   10.63      SUBAREA RUNOFF(CFS) =   11.51
EFFECTIVE AREA(ACRES) =    166.10    AREA-AVERAGED Fm(INCH/HR) =  0.54
AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.81
TOTAL AREA(ACRES) =      166.1        PEAK FLOW RATE(CFS) =     180.81

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.32

END OF SUBAREA STREET FLOW HYDRAULICS:
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```
  DEPTH(FEET) = 0.76   HALFSTREET FLOOD WIDTH(FEET) =  31.07
  FLOW VELOCITY(FEET/SEC.) =  9.02   DEPTH*VELOCITY(FT*FT/SEC.) =   6.87
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20314.00 =    7539.09 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20314.00 TO NODE  20315.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2020.00  DOWNSTREAM ELEVATION(FEET) = 1980.00
  STREET LENGTH(FEET) =   511.41   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     185.76
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.70
    HALFSTREET FLOOD WIDTH(FEET) =   27.96
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.35
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.94
  STREET FLOW TRAVEL TIME(MIN.) =   0.75   Tc(MIN.) =   34.24
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.728
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.85      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.24      0.75     0.600    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B        1.05      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.721
  SUBAREA AREA(ACRES) =    9.14      SUBAREA RUNOFF(CFS) =    9.90
  EFFECTIVE AREA(ACRES) =    175.24    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =      175.2        PEAK FLOW RATE(CFS) =     187.25

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.01

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.08
  FLOW VELOCITY(FEET/SEC.) = 11.34   DEPTH*VELOCITY(FT*FT/SEC.) =   7.96
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20315.00 =    8050.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20315.00 TO NODE  20316.00 IS CODE =  62
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----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1980.00  DOWNSTREAM ELEVATION(FEET) = 1950.00
  STREET LENGTH(FEET) =   522.61   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     191.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.74
    HALFSTREET FLOOD WIDTH(FEET) =   30.04
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.18
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.54
  STREET FLOW TRAVEL TIME(MIN.) =   0.86   Tc(MIN.) =   35.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.702
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        6.12      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.25      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.683
  SUBAREA AREA(ACRES) =    7.37      SUBAREA RUNOFF(CFS) =    7.90
  EFFECTIVE AREA(ACRES) =    182.61    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =      182.6        PEAK FLOW RATE(CFS) =     191.15

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.62

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  30.04
  FLOW VELOCITY(FEET/SEC.) = 10.18   DEPTH*VELOCITY(FT*FT/SEC.) =   7.54
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20316.00 =    8573.11 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20316.00 TO NODE  20317.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1950.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
  STREET LENGTH(FEET) =   743.58   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
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  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     194.13
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.71
    HALFSTREET FLOOD WIDTH(FEET) =   28.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =   11.62
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.19
  STREET FLOW TRAVEL TIME(MIN.) =   1.07   Tc(MIN.) =   36.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.672
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.10      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.55      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.01      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.673
  SUBAREA AREA(ACRES) =    5.66      SUBAREA RUNOFF(CFS) =    5.95
  EFFECTIVE AREA(ACRES) =    188.27    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =      188.3        PEAK FLOW RATE(CFS) =     192.12

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.70   HALFSTREET FLOOD WIDTH(FEET) =  28.20
  FLOW VELOCITY(FEET/SEC.) = 11.54   DEPTH*VELOCITY(FT*FT/SEC.) =   8.13
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20317.00 =    9316.69 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20317.00 TO NODE  20318.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
  STREET LENGTH(FEET) =   640.63   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
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  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     198.21
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.77
    HALFSTREET FLOOD WIDTH(FEET) =   31.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    7.35
  STREET FLOW TRAVEL TIME(MIN.) =   1.13   Tc(MIN.) =   37.29
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.642
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.10      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        0.01      0.75     0.900    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.92      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.691
  SUBAREA AREA(ACRES) =   12.03      SUBAREA RUNOFF(CFS) =   12.18
  EFFECTIVE AREA(ACRES) =    200.30    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.79
  TOTAL AREA(ACRES) =      200.3        PEAK FLOW RATE(CFS) =     199.14

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.78   HALFSTREET FLOOD WIDTH(FEET) =  31.81
  FLOW VELOCITY(FEET/SEC.) =  9.50   DEPTH*VELOCITY(FT*FT/SEC.) =   7.37
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20318.00 =    9957.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20318.00 TO NODE  20319.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1835.00
  STREET LENGTH(FEET) =   624.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     275.14
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
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```
    STREET FLOW DEPTH(FEET) =  0.91
    HALFSTREET FLOOD WIDTH(FEET) =   38.14
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.53
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    8.67
  STREET FLOW TRAVEL TIME(MIN.) =   1.09   Tc(MIN.) =   38.38
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.613
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.46      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        9.05      0.75     0.900    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B      100.00      0.75     0.700    56
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       28.82      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"               B       18.27      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.73
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.745
  SUBAREA AREA(ACRES) =  157.60      SUBAREA RUNOFF(CFS) =  151.98
  EFFECTIVE AREA(ACRES) =    357.90    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =      357.9        PEAK FLOW RATE(CFS) =     346.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.68

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.98   HALFSTREET FLOOD WIDTH(FEET) =  41.44
  FLOW VELOCITY(FEET/SEC.) = 10.14   DEPTH*VELOCITY(FT*FT/SEC.) =   9.89
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  624.0 FT WITH ELEVATION-DROP =  25.0 FT, IS  427.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20319.00
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20319.00 =   10581.32 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20319.00 TO NODE  20330.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1835.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   597.75   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 26.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     347.61
    ***STREET FLOWING FULL***
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    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.99
    HALFSTREET FLOOD WIDTH(FEET) =   42.17
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.83
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    9.74
  STREET FLOW TRAVEL TIME(MIN.) =   1.01   Tc(MIN.) =   39.39
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.588
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.71      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.91      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.841
  SUBAREA AREA(ACRES) =    3.62      SUBAREA RUNOFF(CFS) =    3.13
  EFFECTIVE AREA(ACRES) =    361.52    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =      361.5        PEAK FLOW RATE(CFS) =     346.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.99   HALFSTREET FLOOD WIDTH(FEET) =  42.11
  FLOW VELOCITY(FEET/SEC.) =  9.82   DEPTH*VELOCITY(FT*FT/SEC.) =   9.71
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 =   11179.07 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20330.00 TO NODE  20330.00 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.) =   39.39
  RAINFALL INTENSITY(INCH/HR) =   1.59
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.70
  AREA-AVERAGED Ap =  0.77
  EFFECTIVE STREAM AREA(ACRES) =     361.52
  TOTAL STREAM AREA(ACRES) =     361.52
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     346.04

****************************************************************************
  FLOW PROCESS FROM NODE  20320.00 TO NODE  20321.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1020.45
  ELEVATION DATA: UPSTREAM(FEET) =   2240.00  DOWNSTREAM(FEET) =   2180.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   19.882
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.394
```

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  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"                B        9.71      0.61     1.000    66   19.88
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA RUNOFF(CFS) =     15.56
  TOTAL AREA(ACRES) =      9.71   PEAK FLOW RATE(CFS) =     15.56

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 7.50

****************************************************************************
  FLOW PROCESS FROM NODE  20321.00 TO NODE  20322.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2180.00  DOWNSTREAM(FEET) =   2160.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   548.49   CHANNEL SLOPE =  0.0365
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   1.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      15.56
  FLOW VELOCITY(FEET/SEC.) =   2.11   FLOW DEPTH(FEET) =   0.38
  TRAVEL TIME(MIN.) =   4.34   Tc(MIN.) =   24.22
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20322.00 =    1568.94 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20322.00 TO NODE  20322.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   24.22
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.127
  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       15.34      0.61     1.000    66
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B        0.02      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.61
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  1.000
  SUBAREA AREA(ACRES) =   15.36      SUBAREA RUNOFF(CFS) =   20.91
  EFFECTIVE AREA(ACRES) =     25.07   AREA-AVERAGED Fm(INCH/HR) =  0.61
  AREA-AVERAGED Fp(INCH/HR) =  0.61  AREA-AVERAGED Ap =  1.00
  TOTAL AREA(ACRES) =       25.1       PEAK FLOW RATE(CFS) =      34.13

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 7.29

****************************************************************************
  FLOW PROCESS FROM NODE  20322.00 TO NODE  20323.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```



```
  ELEVATION DATA: UPSTREAM(FEET) =   2160.00  DOWNSTREAM(FEET) =   2150.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   479.58   CHANNEL SLOPE =  0.0209
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      34.13
  FLOW VELOCITY(FEET/SEC.) =   2.06   FLOW DEPTH(FEET) =   0.58
  TRAVEL TIME(MIN.) =   3.87   Tc(MIN.) =   28.09
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20323.00 =    2048.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20323.00 TO NODE  20323.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   28.09
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.946
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"          B       11.74      0.75     0.700    56
  NATURAL FAIR COVER
  "OPEN BRUSH"                B        8.32      0.61     1.000    66
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.68
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.824
  SUBAREA AREA(ACRES) =   20.06      SUBAREA RUNOFF(CFS) =   24.99
  EFFECTIVE AREA(ACRES) =     45.13   AREA-AVERAGED Fm(INCH/HR) =  0.59
  AREA-AVERAGED Fp(INCH/HR) =  0.64  AREA-AVERAGED Ap =  0.92
  TOTAL AREA(ACRES) =       45.1       PEAK FLOW RATE(CFS) =      55.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 6.70

****************************************************************************
  FLOW PROCESS FROM NODE  20323.00 TO NODE  20324.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2150.00  DOWNSTREAM(FEET) =   2100.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   676.85   CHANNEL SLOPE =  0.0739
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      55.04
  FLOW VELOCITY(FEET/SEC.) =   3.79   FLOW DEPTH(FEET) =   0.54
  TRAVEL TIME(MIN.) =   2.98   Tc(MIN.) =   31.07
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20324.00 =    2725.37 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20324.00 TO NODE  20324.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   31.07
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.832
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       14.74      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.700
  SUBAREA AREA(ACRES) =   14.74      SUBAREA RUNOFF(CFS) =   17.35
  EFFECTIVE AREA(ACRES) =     59.87   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.87
  TOTAL AREA(ACRES) =       59.9       PEAK FLOW RATE(CFS) =      67.76

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.93; 1HR = 1.23; 3HR = 2.02; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20324.00 TO NODE  20325.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2100.00  DOWNSTREAM(FEET) =   2080.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   631.62   CHANNEL SLOPE =  0.0317
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      67.76
  FLOW VELOCITY(FEET/SEC.) =   2.90   FLOW DEPTH(FEET) =   0.68
  TRAVEL TIME(MIN.) =   3.63   Tc(MIN.) =   34.70
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20325.00 =    3356.99 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20325.00 TO NODE  20325.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   34.70
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.714
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       10.91      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.700
  SUBAREA AREA(ACRES) =   10.91      SUBAREA RUNOFF(CFS) =   11.69
  EFFECTIVE AREA(ACRES) =     70.78   AREA-AVERAGED Fm(INCH/HR) =  0.57
  AREA-AVERAGED Fp(INCH/HR) =  0.67  AREA-AVERAGED Ap =  0.84
  TOTAL AREA(ACRES) =       70.8       PEAK FLOW RATE(CFS) =      73.11

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20325.00 TO NODE  20326.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2050.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   686.64   CHANNEL SLOPE =  0.0437
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
```



```
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      73.11
  FLOW VELOCITY(FEET/SEC.) =   3.29   FLOW DEPTH(FEET) =   0.67
  TRAVEL TIME(MIN.) =   3.48   Tc(MIN.) =   38.18
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20326.00 =    4043.63 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20326.00 TO NODE  20326.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   38.18
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.618
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       48.19      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.06      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.700
  SUBAREA AREA(ACRES) =   48.25      SUBAREA RUNOFF(CFS) =   47.55
  EFFECTIVE AREA(ACRES) =    119.03   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.70  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =      119.0       PEAK FLOW RATE(CFS) =     114.58

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.44; 30M = 0.91; 1HR = 1.20; 3HR = 2.00; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20326.00 TO NODE  20327.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2050.00  DOWNSTREAM(FEET) =   1990.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1389.79   CHANNEL SLOPE =  0.0432
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     114.58
  FLOW VELOCITY(FEET/SEC.) =   3.68   FLOW DEPTH(FEET) =   0.79
  TRAVEL TIME(MIN.) =   6.29   Tc(MIN.) =   44.47
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20327.00 =    5433.42 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20327.00 TO NODE  20327.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   44.47
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.477
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       16.19      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
```

```
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.700
  SUBAREA AREA(ACRES) =   16.19      SUBAREA RUNOFF(CFS) =   13.89
  EFFECTIVE AREA(ACRES) =    135.22   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
  TOTAL AREA(ACRES) =      135.2       PEAK FLOW RATE(CFS) =     114.58
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20327.00 TO NODE  20328.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1990.00  DOWNSTREAM(FEET) =   1920.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1079.99   CHANNEL SLOPE =  0.0648
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
  CHANNEL FLOW THRU SUBAREA(CFS) =     114.58
  FLOW VELOCITY(FEET/SEC.) =   4.31   FLOW DEPTH(FEET) =   0.73
  TRAVEL TIME(MIN.) =   4.18   Tc(MIN.) =   48.65
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20328.00 =    6513.41 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20328.00 TO NODE  20328.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   48.65
  * 100 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
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       25.33      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.699
  SUBAREA AREA(ACRES) =   25.60      SUBAREA RUNOFF(CFS) =   20.20
  EFFECTIVE AREA(ACRES) =    160.82   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =      160.8       PEAK FLOW RATE(CFS) =     124.08

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20328.00 TO NODE  20329.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1920.00  DOWNSTREAM ELEVATION(FEET) = 1870.00
  STREET LENGTH(FEET) =  1075.25   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00
```



```
  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     129.32
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.92
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.49
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.76
  STREET FLOW TRAVEL TIME(MIN.) =   2.11   Tc(MIN.) =   50.76
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.364
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       13.84      0.75     0.700    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.700
  SUBAREA AREA(ACRES) =   13.84      SUBAREA RUNOFF(CFS) =   10.47
  EFFECTIVE AREA(ACRES) =    174.66    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =      174.7       PEAK FLOW RATE(CFS) =     129.46

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.92
  FLOW VELOCITY(FEET/SEC.) =  8.50   DEPTH*VELOCITY(FT*FT/SEC.) =   5.77
  LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20329.00 =    7588.66 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20329.00 TO NODE  20330.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1870.00  DOWNSTREAM ELEVATION(FEET) = 1813.00
  STREET LENGTH(FEET) =   927.52   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     135.55
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.66
  HALFSTREET FLOOD WIDTH(FEET) =   25.95
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.55
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    6.29
 STREET FLOW TRAVEL TIME(MIN.) =   1.62   Tc(MIN.) =   52.38
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.339
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.48      0.75     0.600    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        5.88      0.75     0.900    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       11.27      0.75     0.700    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.764
 SUBAREA AREA(ACRES) =   17.63      SUBAREA RUNOFF(CFS) =   12.18
 EFFECTIVE AREA(ACRES) =    192.29    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =      192.3        PEAK FLOW RATE(CFS) =     137.63

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.66   HALFSTREET FLOOD WIDTH(FEET) =  26.13
 FLOW VELOCITY(FEET/SEC.) =  9.57   DEPTH*VELOCITY(FT*FT/SEC.) =   6.34
 LONGEST FLOWPATH FROM NODE  20320.00 TO NODE  20330.00 =    8516.18 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20330.00 TO NODE  20330.00 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.) =   52.38
 RAINFALL INTENSITY(INCH/HR) =   1.34
 AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72
 AREA-AVERAGED Ap =  0.76
 EFFECTIVE STREAM AREA(ACRES) =     192.29
 TOTAL STREAM AREA(ACRES) =     192.29
 PEAK FLOW RATE(CFS) AT CONFLUENCE =     137.63

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1      346.04   39.39    1.588  0.70( 0.54) 0.77     361.5   20300.00
     2      137.63   52.38    1.339  0.72( 0.54) 0.76     192.3   20320.00

 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      482.04   39.39    1.588  0.71( 0.54) 0.77     506.1   20300.00
     2      401.28   52.38    1.339  0.71( 0.54) 0.77     553.8   20320.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =     482.04    Tc(MIN.) =    39.39
 EFFECTIVE AREA(ACRES) =     506.13   AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.77
 TOTAL AREA(ACRES) =      553.8
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20330.00 =   11179.07 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20330.00 TO NODE  20349.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 18 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1813.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
 STREET LENGTH(FEET) =  1334.61   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 26.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     488.27
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  1.21
  HALFSTREET FLOOD WIDTH(FEET) =   53.22
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    8.65
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   10.48
 STREET FLOW TRAVEL TIME(MIN.) =   2.57   Tc(MIN.) =   41.96
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.529
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        1.05      0.75     0.600    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.65      0.75     0.700    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.692
 SUBAREA AREA(ACRES) =   13.70      SUBAREA RUNOFF(CFS) =   12.47
 EFFECTIVE AREA(ACRES) =    519.83    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
 TOTAL AREA(ACRES) =      567.5        PEAK FLOW RATE(CFS) =     482.04
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
```

```
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.21   HALFSTREET FLOOD WIDTH(FEET) =  52.97
  FLOW VELOCITY(FEET/SEC.) =  8.62   DEPTH*VELOCITY(FT*FT/SEC.) =  10.40
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 =   12513.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20349.00 TO NODE  20349.00 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.) =   41.96
  RAINFALL INTENSITY(INCH/HR) =   1.53
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71
  AREA-AVERAGED Ap =  0.76
  EFFECTIVE STREAM AREA(ACRES) =     519.83
  TOTAL STREAM AREA(ACRES) =     567.51
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     482.04

****************************************************************************
  FLOW PROCESS FROM NODE  20340.00 TO NODE  20341.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   998.88
  ELEVATION DATA: UPSTREAM(FEET) =   2120.00  DOWNSTREAM(FEET) =   2080.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =   12.422
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  3.175
  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        6.76      0.57     1.000    69   21.29
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        1.12      0.75     0.600    56   12.42
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.58
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.943
  SUBAREA RUNOFF(CFS) =     18.62
  TOTAL AREA(ACRES) =      7.88   PEAK FLOW RATE(CFS) =     18.62

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20341.00 TO NODE  20342.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2080.00  DOWNSTREAM(FEET) =   2055.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   397.26   CHANNEL SLOPE =  0.0629
```



```
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      18.62
  FLOW VELOCITY(FEET/SEC.) =   2.71   FLOW DEPTH(FEET) =   0.37
  TRAVEL TIME(MIN.) =   2.45   Tc(MIN.) =   14.87
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20342.00 =    1396.14 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20342.00 TO NODE  20342.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   14.87
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.850
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        4.25      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.25      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.694
  SUBAREA AREA(ACRES) =     4.50      SUBAREA RUNOFF(CFS) =     9.44
  EFFECTIVE AREA(ACRES) =     12.38   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.63  AREA-AVERAGED Ap =  0.85
  TOTAL AREA(ACRES) =       12.4       PEAK FLOW RATE(CFS) =      25.75

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.43; 30M = 0.88; 1HR = 1.16; 3HR = 1.97; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20342.00 TO NODE  20343.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2055.00  DOWNSTREAM(FEET) =   2035.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   438.38   CHANNEL SLOPE =  0.0456
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      25.75
  FLOW VELOCITY(FEET/SEC.) =   2.60   FLOW DEPTH(FEET) =   0.45
  TRAVEL TIME(MIN.) =   2.81   Tc(MIN.) =   17.68
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20343.00 =    1834.52 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20343.00 TO NODE  20343.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   17.68
  * 100 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
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        5.37      0.75     0.700    56
```

```
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.37      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.694
  SUBAREA AREA(ACRES) =     5.74      SUBAREA RUNOFF(CFS) =   10.59
  EFFECTIVE AREA(ACRES) =     18.12   AREA-AVERAGED Fm(INCH/HR) =  0.53
  AREA-AVERAGED Fp(INCH/HR) =  0.66  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =       18.1       PEAK FLOW RATE(CFS) =      33.21

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.44; 30M = 0.89; 1HR = 1.18; 3HR = 1.98; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20343.00 TO NODE  20344.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2035.00  DOWNSTREAM(FEET) =   2015.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   496.72   CHANNEL SLOPE =  0.0403
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      33.21
  FLOW VELOCITY(FEET/SEC.) =   2.65   FLOW DEPTH(FEET) =   0.50
  TRAVEL TIME(MIN.) =   3.12   Tc(MIN.) =   20.81
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20344.00 =    2331.24 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20344.00 TO NODE  20344.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   20.81
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.330
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B        2.06      0.75     0.700    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        2.77      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.07      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.812
  SUBAREA AREA(ACRES) =     4.90      SUBAREA RUNOFF(CFS) =    7.60
  EFFECTIVE AREA(ACRES) =     23.02   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.68  AREA-AVERAGED Ap =  0.80
  TOTAL AREA(ACRES) =       23.0       PEAK FLOW RATE(CFS) =      36.91

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.45; 30M = 0.92; 1HR = 1.21; 3HR = 2.00; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20344.00 TO NODE  20345.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```



```
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2015.00  DOWNSTREAM(FEET) =   1980.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   575.06   CHANNEL SLOPE =  0.0609
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      36.91
  FLOW VELOCITY(FEET/SEC.) =   3.16   FLOW DEPTH(FEET) =   0.48
  TRAVEL TIME(MIN.) =   3.04   Tc(MIN.) =   23.84
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20345.00 =    2906.30 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20345.00 TO NODE  20345.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   23.84
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.147
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       12.00      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.27      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"         B        3.29      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.741
  SUBAREA AREA(ACRES) =   15.56      SUBAREA RUNOFF(CFS) =   22.31
  EFFECTIVE AREA(ACRES) =     38.58   AREA-AVERAGED Fm(INCH/HR) =  0.55
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.78
  TOTAL AREA(ACRES) =       38.6       PEAK FLOW RATE(CFS) =      55.43

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
  FLOW PROCESS FROM NODE  20345.00 TO NODE  20346.00 IS CODE =  54
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1980.00  DOWNSTREAM(FEET) =   1940.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   558.59   CHANNEL SLOPE =  0.0716
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   2.00
  CHANNEL FLOW THRU SUBAREA(CFS) =      55.43
  FLOW VELOCITY(FEET/SEC.) =   3.71   FLOW DEPTH(FEET) =   0.55
  TRAVEL TIME(MIN.) =   2.51   Tc(MIN.) =   26.35
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20346.00 =    3464.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20346.00 TO NODE  20346.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =   26.35
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  2.022
```

```
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        3.53      0.75     0.700    56
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.62      0.75     0.600    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        3.41      0.75     0.900    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.782
 SUBAREA AREA(ACRES) =    7.56      SUBAREA RUNOFF(CFS) =    9.78
 EFFECTIVE AREA(ACRES) =     46.14   AREA-AVERAGED Fm(INCH/HR) =  0.56
 AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.78
 TOTAL AREA(ACRES) =       46.1       PEAK FLOW RATE(CFS) =      60.86

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

****************************************************************************
 FLOW PROCESS FROM NODE  20346.00 TO NODE  20347.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1940.00  DOWNSTREAM ELEVATION(FEET) = 1890.00
 STREET LENGTH(FEET) =   993.62   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      67.37
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.56
   HALFSTREET FLOOD WIDTH(FEET) =   20.76
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    7.20
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.00
 STREET FLOW TRAVEL TIME(MIN.) =   2.30   Tc(MIN.) =   28.65
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.923
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        2.71      0.75     0.600    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B        6.04      0.75     0.700    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B        1.62      0.75     0.900    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.705
```



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 SUBAREA AREA(ACRES) =   10.37      SUBAREA RUNOFF(CFS) =   13.02
 EFFECTIVE AREA(ACRES) =     56.51    AREA-AVERAGED Fm(INCH/HR) =  0.55
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.77
 TOTAL AREA(ACRES) =       56.5        PEAK FLOW RATE(CFS) =      69.78

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.56   HALFSTREET FLOOD WIDTH(FEET) =  21.00
 FLOW VELOCITY(FEET/SEC.) =  7.30   DEPTH*VELOCITY(FT*FT/SEC.) =   4.09
 LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20347.00 =    4458.51 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE  20347.00 TO NODE  20348.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1890.00  DOWNSTREAM ELEVATION(FEET) = 1860.00
 STREET LENGTH(FEET) =   874.50   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      77.76
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.61
   HALFSTREET FLOOD WIDTH(FEET) =   23.51
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    6.60
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    4.03
 STREET FLOW TRAVEL TIME(MIN.) =   2.21   Tc(MIN.) =   30.86
 * 100 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
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        0.78      0.75     0.600    56
 RESIDENTIAL
 "2 DWELLINGS/ACRE"         B       12.66      0.75     0.700    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.694
 SUBAREA AREA(ACRES) =   13.44      SUBAREA RUNOFF(CFS) =   15.96
 EFFECTIVE AREA(ACRES) =     69.95    AREA-AVERAGED Fm(INCH/HR) =  0.54
 AREA-AVERAGED Fp(INCH/HR) =  0.72  AREA-AVERAGED Ap =  0.75
 TOTAL AREA(ACRES) =       69.9        PEAK FLOW RATE(CFS) =      81.48

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.87
  FLOW VELOCITY(FEET/SEC.) =  6.72   DEPTH*VELOCITY(FT*FT/SEC.) =   4.15
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20348.00 =    5333.01 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20348.00 TO NODE  20349.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1860.00  DOWNSTREAM ELEVATION(FEET) = 1785.00
  STREET LENGTH(FEET) =  1082.38   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     100.39
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.65
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    5.42
  STREET FLOW TRAVEL TIME(MIN.) =   1.98   Tc(MIN.) =   32.83
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.772
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  RESIDENTIAL
  "2 DWELLINGS/ACRE"         B       33.09      0.75     0.700    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.55      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.698
  SUBAREA AREA(ACRES) =   33.64      SUBAREA RUNOFF(CFS) =   37.83
  EFFECTIVE AREA(ACRES) =    103.59    AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.73  AREA-AVERAGED Ap =  0.73
  TOTAL AREA(ACRES) =      103.6        PEAK FLOW RATE(CFS) =     115.07

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.62   HALFSTREET FLOOD WIDTH(FEET) =  23.81
  FLOW VELOCITY(FEET/SEC.) =  9.53   DEPTH*VELOCITY(FT*FT/SEC.) =   5.87
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1082.4 FT WITH ELEVATION-DROP =  75.0 FT, IS   84.9 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20349.00
  LONGEST FLOWPATH FROM NODE  20340.00 TO NODE  20349.00 =    6415.39 FEET.
```



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****************************************************************************
  FLOW PROCESS FROM NODE  20349.00 TO NODE  20349.00 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.) =   32.83
  RAINFALL INTENSITY(INCH/HR) =   1.77
  AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.73
  AREA-AVERAGED Ap =  0.73
  EFFECTIVE STREAM AREA(ACRES) =     103.59
  TOTAL STREAM AREA(ACRES) =     103.59
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     115.07

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1      482.04   41.96    1.529  0.71( 0.54) 0.76     519.8   20300.00
      1      401.28   55.06    1.299  0.71( 0.54) 0.76     567.5   20320.00
      2      115.07   32.83    1.772  0.73( 0.54) 0.73     103.6   20340.00

  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      584.75   32.83    1.772  0.71( 0.54) 0.76     510.4   20340.00
      2      574.51   41.96    1.529  0.71( 0.54) 0.76     623.4   20300.00
      3      472.29   55.06    1.299  0.71( 0.54) 0.76     671.1   20320.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     584.75    Tc(MIN.) =    32.83
  EFFECTIVE AREA(ACRES) =     510.35   AREA-AVERAGED Fm(INCH/HR) =  0.54
  AREA-AVERAGED Fp(INCH/HR) =  0.71  AREA-AVERAGED Ap =  0.76
  TOTAL AREA(ACRES) =      671.1
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 =   12513.68 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20349.00 TO NODE  20349.00 IS CODE =  71
----------------------------------------------------------------------------
  >>>>>PEAK FLOW RATE ESTIMATOR CHANGED TO UNIT-HYDROGRAPH METHOD<<<<<
  >>>>>USING TIME-OF-CONCENTRATION OF LONGEST FLOWPATH<<<<<
============================================================================
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.83
  S-GRAPH: VALLEY(DEV.)= 75.1%;VALLEY(UNDEV.)/DESERT= 24.9%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.70; LAG(HR) = 0.56; Fm(INCH/HR) = 0.54; Ybar = 0.50
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
  3HR = 1.00; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      671.1
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20349.00 =   12513.68 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
```

```
 Lca/L=0.3,n=.0580; Lca/L=0.4,n=.0520; Lca/L=0.5,n=.0478;Lca/L=0.6,n=.0446
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     200.99
 UNIT-HYDROGRAPH METHOD PEAK FLOW RATE(CFS) =    686.96
 TOTAL PEAK FLOW RATE(CFS) =    686.96 (SOURCE FLOW INCLUDED)
 RATIONAL METHOD PEAK FLOW RATE(CFS) =    584.75
  (UPSTREAM NODE PEAK FLOW RATE(CFS) =    584.75)
 PEAK FLOW RATE(CFS) USED =    686.96

****************************************************************************
 FLOW PROCESS FROM NODE  20349.00 TO NODE  20350.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1785.00  DOWNSTREAM ELEVATION(FEET) = 1715.00
 STREET LENGTH(FEET) =  1290.16   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     715.76
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.16
   HALFSTREET FLOOD WIDTH(FEET) =   51.22
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   13.46
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   15.67
 STREET FLOW TRAVEL TIME(MIN.) =   1.60   Tc(MIN.) =   43.56
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.495
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        4.52      0.75     0.600    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B       72.05      0.75     0.900    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.882
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.80
 S-GRAPH: VALLEY(DEV.)= 68.0%;VALLEY(UNDEV.)/DESERT= 32.0%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.73; LAG(HR) = 0.58; Fm(INCH/HR) = 0.55; Ybar = 0.52
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.97; 30M = 0.97; 1HR = 0.97;
 3HR = 0.99; 6HR = 1.00; 24HR= 1.00
 UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      747.7
 LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20350.00 =   13803.84 FEET.
  EQUIVALENT BASIN FACTOR APPROXIMATIONS:
  Lca/L=0.3,n=.0557; Lca/L=0.4,n=.0499; Lca/L=0.5,n=.0459;Lca/L=0.6,n=.0428
 TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     217.79
```



```
 UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =     718.83
 TOTAL AREA(ACRES) =      747.7        PEAK FLOW RATE(CFS) =     718.83

 SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
 5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 1.17   HALFSTREET FLOOD WIDTH(FEET) =  51.28
 FLOW VELOCITY(FEET/SEC.) = 13.48   DEPTH*VELOCITY(FT*FT/SEC.) =  15.71
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
        AND L = 1290.2 FT WITH ELEVATION-DROP =  70.0 FT, IS  167.9 CFS,
        WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20350.00

****************************************************************************
 FLOW PROCESS FROM NODE  20350.00 TO NODE  20351.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) = 1715.00  DOWNSTREAM ELEVATION(FEET) = 1680.00
 STREET LENGTH(FEET) =  1342.03   CURB HEIGHT(INCHES) =  6.0
 STREET HALFWIDTH(FEET) = 18.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.020
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     747.49
   ***STREET FLOWING FULL***
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  1.34
   HALFSTREET FLOOD WIDTH(FEET) =   60.25
   AVERAGE FLOW VELOCITY(FEET/SEC.) =   10.19
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   13.71
 STREET FLOW TRAVEL TIME(MIN.) =   2.19   Tc(MIN.) =   45.75
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.452
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap     SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 RESIDENTIAL
 "3-4 DWELLINGS/ACRE"       B        7.14      0.75     0.600    56
 RESIDENTIAL
 ".4 DWELLING/ACRE"         B       72.56      0.75     0.900    56
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.873
 UNIT-HYDROGRAPH DATA:
 RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77
 S-GRAPH: VALLEY(DEV.)= 62.4%;VALLEY(UNDEV.)/DESERT= 37.6%
          MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
 Tc(HR) = 0.76; LAG(HR) = 0.61; Fm(INCH/HR) = 0.56; Ybar = 0.53
 USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
 DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
 3HR = 0.99; 6HR = 1.00; 24HR= 1.00
```

```
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      827.4
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20351.00 =   15145.87 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0540; Lca/L=0.4,n=.0484; Lca/L=0.5,n=.0445;Lca/L=0.6,n=.0415
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     235.54
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =     757.04
  TOTAL AREA(ACRES) =      827.4        PEAK FLOW RATE(CFS) =     757.04

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.35   HALFSTREET FLOOD WIDTH(FEET) =  60.55
  FLOW VELOCITY(FEET/SEC.) = 10.22   DEPTH*VELOCITY(FT*FT/SEC.) =  13.81
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1342.0 FT WITH ELEVATION-DROP =  35.0 FT, IS  154.6 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20351.00

****************************************************************************
  FLOW PROCESS FROM NODE  20351.00 TO NODE  20352.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  5 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1680.00  DOWNSTREAM ELEVATION(FEET) = 1655.00
  STREET LENGTH(FEET) =  1091.03   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  10.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  2
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0180
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     762.63
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  1.39
    HALFSTREET FLOOD WIDTH(FEET) =   62.32
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    9.73
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   13.48
  STREET FLOW TRAVEL TIME(MIN.) =   1.87   Tc(MIN.) =   47.62
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.417
  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       15.77      0.75     0.900    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"       B        0.71      0.75     0.600    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.887
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.46;30M= 0.94;1H= 1.24;3H= 2.02;6H= 2.75;24H= 6.77
  S-GRAPH: VALLEY(DEV.)= 61.2%;VALLEY(UNDEV.)/DESERT= 38.8%
```



```
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.79; LAG(HR) = 0.63; Fm(INCH/HR) = 0.56; Ybar = 0.53
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.96; 30M = 0.96; 1HR = 0.96;
  3HR = 0.99; 6HR = 1.00; 24HR= 1.00
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =      843.8
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 =   16236.90 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0529; Lca/L=0.4,n=.0474; Lca/L=0.5,n=.0435;Lca/L=0.6,n=.0406
  TIME OF PEAK FLOW(HR) = 16.67  RUNOFF VOLUME(AF) =     239.13
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =     756.39
  TOTAL AREA(ACRES) =      843.8        PEAK FLOW RATE(CFS) =     757.04
  NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 1.38   HALFSTREET FLOOD WIDTH(FEET) =  62.14
  FLOW VELOCITY(FEET/SEC.) =  9.71   DEPTH*VELOCITY(FT*FT/SEC.) =  13.43
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L = 1091.0 FT WITH ELEVATION-DROP =  25.0 FT, IS   33.3 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE  20352.00

****************************************************************************
  FLOW PROCESS FROM NODE  20352.00 TO NODE  20352.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 IS CODE = 15.1
----------------------------------------------------------------------------
  >>>>>DEFINE MEMORY BANK # 2 <<<<<
============================================================================
  PEAK FLOWRATE TABLE FILE NAME: 20274.DNA
  MEMORY BANK #  2 DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2478.03    Tc(MIN.) =   41.02
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.54
  TOTAL AREA(ACRES) =     3101.9
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 =   19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 IS CODE = 14.0
----------------------------------------------------------------------------
  >>>>>MEMORY BANK #  2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
============================================================================

  MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     2478.03    Tc(MIN.) =   41.02
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.54
  TOTAL AREA(ACRES) =     3101.9
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20274.00 =   19473.89 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE  20274.00 TO NODE  20274.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 2 <<<<<
```

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================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE  20274.00 TO NODE  20352.00 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1670.00  DOWNSTREAM(FEET) =   1655.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   623.43   CHANNEL SLOPE =  0.0241
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    2478.03
  FLOW VELOCITY(FEET/SEC.) =  16.23   FLOW DEPTH(FEET) =   6.59
  TRAVEL TIME(MIN.) =   0.64   Tc(MIN.) =   41.66
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 =   20097.32 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  20352.00 TO NODE  20352.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   41.66
  * 100 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
  SCHOOL                      B       10.49      0.75     0.600    56
  RESIDENTIAL
  "3-4 DWELLINGS/ACRE"        B        1.59      0.75     0.600    56
  RESIDENTIAL
  ".4 DWELLING/ACRE"          B       21.45      0.75     0.900    56
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.75
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.792
  SUBAREA AREA(ACRES) =   33.53
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.21;3H= 2.05;6H= 2.87;24H= 7.06
  S-GRAPH: VALLEY(DEV.)= 35.0%;VALLEY(UNDEV.)/DESERT= 65.0%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.69; LAG(HR) = 0.56; Fm(INCH/HR) = 0.59; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.86; 30M = 0.86; 1HR = 0.86;
  3HR = 0.98; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     3135.5
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 =   20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0412; Lca/L=0.4,n=.0369; Lca/L=0.5,n=.0339;Lca/L=0.6,n=.0316
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =     884.32
  UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =    2480.59
  TOTAL AREA(ACRES) =     3135.5       PEAK FLOW RATE(CFS) =    2480.59

  SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
  5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

********************************************************************************
  FLOW PROCESS FROM NODE  20352.00 TO NODE  20352.00 IS CODE =  11
--------------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
```



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================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =     2480.59    Tc(MIN.) =   41.66
  AREA-AVERAGED Fm(INCH/HR) =  0.59    Ybar = 0.54
  TOTAL AREA(ACRES) =     3135.5
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 =   20097.32 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  PEAK FLOW RATE(CFS) =      757.04    Tc(MIN.) =   47.62
  AREA-AVERAGED Fm(INCH/HR) =  0.56    Ybar = 0.53
  TOTAL AREA(ACRES) =      843.8
  LONGEST FLOWPATH FROM NODE  20300.00 TO NODE  20352.00 =   16236.90 FEET.

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  UNIT-HYDROGRAPH DATA:
  RAINFALL(INCH): 5M= 0.45;30M= 0.92;1H= 1.22;3H= 2.05;6H= 2.84;24H= 6.99
  S-GRAPH: VALLEY(DEV.)= 40.6%;VALLEY(UNDEV.)/DESERT= 59.4%
           MOUNTAIN=  0.0%;FOOTHILL=  0.0%;DESERT(UNDEV.)=  0.0%
  Tc(HR) = 0.69; LAG(HR) = 0.56; Fm(INCH/HR) = 0.58; Ybar = 0.54
  USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC  II CONDITION.
  DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
  3HR = 0.97; 6HR = 0.99; 24HR= 0.99
  UNIT-INTERVAL(MIN) =  5.00   TOTAL AREA(ACRES) =     3979.3
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20352.00 =   20097.32 FEET.
   EQUIVALENT BASIN FACTOR APPROXIMATIONS:
   Lca/L=0.3,n=.0412; Lca/L=0.4,n=.0369; Lca/L=0.5,n=.0339;Lca/L=0.6,n=.0316
  TIME OF PEAK FLOW(HR) = 16.58  RUNOFF VOLUME(AF) =    1112.54
  PEAK FLOW RATE(CFS) =    3054.49

********************************************************************************
  FLOW PROCESS FROM NODE  20352.00 TO NODE  20352.00 IS CODE =  12
--------------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
================================================================================

********************************************************************************
  FLOW PROCESS FROM NODE  20352.00 TO NODE  20353.00 IS CODE =  54
--------------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1655.00  DOWNSTREAM(FEET) =   1625.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1454.79   CHANNEL SLOPE =  0.0206
  CHANNEL BASE(FEET) =   12.00   "Z" FACTOR =   2.000
  MANNING'S FACTOR = 0.035   MAXIMUM DEPTH(FEET) =  10.00
  CHANNEL FLOW THRU SUBAREA(CFS) =    3054.49
  FLOW VELOCITY(FEET/SEC.) =  16.10   FLOW DEPTH(FEET) =   7.19
  TRAVEL TIME(MIN.) =   1.51   Tc(MIN.) =   43.16
  LONGEST FLOWPATH FROM NODE  20120.00 TO NODE  20353.00 =   21552.11 FEET.

********************************************************************************
  FLOW PROCESS FROM NODE  20353.00 TO NODE  20353.00 IS CODE =  81
--------------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  MAINLINE Tc(MIN.) =   43.16
  * 100 YEAR RAINFALL INTENSITY(INCH/HR) =  1.504
```

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
SCHOOL	B	20.64	0.75	0.600	56
RESIDENTIAL "3-4 DWELLINGS/ACRE"	B	1.09	0.75	0.600	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	25.75	0.75	0.900	56
NATURAL FAIR COVER "OPEN BRUSH"	B	2.69	0.61	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.74
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.775
SUBAREA AREA(ACRES) =   50.17
UNIT-HYDROGRAPH DATA:
RAINFALL(INCH): 5M= 0.45;30M= 0.93;1H= 1.22;3H= 2.05;6H= 2.84;24H= 6.99
S-GRAPH: VALLEY(DEV.)= 40.6%;VALLEY(UNDEV.)/DESERT= 59.4%
         MOUNTAIN= 0.0%;FOOTHILL= 0.0%;DESERT(UNDEV.)= 0.0%
Tc(HR) = 0.72; LAG(HR) = 0.58; Fm(INCH/HR) = 0.58; Ybar = 0.54
USED SIERRA MADRE DEPTH-AREA CURVES WITH AMC II CONDITION.
DEPTH-AREA FACTORS: 5M = 0.82; 30M = 0.82; 1HR = 0.82;
3HR = 0.97; 6HR = 0.99; 24HR= 0.99
UNIT-INTERVAL(MIN) = 5.00   TOTAL AREA(ACRES) =   4029.5
LONGEST FLOWPATH FROM NODE 20120.00 TO NODE 20353.00 =   21552.11 FEET.
 EQUIVALENT BASIN FACTOR APPROXIMATIONS:
 Lca/L=0.3,n=.0401; Lca/L=0.4,n=.0359; Lca/L=0.5,n=.0330;Lca/L=0.6,n=.0308
TIME OF PEAK FLOW(HR) = 16.58 RUNOFF VOLUME(AF) =   1124.97
UNIT-HYDROGRAPH PEAK FLOW RATE(CFS) =   3007.68
TOTAL AREA(ACRES) =   4029.5   PEAK FLOW RATE(CFS) =   3054.49
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

SUBAREA AREA-AVERAGED RAINFALL DEPTH(INCH):
5M = 0.46; 30M = 0.95; 1HR = 1.25; 3HR = 2.03; 6HR = 2.75; 24HR = 6.50

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

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                        Analysis prepared by:

                         San Bernardino County
                        Public Works Department

                        Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* Opal Basin Routing W/O Crafton Basin                                  *
* Opal Basin Feasibility Study                                          *
* Node 20353 AMC-III                                                    *
 ************************************************************************

  FILE NAME: OPB353A.DAT
  TIME/DATE OF STUDY: 13:19 09/12/2013


************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    250.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =    2221.150 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.490 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED):
                  "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.384
         FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         VALLEY(UNDEVELOPED)/DESERT:
                  "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.616
         DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.350
         LOW LOSS FRACTION = 0.310
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.46
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.94
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.24
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.13
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.01
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  7.33

         *USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
```



```
          5-MINUTE FACTOR = 0.820
         30-MINUTE FACTOR = 0.820
          1-HOUR FACTOR = 0.820
          3-HOUR FACTOR = 0.973
          6-HOUR FACTOR = 0.987
         24-HOUR FACTOR = 0.992

        UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
        UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.007


        RUNOFF HYDROGRAPH LISTING LIMITS:
        MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  16.00
        MODEL TIME(HOURS) FOR END OF RESULTS =  19.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.264	339.471
2	4.631	904.392
3	10.785	1653.291
4	20.280	2550.490
5	31.798	3093.866
6	44.681	3460.766
7	56.611	3204.613
8	65.772	2460.882
9	72.515	1811.287
10	77.424	1318.574
11	81.028	968.023
12	83.809	747.209
13	86.000	588.511
14	87.702	457.146
15	88.983	344.116
16	90.061	289.541
17	91.003	253.192
18	91.867	232.069
19	92.618	201.551
20	93.356	198.299
21	94.000	172.960
22	94.489	131.369
23	94.972	129.678
24	95.384	110.695
25	95.772	104.231
26	96.159	104.063
27	96.498	90.910
28	96.806	82.778
29	97.114	82.722
30	97.421	82.589
31	97.664	65.255
32	97.867	54.654
33	98.071	54.615
34	98.274	54.654
35	98.478	54.615

36	98.681	54.617
37	98.811	34.926
38	98.886	20.219
39	98.961	20.183
40	99.037	20.217
41	99.112	20.183
42	99.187	20.219
43	99.262	20.183
44	99.337	20.181
45	99.413	20.219
46	99.488	20.181
47	99.563	20.183
48	99.638	20.181
49	99.713	20.181
50	99.788	20.183
51	99.863	20.181
52	99.938	20.183
53	100.000	16.537

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 399.4406
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 945.8401

==========

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

==========

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 575.0 1150.0 1725.0 2300.0
16.000	531.0939	870.28	. . Q . V . .
16.083	538.3464	1053.07	. . Q . V . .
16.167	547.4697	1324.70	. . . Q . . .
16.250	558.8416	1651.20	. . . V Q . .
16.333	572.5420	1989.30	. . . V . Q .
16.417	587.5893	2184.86	. . . V . Q .
16.500	603.2255	2270.37	. . . V . Q.
16.583	617.9086	2132.00	. . . V . Q .
16.667	630.5999	1842.77	. . . V . Q .
16.750	641.5264	1586.54	. . . Q . .
16.833	651.1153	1392.30	. . . Q V . .
16.917	659.7304	1250.91	. . .Q V . .
17.000	667.6461	1149.35	. . Q. V . .
17.083	674.9822	1065.21	. . Q . V . .
17.167	681.7884	988.26	. . Q . V . .
17.250	688.0996	916.39	. . Q . V. .
17.333	694.0256	860.45	. . Q . V. .
17.417	699.6032	809.88	. . Q . V. .
17.500	704.8595	763.21	. Q . V. .
17.583	709.7971	716.93	. Q . V .
17.667	714.4987	682.67	.Q . V .

17.750	718.9498	646.31	. .Q . V .
17.833	723.1519	610.14	. Q . V .
17.917	727.2042	588.38	. Q . V .
18.000	731.0951	564.97	. Q. . V .
18.083	734.8704	548.16	. Q. . .V .
18.167	738.5620	536.02	. Q. . .V .
18.250	742.1741	524.48	. Q. . .V .
18.333	745.7465	518.72	. Q. . .V .
18.417	749.3156	518.22	. Q. . .V .
18.500	752.8924	519.36	. Q. . .V .
18.583	756.4420	515.40	. Q . . .V .
18.667	759.9651	511.57	. Q . . . V .
18.750	763.4725	509.27	. Q . . . V .
18.833	766.9568	505.91	. Q . . . V .
18.917	770.4078	501.09	. Q . . . V .
19.000	773.8166	494.95	. Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	400.0
30%	175.0
40%	75.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0
90%	15.0

****

FLOW PROCESS FROM NODE 250.00 TO NODE 274.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<

==========

THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 30.00 CHANNEL Z = 2.50
UPSTREAM ELEVATION(FT) = 1733.00
DOWNSTREAM ELEVATION(FT) = 1670.00
CHANNEL LENGTH(FT) = 2379.03 MANNING'S FACTOR = 0.035
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:

MAXIMUM INFLOW(CFS) = 2270.37
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 1706.76
CHANNEL NORMAL VELOCITY FOR Q = 1706.76 CFS = 13.28 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.887

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.969

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
16.000	870.28	842.01	842.01
16.083	1053.07	952.73	952.73
16.167	1324.70	1173.77	1173.77
16.250	1651.20	1468.83	1468.83
16.333	1989.30	1799.64	1799.64
16.417	2184.86	2072.53	2072.53
16.500	2270.37	2220.34	2220.34
16.583	2132.00	2205.72	2205.72
16.667	1842.77	2002.44	2002.44
16.750	1586.54	1730.94	1730.94
16.833	1392.30	1502.50	1502.50
16.917	1250.91	1331.29	1331.29
17.000	1149.35	1207.12	1207.12
17.083	1065.21	1112.80	1112.80
17.167	988.26	1031.61	1031.61
17.250	916.39	956.85	956.85
17.333	860.45	892.15	892.15
17.417	809.88	838.38	838.38
17.500	763.21	789.49	789.49
17.583	716.93	742.93	742.93
17.667	682.67	702.13	702.13
17.750	646.31	666.70	666.70
17.833	610.14	630.46	630.46
17.917	588.38	600.86	600.86
18.000	564.97	578.10	578.10
18.083	548.16	557.72	557.72
18.167	536.02	542.93	542.93
18.250	524.48	530.98	530.98
18.333	518.72	522.06	522.06
18.417	518.22	518.60	518.60
18.500	519.36	518.75	518.75
18.583	515.40	517.53	517.53
18.667	511.57	513.72	513.72
18.750	509.27	510.59	510.59
18.833	505.91	507.78	507.78
18.917	501.09	503.78	503.78
19.000	494.95	498.38	498.38

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 945.840 AF
OUTFLOW VOLUME = 945.840 AF
LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 274.00 TO NODE 274.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 880.780 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.440 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED):
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.266
FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
VALLEY(UNDEVELOPED)/DESERT:
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.730
DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.004
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.357
LOW LOSS FRACTION = 0.338
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.41
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.85
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.12
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.82
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.47
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.29

*USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.820
30-MINUTE FACTOR = 0.820
1-HOUR FACTOR = 0.820
3-HOUR FACTOR = 0.973
6-HOUR FACTOR = 0.987
24-HOUR FACTOR = 0.992

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 18.939

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 16.00
MODEL TIME(HOURS) FOR END OF RESULTS = 19.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.485	158.232
2	5.716	450.656

3	13.433	821.952
4	24.937	1225.442
5	38.586	1453.903
6	52.403	1471.774
7	62.830	1110.684
8	70.231	788.306
9	75.496	560.876
10	79.347	410.158
11	82.289	313.405
12	84.610	247.203
13	86.461	197.174
14	87.889	152.072
15	89.139	133.241
16	90.249	118.206
17	91.205	101.799
18	92.115	96.919
19	92.916	85.333
20	93.564	69.004
21	94.185	66.192
22	94.710	55.879
23	95.224	54.820
24	95.708	51.506
25	96.119	43.842
26	96.528	43.528
27	96.934	43.276
28	97.251	33.750
29	97.521	28.725
30	97.790	28.695
31	98.060	28.692
32	98.329	28.676
33	98.552	23.781
34	98.658	11.259
35	98.758	10.666
36	98.858	10.681
37	98.958	10.651
38	99.058	10.681
39	99.158	10.649
40	99.258	10.633
41	99.358	10.586
42	99.457	10.569
43	99.556	10.569
44	99.655	10.569
45	99.755	10.569
46	99.854	10.569
47	99.953	10.568
48	100.000	5.013

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 148.0885
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 309.6898

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 225.0 450.0 675.0 900.0
16.000	173.3142	298.76	. Q . V . .
16.083	175.9199	378.35	. Q . V . .
16.167	179.3562	498.95	. QV . .
16.250	183.7354	635.86	. V Q . .
16.333	188.9945	763.63	. V . Q .
16.417	194.6603	822.67	. V . Q .
16.500	200.1864	802.39	. V . Q .
16.583	204.8531	677.62	. V Q .
16.667	208.7421	564.68	. QV . .
16.750	212.0680	482.93	.Q V . .
16.833	215.0086	426.97	. Q . V . .
16.917	217.6713	386.62	. Q . V . .
17.000	220.1173	355.16	. Q . V . .
17.083	222.3774	328.17	. Q . V . .
17.167	224.4641	302.99	. Q . V . .
17.250	226.4204	284.05	. Q . V. .
17.333	228.2479	265.35	.Q . V. .
17.417	229.9444	246.34	Q . V. .
17.500	231.5312	230.41	Q . V. .
17.583	233.0117	214.96	Q. . V .
17.667	234.3937	200.67	Q . . V .
17.750	235.7108	191.25	Q . . V .
17.833	236.9604	181.43	Q . . V .
17.917	238.1634	174.68	Q . . V .
18.000	239.3191	167.80	Q . . V .
18.083	240.4304	161.36	Q . . .V .
18.167	241.5231	158.66	Q . . .V .
18.250	242.6107	157.92	Q . . .V .
18.333	243.6933	157.20	Q . . .V .
18.417	244.7895	159.16	Q . . .V .
18.500	245.9107	162.80	Q . . .V .
18.583	247.0465	164.92	Q . . .V .
18.667	248.1851	165.32	Q . . . V .
18.750	249.3097	163.29	Q . . . V .
18.833	250.4058	159.15	Q . . . V .
18.917	251.4931	157.88	Q . . . V .
19.000	252.5728	156.76	Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	230.0
30%	120.0
40%	60.0
50%	45.0

60%	35.0
70%	25.0
80%	20.0
90%	15.0

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FLOW PROCESS FROM NODE 274.00 TO NODE 274.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
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STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 775.0 1550.0 2325.0 3100.0
16.000	701.0480	1140.78	. . Q . V . .
16.083	710.2152	1331.08	. . Q . V . .
16.167	721.7353	1672.71	. . .QV . .
16.250	736.2304	2104.69	. . . V Q . .
16.333	753.8838	2563.27	. . . V . Q .
16.417	773.8232	2895.20	. . . V . Q .
16.500	794.6408	3022.72	. . . V . Q.
16.583	814.4985	2883.34	. . . V . Q .
16.667	832.1784	2567.12	. . . V . Q .
16.750	847.4254	2213.87	. . . V Q . .
16.833	860.7138	1929.47	. . . Q V . .
16.917	872.5451	1717.91	. . . Q V . .
17.000	883.3046	1562.28	. . Q V . .
17.083	893.2286	1440.97	. . Q . V . .
17.167	902.4201	1334.60	. . Q . V . .
17.250	910.9663	1240.91	. . Q . V. .
17.333	918.9380	1157.50	. . Q . V. .
17.417	926.4086	1084.72	. . Q . V. .
17.500	933.4327	1019.90	. . Q . V. .
17.583	940.0297	957.89	. . Q . V. .
17.667	946.2473	902.79	. .Q . V .
17.750	952.1561	857.96	. .Q . V .
17.833	957.7477	811.89	. Q . V .
17.917	963.0889	775.54	. Q . V .
18.000	968.2260	745.90	. Q. . V .
18.083	973.1782	719.07	. Q. . .V .
18.167	978.0101	701.59	. Q. . .V .
18.250	982.7545	688.89	. Q . . .V .
18.333	987.4326	679.26	. Q . . .V .
18.417	992.1003	677.76	. Q . . .V .
18.500	996.7943	681.56	. Q . . .V .
18.583	1001.4943	682.45	. Q . . .V .
18.667	1006.1709	679.04	. Q . . . V .
18.750	1010.8120	673.88	. Q . . . V .
18.833	1015.4052	666.93	. Q . . . V .
18.917	1019.9620	661.66	. Q . . . V .
19.000	1024.4740	655.14	. Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	390.0
30%	165.0
40%	75.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0
90%	15.0

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FLOW PROCESS FROM NODE 274.00 TO NODE 352.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
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THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 10.00 CHANNEL Z = 2.00
UPSTREAM ELEVATION(FT) = 1670.00
DOWNSTREAM ELEVATION(FT) = 1655.00
CHANNEL LENGTH(FT) = 623.43 MANNING'S FACTOR = 0.015
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:
MAXIMUM INFLOW(CFS) = 3022.72
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 2284.78
CHANNEL NORMAL VELOCITY FOR Q = 2284.78 CFS = 29.68 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.946

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 1.000

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
16.000	1140.78	1137.00	1137.00
16.083	1331.08	1318.48	1318.48
16.167	1672.71	1650.09	1650.09
16.250	2104.69	2076.09	2076.09
16.333	2563.27	2532.91	2532.91
16.417	2895.20	2873.22	2873.22

16.500	3022.72	3014.28	3014.28
16.583	2883.34	2892.57	2892.57
16.667	2567.12	2588.06	2588.06
16.750	2213.87	2237.26	2237.26
16.833	1929.47	1948.30	1948.30
16.917	1717.91	1731.92	1731.92
17.000	1562.28	1572.58	1572.58
17.083	1440.97	1449.00	1449.00
17.167	1334.60	1341.65	1341.65
17.250	1240.91	1247.11	1247.11
17.333	1157.50	1163.02	1163.02
17.417	1084.72	1089.54	1089.54
17.500	1019.90	1024.20	1024.20
17.583	957.89	962.00	962.00
17.667	902.79	906.44	906.44
17.750	857.96	860.92	860.92
17.833	811.89	814.94	814.94
17.917	775.54	777.95	777.95
18.000	745.90	747.86	747.86
18.083	719.07	720.85	720.85
18.167	701.59	702.75	702.75
18.250	688.89	689.73	689.73
18.333	679.26	679.89	679.89
18.417	677.76	677.86	677.86
18.500	681.56	681.30	681.30
18.583	682.45	682.39	682.39
18.667	679.04	679.27	679.27
18.750	673.88	674.22	674.22
18.833	666.93	667.39	667.39
18.917	661.66	662.01	662.01
19.000	655.14	655.57	655.57

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PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 1255.530 AF
OUTFLOW VOLUME = 1255.529 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 352.00 TO NODE 352.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

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(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 877.380 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.480 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED):
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.610
FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
VALLEY(UNDEVELOPED)/DESERT:
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.390

DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.330
LOW LOSS FRACTION = 0.311
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.46
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.94
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.24
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 2.02
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.75
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.77

*USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.820
30-MINUTE FACTOR = 0.820
1-HOUR FACTOR = 0.820
3-HOUR FACTOR = 0.973
6-HOUR FACTOR = 0.987
24-HOUR FACTOR = 0.992

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 17.361

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 16.00
MODEL TIME(HOURS) FOR END OF RESULTS = 19.00

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UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.182	125.446
2	4.354	336.580
3	10.707	674.107
4	20.574	1046.928
5	32.294	1243.622
6	45.868	1440.305
7	58.683	1359.796
8	69.021	1096.918
9	76.382	781.054
10	81.721	566.459
11	85.386	388.965
12	88.182	296.636
13	90.180	212.057
14	91.687	159.908
15	92.620	99.009
16	93.406	83.359
17	94.116	75.360
18	94.771	69.478
19	95.365	63.026
20	95.959	63.067
21	96.334	39.750
22	96.649	33.412

23	96.945	31.420
24	97.198	26.793
25	97.448	26.610
26	97.688	25.428
27	97.890	21.453
28	98.089	21.127
29	98.288	21.135
30	98.469	19.163
31	98.603	14.199
32	98.734	13.948
33	98.866	13.948
34	98.997	13.957
35	99.129	13.939
36	99.233	11.099
37	99.283	5.316
38	99.332	5.168
39	99.381	5.158
40	99.429	5.149
41	99.478	5.149
42	99.526	5.167
43	99.575	5.140
44	99.624	5.177
45	99.672	5.140
46	99.721	5.140
47	99.769	5.140
48	99.817	5.139
49	99.866	5.140
50	99.914	5.140
51	99.963	5.140
52	100.000	3.952

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 145.4045
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 345.3988

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 250.0 500.0 750.0 1000.0
16.000	192.7135	335.17	. . Q . V . .
16.083	195.5213	407.69	. . Q . V . .
16.167	199.0795	516.65	. . Q V . .
16.250	203.6414	662.40	. . . V Q . .
16.333	209.1870	805.22	. . . V . Q .
16.417	215.2608	881.91	. . . V . Q .
16.500	221.6831	932.53	. . . V . Q .
16.583	227.7637	882.91	. . . V Q . .
16.667	233.0724	770.83	. . . V Q . .

16.750	237.5088	644.16	. . . Q V . .
16.833	241.3148	552.63	. . . Q V . .
16.917	244.6089	478.30	. . Q. V . .
17.000	247.5778	431.09	. . Q . V . .
17.083	250.2464	387.48	. . Q . V . .
17.167	252.6820	353.64	. . Q . V. .
17.250	254.8753	318.48	. . Q . V. .
17.333	256.9194	296.80	. .Q . V. .
17.417	258.8325	277.78	. .Q . V. .
17.500	260.6190	259.40	. Q . V .
17.583	262.2833	241.65	. Q. . V .
17.667	263.8473	227.09	. Q. . V .
17.750	265.2838	208.59	. Q . . V .
17.833	266.6406	197.00	. Q . . V .
17.917	267.9378	188.36	. Q . . .V .
18.000	269.1791	180.23	. Q . . .V .
18.083	270.3817	174.62	. Q . . .V .
18.167	271.5547	170.32	. Q . . .V .
18.250	272.7091	167.62	. Q . . .V .
18.333	273.8674	168.19	. Q . . .V .
18.417	275.0389	170.10	. Q . . .V .
18.500	276.2276	172.60	. Q . . .V .
18.583	277.4275	174.22	. Q . . . V .
18.667	278.6409	176.18	. Q . . . V .
18.750	279.8600	177.01	. Q . . . V .
18.833	281.0784	176.92	. Q . . . V .
18.917	282.2896	175.86	. Q . . . V .
19.000	283.4850	173.58	. Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	215.0
30%	125.0
40%	65.0
50%	50.0
60%	35.0
70%	30.0
80%	25.0
90%	15.0

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FLOW PROCESS FROM NODE 352.00 TO NODE 352.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 1000.0 2000.0 3000.0 4000.0

16.000	893.2413	1472.17	. . Q . V . .
16.083	905.1295	1726.17	. . Q . V . .
16.167	920.0520	2166.74	. . .QV . .
16.250	938.9121	2738.49	. . . V Q . .
16.333	961.9019	3338.12	. . . V . Q .
16.417	987.7637	3755.13	. . . V . . Q .
16.500	1014.9455	3946.80	. . . V . . Q.
16.583	1040.9474	3775.47	. . . V . . Q .
16.667	1064.0802	3358.88	. . . V . Q . .
16.750	1083.9247	2881.42	. . . VQ . . .
16.833	1101.1487	2500.93	. . . Q V . . .
16.917	1116.3706	2210.22	. . . Q V . . .
17.000	1130.1700	2003.67	. . Q V . . .
17.083	1142.8180	1836.48	. . Q . V . . .
17.167	1154.4935	1695.29	. . Q . V . . .
17.250	1165.2758	1565.59	. . Q . V. . .
17.333	1175.3296	1459.82	. . Q . V. . .
17.417	1184.7463	1367.32	. . Q . V. . .
17.500	1193.5865	1283.59	. . Q . V. . .
17.583	1201.8761	1203.65	. . Q . V . .
17.667	1209.6827	1133.53	. . Q . V . .
17.750	1217.0486	1069.52	. . Q . V . .
17.833	1224.0178	1011.94	. . Q . V . .
17.917	1230.6729	966.31	. . Q. . V . .
18.000	1237.0647	928.09	. . Q. . V . .
18.083	1243.2318	895.47	. . Q . . .V . .
18.167	1249.2446	873.06	. . Q . . .V . .
18.250	1255.1493	857.35	. . Q . . .V . .
18.333	1260.9901	848.09	. . Q . . .V . .
18.417	1266.8301	847.96	. . Q . . .V . .
18.500	1272.7109	853.90	. . Q . . .V . .
18.583	1278.6105	856.61	. . Q . . .V . .
18.667	1284.5020	855.45	. . Q . . . V . .
18.750	1290.3645	851.24	. . Q . . . V . .
18.833	1296.1793	844.31	. . Q . . . V . .
18.917	1301.9497	837.87	. . Q . . . V . .
19.000	1307.6602	829.16	. . Q . . . V . .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	330.0
30%	160.0
40%	70.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0
90%	15.0

FLOW PROCESS FROM NODE 352.00 TO NODE 353.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<

THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 12.00 CHANNEL Z = 2.00
UPSTREAM ELEVATION(FT) = 1655.00
DOWNSTREAM ELEVATION(FT) = 1625.00
CHANNEL LENGTH(FT) = 1454.79 MANNING'S FACTOR = 0.015
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:
MAXIMUM INFLOW(CFS) = 3946.80
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 2970.53
CHANNEL NORMAL VELOCITY FOR Q = 2970.53 CFS = 29.74 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.946

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 1.000

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
16.000	1472.17	1460.38	1460.38
16.083	1726.17	1687.00	1687.00
16.167	2166.74	2098.80	2098.80
16.250	2738.49	2650.31	2650.31
16.333	3338.12	3245.65	3245.65
16.417	3755.13	3690.82	3690.82
16.500	3946.80	3917.24	3917.24
16.583	3775.47	3801.90	3801.90
16.667	3358.88	3423.13	3423.13
16.750	2881.42	2955.05	2955.05
16.833	2500.93	2559.61	2559.61
16.917	2210.22	2255.05	2255.05
17.000	2003.67	2035.53	2035.53
17.083	1836.48	1862.27	1862.27
17.167	1695.29	1717.06	1717.06
17.250	1565.59	1585.59	1585.59
17.333	1459.82	1476.13	1476.13
17.417	1367.32	1381.59	1381.59
17.500	1283.59	1296.50	1296.50
17.583	1203.65	1215.98	1215.98
17.667	1133.53	1144.34	1144.34
17.750	1069.52	1079.39	1079.39

17.833	1011.94	1020.82	1020.82
17.917	966.31	973.34	973.34
18.000	928.09	933.99	933.99
18.083	895.47	900.50	900.50
18.167	873.06	876.52	876.52
18.250	857.35	859.77	859.77
18.333	848.09	849.51	849.51
18.417	847.96	847.98	847.98
18.500	853.90	852.99	852.99
18.583	856.61	856.19	856.19
18.667	855.45	855.63	855.63
18.750	851.24	851.89	851.89
18.833	844.31	845.38	845.38
18.917	837.87	838.86	838.86
19.000	829.16	830.50	830.50

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 1600.928 AF
OUTFLOW VOLUME = 1600.928 AF
LOSS VOLUME = 0.000 AF

****
FLOW PROCESS FROM NODE 353.00 TO NODE 353.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 50.170 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.100 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED):
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.433
FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
VALLEY(UNDEVELOPED)/DESERT:
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.567
DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.322
LOW LOSS FRACTION = 0.306
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.45
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.92
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.22
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 2.04
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.83
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.97

*USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.820
30-MINUTE FACTOR = 0.820
1-HOUR FACTOR = 0.820

3-HOUR FACTOR = 0.973
6-HOUR FACTOR = 0.987
24-HOUR FACTOR = 0.992

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 83.333

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 16.00
MODEL TIME(HOURS) FOR END OF RESULTS = 19.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	13.170	79.908
2	62.562	299.685
3	85.799	140.986
4	92.075	38.078
5	94.971	17.573
6	96.847	11.385
7	98.101	7.603
8	98.891	4.797
9	99.262	2.251
10	99.597	2.031
11	99.839	1.468
12	99.960	0.734
13	100.000	0.245

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 8.4464
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 20.4475

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 50.0 100.0 150.0 200.0
16.000	12.3360	33.69	. Q . . V . .
16.083	12.7910	66.07	. . Q . V . .
16.167	13.6395	123.20	. . . Q V . .
16.250	14.1286	71.02	. . Q . V . .
16.333	14.3704	35.12	. Q . . V . .
16.417	14.5459	25.48	. Q . . V . .

16.500	14.7135	24.34	.	Q	.	.	V	.	.
16.583	14.8705	22.80	.	Q	.	.	V.	.	.
16.667	15.0135	20.77	.	Q	.	.	V.	.	.
16.750	15.1441	18.96	.	Q	.	.	V.	.	.
16.833	15.2679	17.97	.	Q	.	.	V.	.	.
16.917	15.3850	17.01	.	Q	.	.	V	.	.
17.000	15.4958	16.10	.	Q	.	.	V	.	.
17.083	15.5987	14.94	.	Q	.	.	V	.	.
17.167	15.6871	12.83	.	Q	.	.	V	.	.
17.250	15.7673	11.65	.	Q	.	.	V	.	.
17.333	15.8433	11.03	.	Q	.	.	V	.	.
17.417	15.9159	10.55	.	Q	.	.	.V	.	.
17.500	15.9858	10.15	.	Q	.	.	.V	.	.
17.583	16.0532	9.79	.Q		.	.	.V	.	.
17.667	16.1185	9.48	.Q		.	.	.V	.	.
17.750	16.1819	9.20	.Q		.	.	.V	.	.
17.833	16.2435	8.95	.Q		.	.	.V	.	.
17.917	16.3035	8.71	.Q		.	.	.V	.	.
18.000	16.3621	8.50	.Q		.	.	. V	.	.
18.083	16.4217	8.65	.Q		.	.	. V	.	.
18.167	16.4890	9.78	.Q		.	.	. V	.	.
18.250	16.5595	10.23	.	Q	.	.	. V	.	.
18.333	16.6301	10.25	.	Q	.	.	. V	.	.
18.417	16.7003	10.19	.	Q	.	.	. V	.	.
18.500	16.7699	10.10	.	Q	.	.	. V	.	.
18.583	16.8388	10.01	.	Q	.	.	. V	.	.
18.667	16.9071	9.91	.Q		.	.	. V	.	.
18.750	16.9746	9.81	.Q		.	.	. V	.	.
18.833	17.0415	9.71	.Q		.	.	. V	.	.
18.917	17.1077	9.61	.Q		.	.	. V	.	.
19.000	17.1732	9.51	.Q		.	.	. V	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	185.0
20%	35.0
30%	15.0
40%	15.0
50%	15.0
60%	5.0
70%	5.0
80%	5.0
90%	5.0

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FLOW PROCESS FROM NODE 353.00 TO NODE 353.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)

(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 1000.0 2000.0 3000.0 4000.0
16.000	904.0137	1494.07	. . Q . V . .
16.083	916.0872	1753.06	. . Q . V . .
16.167	931.3902	2222.00	. . . Q . . .
16.250	950.1321	2721.33	. . . V Q . .
16.333	972.7269	3280.77	. . . V . Q .
16.417	998.3213	3716.30	. . . V . . Q .
16.500	1025.4672	3941.58	. . . V . . Q.
16.583	1051.8080	3824.69	. . . V . . Q .
16.667	1075.5262	3443.90	. . . V . Q .
16.750	1096.0084	2974.01	. . . V Q. .
16.833	1113.7604	2577.58	. . . Q V . .
16.917	1129.4082	2272.06	. . . Q V . .
17.000	1143.5378	2051.62	. . Q V . .
17.083	1156.4662	1877.20	. . Q . V . .
17.167	1168.3800	1729.89	. . Q . V . .
17.250	1179.3802	1597.24	. . Q . V. .
17.333	1189.6224	1487.16	. . Q . V. .
17.417	1199.2102	1392.14	. . Q . V. .
17.500	1208.2092	1306.65	. . Q . V. .
17.583	1216.6511	1225.77	. Q . V .
17.667	1224.5975	1153.82	.Q . V .
17.750	1232.0947	1088.59	Q . V .
17.833	1239.1868	1029.77	Q . V .
17.917	1245.9502	982.06	Q. . V .
18.000	1252.4412	942.49	Q. . V .
18.083	1258.7025	909.15	Q. . .V .
18.167	1264.8065	886.30	Q . . .V .
18.250	1270.7983	870.01	Q . . .V .
18.333	1276.7196	859.77	Q . . .V .
18.417	1282.6299	858.17	Q . . .V .
18.500	1288.5741	863.09	Q . . .V .
18.583	1294.5397	866.21	Q . . .V .
18.667	1300.5007	865.54	Q . . . V .
18.750	1306.4353	861.70	Q . . . V .
18.833	1312.3243	855.09	Q . . . V .
18.917	1318.1678	848.47	Q . . . V .
19.000	1323.9530	840.01	Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	355.0
30%	160.0
40%	75.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0

90% 15.0

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FLOW PROCESS FROM NODE 353.00 TO NODE 353.00 IS CODE = 3.1

>>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
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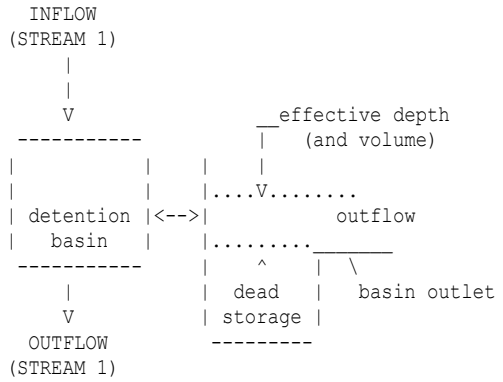

ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
THROUGH A FLOW-THROUGH DETENTION BASIN
SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
  DEAD STORAGE(AF) = 0.000
  SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
  SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
  DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	1.00	8.18	0.190
3	2.00	31.40	1.260
4	4.00	113.93	7.830
5	6.00	243.56	19.470
6	8.00	314.44	35.170
7	10.00	372.05	54.690
8	11.00	397.74	65.080
9	12.00	421.86	75.730
10	14.00	466.39	97.820
11	16.00	507.02	121.020
12	18.00	544.62	145.370
13	20.00	579.80	170.940
14	22.00	612.95	198.070
15	24.00	644.41	226.570
16	26.00	674.40	256.470
17	28.00	703.11	287.820
18	30.00	730.69	320.680

19	31.00	744.10	337.700
20	32.00	757.27	355.120

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MODIFIED-PULS BASIN ROUTING MODEL RESULTS(5-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
16.083	0.000	1753.06	0.00	28.29	704.0	292.565
16.167	0.000	2222.00	0.00	28.92	711.5	302.968
16.250	0.000	2721.33	0.00	29.76	721.6	316.740
16.333	0.000	3280.77	0.00	30.80	734.4	334.277
16.417	0.000	3716.30	0.00	31.98	749.2	354.712
16.500	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
16.500	0.000	3941.58	0.00	33.23	765.2	376.588
16.583	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
16.583	0.000	3824.69	0.00	34.44	781.4	397.547
16.667	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
16.667	0.000	3443.90	0.00	35.48	796.2	415.781
16.750	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
16.750	0.000	2974.01	0.00	36.34	808.8	430.694
16.833	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
16.833	0.000	2577.58	0.00	37.03	819.0	442.805
16.917	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
16.917	0.000	2272.06	0.00	37.60	827.3	452.755
17.000	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.000	0.000	2051.62	0.00	38.09	834.3	461.139
17.083	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.083	0.000	1877.20	0.00	38.50	840.1	468.282
17.167	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.167	0.000	1729.89	0.00	38.85	845.1	474.375
17.250	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.250	0.000	1597.24	0.00	39.14	849.4	479.526
17.333	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.333	0.000	1487.16	0.00	39.39	853.0	483.893
17.417	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.417	0.000	1392.14	0.00	39.60	856.0	487.586
17.500	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.500	0.000	1306.65	0.00	39.78	858.6	490.671
17.583	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.583	0.000	1225.77	0.00	39.93	860.7	493.186
17.667	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.667	0.000	1153.82	0.00	40.04	862.4	495.193
17.750	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.750	0.000	1088.59	0.00	40.13	863.8	496.741
17.833	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.833	0.000	1029.77	0.00	40.20	864.8	497.878
17.917	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
17.917	0.000	982.06	0.00	40.24	865.5	498.680
18.000	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
18.000	0.000	942.49	0.00	40.27	866.0	499.207
18.083	*BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*					
18.083	0.000	909.15	0.00	40.29	866.3	499.502

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18.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.167        0.000   886.30     0.00     40.30    866.5    499.639
18.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.250        0.000   870.01     0.00     40.30    866.5    499.663
18.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.333        0.000   859.77     0.00     40.29    866.5    499.616
18.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.417        0.000   858.17     0.00     40.29    866.5    499.559
18.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.500        0.000   863.09     0.00     40.29    866.5    499.536
18.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.583        0.000   866.21     0.00     40.29    866.5    499.534
18.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.667        0.000   865.54     0.00     40.29    866.4    499.528
18.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.750        0.000   861.70     0.00     40.29    866.4    499.495
18.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.833        0.000   855.09     0.00     40.28    866.4    499.417
18.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
18.917        0.000   848.47     0.00     40.28    866.3    499.294
19.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.000        0.000   840.01     0.00     40.27    866.2    499.114
19.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.083        0.000   827.65     0.00     40.25    866.0    498.850
19.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.167        0.000   813.93     0.00     40.23    865.8    498.493
19.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.250        0.000   802.28     0.00     40.21    865.5    498.057
19.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.333        0.000   793.42     0.00     40.18    865.1    497.563
19.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.417        0.000   785.42     0.00     40.15    864.8    497.017
19.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.500        0.000   777.60     0.00     40.11    864.3    496.420
19.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.583        0.000   769.93     0.00     40.07    863.9    495.773
19.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.667        0.000   762.49     0.00     40.03    863.3    495.078
19.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.750        0.000   755.25     0.00     39.99    862.8    494.338
19.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.833        0.000   748.18     0.00     39.95    862.2    493.552
19.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
19.917        0.000   741.17     0.00     39.90    861.6    492.723
20.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.000        0.000   733.18     0.00     39.85    861.0    491.843
20.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.083        0.000   725.30     0.00     39.80    860.3    490.913
20.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.167        0.000   718.73     0.00     39.74    859.6    489.943
20.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.250        0.000   712.53     0.00     39.68    858.8    488.936
20.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.333        0.000   705.86     0.00     39.62    858.0    487.888
20.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.417        0.000   697.94     0.00     39.56    857.2    486.791
20.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.500        0.000   689.19     0.00     39.49    856.4    485.639
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20.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.583        0.000   680.82     0.00     39.42    855.5    484.436
20.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.667        0.000   674.84     0.00     39.35    854.6    483.198
20.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.750        0.000   669.70     0.00     39.28    853.6    481.932
20.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.833        0.000   664.71     0.00     39.21    852.7    480.637
20.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
20.917        0.000   659.81     0.00     39.13    851.7    479.316
21.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.000        0.000   655.07     0.00     39.05    850.7    477.969
21.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.083        0.000   650.46     0.00     38.97    849.6    476.597
21.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.167        0.000   645.96     0.00     38.89    848.6    475.202
21.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.250        0.000   641.56     0.00     38.81    847.5    473.784
21.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.333        0.000   637.28     0.00     38.73    846.4    472.343
21.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.417        0.000   633.16     0.00     38.65    845.3    470.882
21.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.500        0.000   629.19     0.00     38.56    844.2    469.401
21.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.583        0.000   625.38     0.00     38.47    843.1    467.901
21.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.667        0.000   621.68     0.00     38.39    842.0    466.384
21.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.750        0.000   618.08     0.00     38.30    840.8    464.850
21.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.833        0.000   614.57     0.00     38.21    839.6    463.300
21.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
21.917        0.000   611.15     0.00     38.12    838.5    461.735
22.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.000        0.000   607.80     0.00     38.03    837.3    460.154
22.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.083        0.000   604.50     0.00     37.94    836.1    458.559
22.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.167        0.000   601.27     0.00     37.85    834.9    456.951
22.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.250        0.000   598.11     0.00     37.75    833.6    455.329
22.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.333        0.000   595.02     0.00     37.66    832.4    453.694
22.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.417        0.000   591.98     0.00     37.56    831.2    452.046
22.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.500        0.000   588.97     0.00     37.47    829.9    450.387
22.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.583        0.000   585.99     0.00     37.37    828.7    448.716
22.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.667        0.000   583.07     0.00     37.28    827.4    447.033
22.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.750        0.000   580.20     0.00     37.18    826.1    445.339
22.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.833        0.000   577.39     0.00     37.08    824.8    443.635
22.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
22.917        0.000   574.63     0.00     36.98    823.5    441.921
```

```
         23.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.000        0.000   571.92     0.00     36.88    822.2    440.197
         23.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.083        0.000   569.26     0.00     36.78    820.9    438.464
         23.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.167        0.000   566.65     0.00     36.68    819.6    436.722
         23.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.250        0.000   564.09     0.00     36.58    818.3    434.971
         23.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.333        0.000   561.57     0.00     36.48    817.0    433.212
         23.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.417        0.000   559.10     0.00     36.38    815.6    431.445
         23.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.500        0.000   556.67     0.00     36.28    814.3    429.671
         23.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.583        0.000   554.28     0.00     36.18    813.0    427.889
         23.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.667        0.000   551.93     0.00     36.07    811.6    426.101
         23.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.750        0.000   549.62     0.00     35.97    810.3    424.306
         23.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.833        0.000   547.35     0.00     35.87    808.9    422.504
         23.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         23.917        0.000   545.11     0.00     35.76    807.5    420.697
         24.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.417     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.500     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.583     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.667     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.750     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.833     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         24.917     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         25.000     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         25.083     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         25.167     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         25.250     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
         25.333     *BASIN CAPACITY EXCEEDED: BASIN DATA IS EXTRAPOLATED*
-------------------------------------------------------------------------------
  PROCESS SUMMARY OF STORAGE:
    INFLOW  VOLUME =   1621.376 AF
    BASIN  STORAGE =      0.000 AF (WITH      0.000 AF INITIALLY FILLED)
    OUTFLOW VOLUME =   1621.380 AF
    LOSS    VOLUME =      0.000 AF
===============================================================================

  END OF FLOODSCx ROUTING ANALYSIS
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                        Analysis prepared by:

                         San Bernardino County
                        Public Works Department

                        Water Resources Division

 ************************* DESCRIPTION OF STUDY *************************
* Opal Hydrology W/o Basin                                               *
* Opal Feasibility Study                                                 *
* Node 20353 AMC-III                                                     *
 ************************************************************************

  FILE NAME: OP353A.DAT
  TIME/DATE OF STUDY: 13:23 09/12/2013


**************************************************************************
  FLOW PROCESS FROM NODE    250.00 TO NODE    250.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =    2221.150 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.490 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         VALLEY(DEVELOPED):
                  "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.384
         FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         VALLEY(UNDEVELOPED)/DESERT:
                  "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.616
         DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) =  0.000
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.350
         LOW LOSS FRACTION = 0.310
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.46
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.94
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.24
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  2.13
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  3.01
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  7.33

         *USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
```



```
          5-MINUTE FACTOR = 0.820
         30-MINUTE FACTOR = 0.820
          1-HOUR FACTOR = 0.820
          3-HOUR FACTOR = 0.973
          6-HOUR FACTOR = 0.987
         24-HOUR FACTOR = 0.992

        UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
        UNIT INTERVAL PERCENTAGE OF LAG-TIME =  17.007


        RUNOFF HYDROGRAPH LISTING LIMITS:
        MODEL TIME(HOURS) FOR BEGINNING OF RESULTS =  16.00
        MODEL TIME(HOURS) FOR END OF RESULTS =  19.00
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.264	339.471
2	4.631	904.392
3	10.785	1653.291
4	20.280	2550.490
5	31.798	3093.866
6	44.681	3460.766
7	56.611	3204.613
8	65.772	2460.882
9	72.515	1811.287
10	77.424	1318.574
11	81.028	968.023
12	83.809	747.209
13	86.000	588.511
14	87.702	457.146
15	88.983	344.116
16	90.061	289.541
17	91.003	253.192
18	91.867	232.069
19	92.618	201.551
20	93.356	198.299
21	94.000	172.960
22	94.489	131.369
23	94.972	129.678
24	95.384	110.695
25	95.772	104.231
26	96.159	104.063
27	96.498	90.910
28	96.806	82.778
29	97.114	82.722
30	97.421	82.589
31	97.664	65.255
32	97.867	54.654
33	98.071	54.615
34	98.274	54.654
35	98.478	54.615

36	98.681	54.617
37	98.811	34.926
38	98.886	20.219
39	98.961	20.183
40	99.037	20.217
41	99.112	20.183
42	99.187	20.219
43	99.262	20.183
44	99.337	20.181
45	99.413	20.219
46	99.488	20.181
47	99.563	20.183
48	99.638	20.181
49	99.713	20.181
50	99.788	20.183
51	99.863	20.181
52	99.938	20.183
53	100.000	16.537

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 399.4406
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 945.8401

==========

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 575.0 1150.0 1725.0 2300.0
16.000	531.0939	870.28	. . Q . V . .
16.083	538.3464	1053.07	. . Q . V . .
16.167	547.4697	1324.70	. . . Q . . .
16.250	558.8416	1651.20	. . . V Q . .
16.333	572.5420	1989.30	. . . V . Q .
16.417	587.5893	2184.86	. . . V . Q .
16.500	603.2255	2270.37	. . . V . Q.
16.583	617.9086	2132.00	. . . V . Q .
16.667	630.5999	1842.77	. . . V . Q .
16.750	641.5264	1586.54	. . . Q . .
16.833	651.1153	1392.30	. . . Q V . .
16.917	659.7304	1250.91	. . .Q V . .
17.000	667.6461	1149.35	. . Q. V . .
17.083	674.9822	1065.21	. . Q . V . .
17.167	681.7884	988.26	. . Q . V . .
17.250	688.0996	916.39	. . Q . V. .
17.333	694.0256	860.45	. . Q . V. .
17.417	699.6032	809.88	. . Q . V. .
17.500	704.8595	763.21	. Q . V. .
17.583	709.7971	716.93	. Q . V .
17.667	714.4987	682.67	.Q . V .

17.750	718.9498	646.31	. .Q . V .
17.833	723.1519	610.14	. Q . V .
17.917	727.2042	588.38	. Q . V .
18.000	731.0951	564.97	. Q. . V .
18.083	734.8704	548.16	. Q. . .V .
18.167	738.5620	536.02	. Q. . .V .
18.250	742.1741	524.48	. Q. . .V .
18.333	745.7465	518.72	. Q. . .V .
18.417	749.3156	518.22	. Q. . .V .
18.500	752.8924	519.36	. Q. . .V .
18.583	756.4420	515.40	. Q . . .V .
18.667	759.9651	511.57	. Q . . . V .
18.750	763.4725	509.27	. Q . . . V .
18.833	766.9568	505.91	. Q . . . V .
18.917	770.4078	501.09	. Q . . . V .
19.000	773.8166	494.95	. Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	400.0
30%	175.0
40%	75.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0
90%	15.0

****

FLOW PROCESS FROM NODE 250.00 TO NODE 274.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<

==========

THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 30.00 CHANNEL Z = 2.50
UPSTREAM ELEVATION(FT) = 1733.00
DOWNSTREAM ELEVATION(FT) = 1670.00
CHANNEL LENGTH(FT) = 2379.03 MANNING'S FACTOR = 0.035
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:

MAXIMUM INFLOW(CFS) = 2270.37
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 1706.76
CHANNEL NORMAL VELOCITY FOR Q = 1706.76 CFS = 13.28 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.887

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 0.969

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
16.000	870.28	842.01	842.01
16.083	1053.07	952.73	952.73
16.167	1324.70	1173.77	1173.77
16.250	1651.20	1468.83	1468.83
16.333	1989.30	1799.64	1799.64
16.417	2184.86	2072.53	2072.53
16.500	2270.37	2220.34	2220.34
16.583	2132.00	2205.72	2205.72
16.667	1842.77	2002.44	2002.44
16.750	1586.54	1730.94	1730.94
16.833	1392.30	1502.50	1502.50
16.917	1250.91	1331.29	1331.29
17.000	1149.35	1207.12	1207.12
17.083	1065.21	1112.80	1112.80
17.167	988.26	1031.61	1031.61
17.250	916.39	956.85	956.85
17.333	860.45	892.15	892.15
17.417	809.88	838.38	838.38
17.500	763.21	789.49	789.49
17.583	716.93	742.93	742.93
17.667	682.67	702.13	702.13
17.750	646.31	666.70	666.70
17.833	610.14	630.46	630.46
17.917	588.38	600.86	600.86
18.000	564.97	578.10	578.10
18.083	548.16	557.72	557.72
18.167	536.02	542.93	542.93
18.250	524.48	530.98	530.98
18.333	518.72	522.06	522.06
18.417	518.22	518.60	518.60
18.500	519.36	518.75	518.75
18.583	515.40	517.53	517.53
18.667	511.57	513.72	513.72
18.750	509.27	510.59	510.59
18.833	505.91	507.78	507.78
18.917	501.09	503.78	503.78
19.000	494.95	498.38	498.38

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 945.840 AF
OUTFLOW VOLUME = 945.840 AF
LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 274.00 TO NODE 274.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 880.780 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.440 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED):
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.266
FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
VALLEY(UNDEVELOPED)/DESERT:
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.730
DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.004
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.357
LOW LOSS FRACTION = 0.338
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.41
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.85
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.12
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.82
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.47
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.29

*USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.820
30-MINUTE FACTOR = 0.820
1-HOUR FACTOR = 0.820
3-HOUR FACTOR = 0.973
6-HOUR FACTOR = 0.987
24-HOUR FACTOR = 0.992

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 18.939

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 16.00
MODEL TIME(HOURS) FOR END OF RESULTS = 19.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.485	158.232
2	5.716	450.656

3	13.433	821.952
4	24.937	1225.442
5	38.586	1453.903
6	52.403	1471.774
7	62.830	1110.684
8	70.231	788.306
9	75.496	560.876
10	79.347	410.158
11	82.289	313.405
12	84.610	247.203
13	86.461	197.174
14	87.889	152.072
15	89.139	133.241
16	90.249	118.206
17	91.205	101.799
18	92.115	96.919
19	92.916	85.333
20	93.564	69.004
21	94.185	66.192
22	94.710	55.879
23	95.224	54.820
24	95.708	51.506
25	96.119	43.842
26	96.528	43.528
27	96.934	43.276
28	97.251	33.750
29	97.521	28.725
30	97.790	28.695
31	98.060	28.692
32	98.329	28.676
33	98.552	23.781
34	98.658	11.259
35	98.758	10.666
36	98.858	10.681
37	98.958	10.651
38	99.058	10.681
39	99.158	10.649
40	99.258	10.633
41	99.358	10.586
42	99.457	10.569
43	99.556	10.569
44	99.655	10.569
45	99.755	10.569
46	99.854	10.569
47	99.953	10.568
48	100.000	5.013

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 148.0885
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 309.6898

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 225.0 450.0 675.0 900.0
16.000	173.3142	298.76	. Q . V . .
16.083	175.9199	378.35	. Q . V . .
16.167	179.3562	498.95	. QV . .
16.250	183.7354	635.86	. V Q . .
16.333	188.9945	763.63	. V . Q .
16.417	194.6603	822.67	. V . Q .
16.500	200.1864	802.39	. V . Q .
16.583	204.8531	677.62	. V Q .
16.667	208.7421	564.68	. QV . .
16.750	212.0680	482.93	.Q V . .
16.833	215.0086	426.97	. Q . V . .
16.917	217.6713	386.62	. Q . V . .
17.000	220.1173	355.16	. Q . V . .
17.083	222.3774	328.17	. Q . V . .
17.167	224.4641	302.99	. Q . V . .
17.250	226.4204	284.05	. Q . V. .
17.333	228.2479	265.35	.Q . V. .
17.417	229.9444	246.34	Q . V. .
17.500	231.5312	230.41	Q . V. .
17.583	233.0117	214.96	Q. . V .
17.667	234.3937	200.67	Q . . V .
17.750	235.7108	191.25	Q . . V .
17.833	236.9604	181.43	Q . . V .
17.917	238.1634	174.68	Q . . V .
18.000	239.3191	167.80	Q . . V .
18.083	240.4304	161.36	Q . . .V .
18.167	241.5231	158.66	Q . . .V .
18.250	242.6107	157.92	Q . . .V .
18.333	243.6933	157.20	Q . . .V .
18.417	244.7895	159.16	Q . . .V .
18.500	245.9107	162.80	Q . . .V .
18.583	247.0465	164.92	Q . . .V .
18.667	248.1851	165.32	Q . . . V .
18.750	249.3097	163.29	Q . . . V .
18.833	250.4058	159.15	Q . . . V .
18.917	251.4931	157.88	Q . . . V .
19.000	252.5728	156.76	Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	230.0
30%	120.0
40%	60.0
50%	45.0

60%	35.0
70%	25.0
80%	20.0
90%	15.0

****
FLOW PROCESS FROM NODE 274.00 TO NODE 274.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
==========

STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 775.0 1550.0 2325.0 3100.0
16.000	701.0480	1140.78	. . Q . V . .
16.083	710.2152	1331.08	. . Q . V . .
16.167	721.7353	1672.71	. . .QV . .
16.250	736.2304	2104.69	. . . V Q . .
16.333	753.8838	2563.27	. . . V . Q .
16.417	773.8232	2895.20	. . . V . Q .
16.500	794.6408	3022.72	. . . V . Q.
16.583	814.4985	2883.34	. . . V . Q .
16.667	832.1784	2567.12	. . . V . Q .
16.750	847.4254	2213.87	. . . V Q . .
16.833	860.7138	1929.47	. . . Q V . .
16.917	872.5451	1717.91	. . . Q V . .
17.000	883.3046	1562.28	. . . Q V . .
17.083	893.2286	1440.97	. . Q . V . .
17.167	902.4201	1334.60	. . Q . V . .
17.250	910.9663	1240.91	. . Q . V. .
17.333	918.9380	1157.50	. . Q . V. .
17.417	926.4086	1084.72	. . Q . V. .
17.500	933.4327	1019.90	. . Q . V. .
17.583	940.0297	957.89	. . Q . V. .
17.667	946.2473	902.79	. .Q . V .
17.750	952.1561	857.96	. .Q . V .
17.833	957.7477	811.89	. Q . V .
17.917	963.0889	775.54	. Q . V .
18.000	968.2260	745.90	. Q. . V .
18.083	973.1782	719.07	. Q. . .V .
18.167	978.0101	701.59	. Q. . .V .
18.250	982.7545	688.89	. Q . . .V .
18.333	987.4326	679.26	. Q . . .V .
18.417	992.1003	677.76	. Q . . .V .
18.500	996.7943	681.56	. Q . . .V .
18.583	1001.4943	682.45	. Q . . .V .
18.667	1006.1709	679.04	. Q . . . V .
18.750	1010.8120	673.88	. Q . . . V .
18.833	1015.4052	666.93	. Q . . . V .
18.917	1019.9620	661.66	. Q . . . V .
19.000	1024.4740	655.14	. Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	390.0
30%	165.0
40%	75.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0
90%	15.0

****
FLOW PROCESS FROM NODE 274.00 TO NODE 352.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<
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THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 10.00 CHANNEL Z = 2.00
UPSTREAM ELEVATION(FT) = 1670.00
DOWNSTREAM ELEVATION(FT) = 1655.00
CHANNEL LENGTH(FT) = 623.43 MANNING'S FACTOR = 0.015
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:
MAXIMUM INFLOW(CFS) = 3022.72
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 2284.78
CHANNEL NORMAL VELOCITY FOR Q = 2284.78 CFS = 29.68 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.946

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 1.000

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
16.000	1140.78	1137.00	1137.00
16.083	1331.08	1318.48	1318.48
16.167	1672.71	1650.09	1650.09
16.250	2104.69	2076.09	2076.09
16.333	2563.27	2532.91	2532.91
16.417	2895.20	2873.22	2873.22

16.500	3022.72	3014.28	3014.28
16.583	2883.34	2892.57	2892.57
16.667	2567.12	2588.06	2588.06
16.750	2213.87	2237.26	2237.26
16.833	1929.47	1948.30	1948.30
16.917	1717.91	1731.92	1731.92
17.000	1562.28	1572.58	1572.58
17.083	1440.97	1449.00	1449.00
17.167	1334.60	1341.65	1341.65
17.250	1240.91	1247.11	1247.11
17.333	1157.50	1163.02	1163.02
17.417	1084.72	1089.54	1089.54
17.500	1019.90	1024.20	1024.20
17.583	957.89	962.00	962.00
17.667	902.79	906.44	906.44
17.750	857.96	860.92	860.92
17.833	811.89	814.94	814.94
17.917	775.54	777.95	777.95
18.000	745.90	747.86	747.86
18.083	719.07	720.85	720.85
18.167	701.59	702.75	702.75
18.250	688.89	689.73	689.73
18.333	679.26	679.89	679.89
18.417	677.76	677.86	677.86
18.500	681.56	681.30	681.30
18.583	682.45	682.39	682.39
18.667	679.04	679.27	679.27
18.750	673.88	674.22	674.22
18.833	666.93	667.39	667.39
18.917	661.66	662.01	662.01
19.000	655.14	655.57	655.57

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 1255.530 AF
OUTFLOW VOLUME = 1255.529 AF
LOSS VOLUME = 0.000 AF

FLOW PROCESS FROM NODE 352.00 TO NODE 352.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 877.380 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.480 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED):
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.610
FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
VALLEY(UNDEVELOPED)/DESERT:
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.390

DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.330
LOW LOSS FRACTION = 0.311
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.46
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.94
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.24
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 2.02
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.75
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.77

*USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.820
30-MINUTE FACTOR = 0.820
1-HOUR FACTOR = 0.820
3-HOUR FACTOR = 0.973
6-HOUR FACTOR = 0.987
24-HOUR FACTOR = 0.992

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 17.361

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 16.00
MODEL TIME(HOURS) FOR END OF RESULTS = 19.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	1.182	125.446
2	4.354	336.580
3	10.707	674.107
4	20.574	1046.928
5	32.294	1243.622
6	45.868	1440.305
7	58.683	1359.796
8	69.021	1096.918
9	76.382	781.054
10	81.721	566.459
11	85.386	388.965
12	88.182	296.636
13	90.180	212.057
14	91.687	159.908
15	92.620	99.009
16	93.406	83.359
17	94.116	75.360
18	94.771	69.478
19	95.365	63.026
20	95.959	63.067
21	96.334	39.750
22	96.649	33.412

23	96.945	31.420
24	97.198	26.793
25	97.448	26.610
26	97.688	25.428
27	97.890	21.453
28	98.089	21.127
29	98.288	21.135
30	98.469	19.163
31	98.603	14.199
32	98.734	13.948
33	98.866	13.948
34	98.997	13.957
35	99.129	13.939
36	99.233	11.099
37	99.283	5.316
38	99.332	5.168
39	99.381	5.158
40	99.429	5.149
41	99.478	5.149
42	99.526	5.167
43	99.575	5.140
44	99.624	5.177
45	99.672	5.140
46	99.721	5.140
47	99.769	5.140
48	99.817	5.139
49	99.866	5.140
50	99.914	5.140
51	99.963	5.140
52	100.000	3.952

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 145.4045
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 345.3988

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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 250.0 500.0 750.0 1000.0
16.000	192.7135	335.17	. . Q . V . .
16.083	195.5213	407.69	. . Q . V . .
16.167	199.0795	516.65	. . Q V . .
16.250	203.6414	662.40	. . . V Q . .
16.333	209.1870	805.22	. . . V . Q .
16.417	215.2608	881.91	. . . V . Q .
16.500	221.6831	932.53	. . . V . Q .
16.583	227.7637	882.91	. . . V Q . .
16.667	233.0724	770.83	. . . V Q . .

16.750	237.5088	644.16	. . . Q V . .
16.833	241.3148	552.63	. . . Q V . .
16.917	244.6089	478.30	. . Q. V . .
17.000	247.5778	431.09	. . Q . V . .
17.083	250.2464	387.48	. . Q . V . .
17.167	252.6820	353.64	. . Q . V. .
17.250	254.8753	318.48	. . Q . V. .
17.333	256.9194	296.80	. .Q . V. .
17.417	258.8325	277.78	. .Q . V. .
17.500	260.6190	259.40	. Q . V .
17.583	262.2833	241.65	. Q. . V .
17.667	263.8473	227.09	. Q. . V .
17.750	265.2838	208.59	. Q . . V .
17.833	266.6406	197.00	. Q . . V .
17.917	267.9378	188.36	. Q . . .V .
18.000	269.1791	180.23	. Q . . .V .
18.083	270.3817	174.62	. Q . . .V .
18.167	271.5547	170.32	. Q . . .V .
18.250	272.7091	167.62	. Q . . .V .
18.333	273.8674	168.19	. Q . . .V .
18.417	275.0389	170.10	. Q . . .V .
18.500	276.2276	172.60	. Q . . .V .
18.583	277.4275	174.22	. Q . . . V .
18.667	278.6409	176.18	. Q . . . V .
18.750	279.8600	177.01	. Q . . . V .
18.833	281.0784	176.92	. Q . . . V .
18.917	282.2896	175.86	. Q . . . V .
19.000	283.4850	173.58	. Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	215.0
30%	125.0
40%	65.0
50%	50.0
60%	35.0
70%	30.0
80%	25.0
90%	15.0

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FLOW PROCESS FROM NODE 352.00 TO NODE 352.00 IS CODE = 11

>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

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STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 1000.0 2000.0 3000.0 4000.0

16.000	893.2413	1472.17	. . Q . V . .
16.083	905.1295	1726.17	. . Q . V . .
16.167	920.0520	2166.74	. . .QV . .
16.250	938.9121	2738.49	. . . V Q . .
16.333	961.9019	3338.12	. . . V . Q .
16.417	987.7637	3755.13	. . . V . . Q .
16.500	1014.9455	3946.80	. . . V . . Q.
16.583	1040.9474	3775.47	. . . V . . Q .
16.667	1064.0802	3358.88	. . . V . Q . .
16.750	1083.9247	2881.42	. . . VQ . . .
16.833	1101.1487	2500.93	. . . Q V . . .
16.917	1116.3706	2210.22	. . . Q V . . .
17.000	1130.1700	2003.67	. . Q V . . .
17.083	1142.8180	1836.48	. . Q . V . . .
17.167	1154.4935	1695.29	. . Q . V . . .
17.250	1165.2758	1565.59	. . Q . V. . .
17.333	1175.3296	1459.82	. . Q . V. . .
17.417	1184.7463	1367.32	. . Q . V. . .
17.500	1193.5865	1283.59	. . Q . V. . .
17.583	1201.8761	1203.65	. . Q . V . .
17.667	1209.6827	1133.53	. .Q . V . .
17.750	1217.0486	1069.52	. Q . V . .
17.833	1224.0178	1011.94	. Q . V . .
17.917	1230.6729	966.31	. Q. . V . .
18.000	1237.0647	928.09	. Q. . V . .
18.083	1243.2318	895.47	. Q . . .V . .
18.167	1249.2446	873.06	. Q . . .V . .
18.250	1255.1493	857.35	. Q . . .V . .
18.333	1260.9901	848.09	. Q . . .V . .
18.417	1266.8301	847.96	. Q . . .V . .
18.500	1272.7109	853.90	. Q . . .V . .
18.583	1278.6105	856.61	. Q . . .V . .
18.667	1284.5020	855.45	. Q . . . V . .
18.750	1290.3645	851.24	. Q . . . V . .
18.833	1296.1793	844.31	. Q . . . V . .
18.917	1301.9497	837.87	. Q . . . V . .
19.000	1307.6602	829.16	. Q . . . V . .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	330.0
30%	160.0
40%	70.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0
90%	15.0

FLOW PROCESS FROM NODE 352.00 TO NODE 353.00 IS CODE = 5.2

>>>>>MODEL CHANNEL ROUTING OF STREAM #1 BY THE CONVEX METHOD<<<<<

THE MODIFIED C-ROUTING COEFFICIENT IS ESTIMATED IN ORDER
TO ROUTE THE STREAM 1 INFLOW HYDROGRAPH BY 5-MINUTE
INTERVALS(Reference: the National Engineering Handbook,
Hydrology, Chapter 17, page 17-52, August,1972,
U.S. Department of Commerce).

ASSUMED REGULAR CHANNEL INFORMATION:
BASEWIDTH(FT) = 12.00 CHANNEL Z = 2.00
UPSTREAM ELEVATION(FT) = 1655.00
DOWNSTREAM ELEVATION(FT) = 1625.00
CHANNEL LENGTH(FT) = 1454.79 MANNING'S FACTOR = 0.015
CONSTANT LOSS RATE(CFS) = 0.00

CHANNEL ROUTING COEFFICIENT ESTIMATED:
MAXIMUM INFLOW(CFS) = 3946.80
AVERAGE FLOWRATE IN EXCESS OF 50% MAXIMUM INFLOW = 2970.53
CHANNEL NORMAL VELOCITY FOR Q = 2970.53 CFS = 29.74 FPS
ESTIMATED CHANNEL ROUTING COEFFICIENT = 0.946

MODIFIED CHANNEL ROUTING COEFFICIENT FOR 5-MINUTE
UNIT INTERVALS IS CSTAR = 1.000

CONVEX METHOD CHANNEL ROUTING RESULTS:

MODEL TIME (HRS)	INFLOW (STREAM 1) (CFS)	ROUTED FLOW (CFS)	OUTFLOW LESS LOSS (STREAM 1) (CFS)
16.000	1472.17	1460.38	1460.38
16.083	1726.17	1687.00	1687.00
16.167	2166.74	2098.80	2098.80
16.250	2738.49	2650.31	2650.31
16.333	3338.12	3245.65	3245.65
16.417	3755.13	3690.82	3690.82
16.500	3946.80	3917.24	3917.24
16.583	3775.47	3801.90	3801.90
16.667	3358.88	3423.13	3423.13
16.750	2881.42	2955.05	2955.05
16.833	2500.93	2559.61	2559.61
16.917	2210.22	2255.05	2255.05
17.000	2003.67	2035.53	2035.53
17.083	1836.48	1862.27	1862.27
17.167	1695.29	1717.06	1717.06
17.250	1565.59	1585.59	1585.59
17.333	1459.82	1476.13	1476.13
17.417	1367.32	1381.59	1381.59
17.500	1283.59	1296.50	1296.50
17.583	1203.65	1215.98	1215.98
17.667	1133.53	1144.34	1144.34
17.750	1069.52	1079.39	1079.39

17.833	1011.94	1020.82	1020.82
17.917	966.31	973.34	973.34
18.000	928.09	933.99	933.99
18.083	895.47	900.50	900.50
18.167	873.06	876.52	876.52
18.250	857.35	859.77	859.77
18.333	848.09	849.51	849.51
18.417	847.96	847.98	847.98
18.500	853.90	852.99	852.99
18.583	856.61	856.19	856.19
18.667	855.45	855.63	855.63
18.750	851.24	851.89	851.89
18.833	844.31	845.38	845.38
18.917	837.87	838.86	838.86
19.000	829.16	830.50	830.50

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 1600.928 AF
OUTFLOW VOLUME = 1600.928 AF
LOSS VOLUME = 0.000 AF

****
FLOW PROCESS FROM NODE 353.00 TO NODE 353.00 IS CODE = 1

>>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<

(UNIT-HYDROGRAPH ADDED TO STREAM #1)

WATERSHED AREA = 50.170 ACRES
BASEFLOW = 0.000 CFS/SQUARE-MILE
*USER ENTERED "LAG" TIME = 0.100 HOURS
CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
VALLEY(DEVELOPED):
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.433
FOOTHILL "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MOUNTAIN "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
VALLEY(UNDEVELOPED)/DESERT:
"S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.567
DESERT(UNDEVELOPED) "S"-CURVE PERCENTAGE(DECIMAL NOTATION) = 0.000
MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) = 0.322
LOW LOSS FRACTION = 0.306
HYDROGRAPH MODEL #1 SPECIFIED

SPECIFIED PEAK 5-MINUTES RAINFALL(INCH)= 0.45
SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)= 0.92
SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.22
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 2.04
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 2.83
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 6.97

*USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.820
30-MINUTE FACTOR = 0.820
1-HOUR FACTOR = 0.820

3-HOUR FACTOR = 0.973
6-HOUR FACTOR = 0.987
24-HOUR FACTOR = 0.992

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 83.333

RUNOFF HYDROGRAPH LISTING LIMITS:
MODEL TIME(HOURS) FOR BEGINNING OF RESULTS = 16.00
MODEL TIME(HOURS) FOR END OF RESULTS = 19.00

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	13.170	79.908
2	62.562	299.685
3	85.799	140.986
4	92.075	38.078
5	94.971	17.573
6	96.847	11.385
7	98.101	7.603
8	98.891	4.797
9	99.262	2.251
10	99.597	2.031
11	99.839	1.468
12	99.960	0.734
13	100.000	0.245

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 8.4464
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 20.4475

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 50.0 100.0 150.0 200.0
16.000	12.3360	33.69	. Q . . V . .
16.083	12.7910	66.07	. . Q . V . .
16.167	13.6395	123.20	. . . Q V . .
16.250	14.1286	71.02	. . Q . V . .
16.333	14.3704	35.12	. Q . . V . .
16.417	14.5459	25.48	. Q . . V . .

16.500	14.7135	24.34	. Q . . V . .
16.583	14.8705	22.80	. Q . . V. .
16.667	15.0135	20.77	. Q . . V. .
16.750	15.1441	18.96	. Q . . V. .
16.833	15.2679	17.97	. Q . . V. .
16.917	15.3850	17.01	. Q . . V .
17.000	15.4958	16.10	. Q . . V .
17.083	15.5987	14.94	. Q . . V .
17.167	15.6871	12.83	. Q . . V .
17.250	15.7673	11.65	. Q . . V .
17.333	15.8433	11.03	. Q . . V .
17.417	15.9159	10.55	. Q . . .V .
17.500	15.9858	10.15	. Q . . .V .
17.583	16.0532	9.79	.Q . . .V .
17.667	16.1185	9.48	.Q . . .V .
17.750	16.1819	9.20	.Q . . .V .
17.833	16.2435	8.95	.Q . . .V .
17.917	16.3035	8.71	.Q . . .V .
18.000	16.3621	8.50	.Q . . . V .
18.083	16.4217	8.65	.Q . . . V .
18.167	16.4890	9.78	.Q . . . V .
18.250	16.5595	10.23	. Q . . . V .
18.333	16.6301	10.25	. Q . . . V .
18.417	16.7003	10.19	. Q . . . V .
18.500	16.7699	10.10	. Q . . . V .
18.583	16.8388	10.01	. Q . . . V .
18.667	16.9071	9.91	.Q . . . V .
18.750	16.9746	9.81	.Q . . . V .
18.833	17.0415	9.71	.Q . . . V .
18.917	17.1077	9.61	.Q . . . V .
19.000	17.1732	9.51	.Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	185.0
20%	35.0
30%	15.0
40%	15.0
50%	15.0
60%	5.0
70%	5.0
80%	5.0
90%	5.0

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FLOW PROCESS FROM NODE 353.00 TO NODE 353.00 IS CODE = 11
>>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<

STREAM HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)

(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0. 1000.0 2000.0 3000.0 4000.0
16.000	904.0137	1494.07	. . Q . V . .
16.083	916.0872	1753.06	. . Q . V . .
16.167	931.3902	2222.00	. . . Q . . .
16.250	950.1321	2721.33	. . . V Q . .
16.333	972.7269	3280.77	. . . V . Q .
16.417	998.3213	3716.30	. . . V . . Q .
16.500	1025.4672	3941.58	. . . V . . Q.
16.583	1051.8080	3824.69	. . . V . . Q .
16.667	1075.5262	3443.90	. . . V . Q .
16.750	1096.0084	2974.01	. . . V Q. .
16.833	1113.7604	2577.58	. . . Q V . .
16.917	1129.4082	2272.06	. . . Q V . .
17.000	1143.5378	2051.62	. . Q V . .
17.083	1156.4662	1877.20	. . Q . V . .
17.167	1168.3800	1729.89	. . Q . V . .
17.250	1179.3802	1597.24	. . Q . V. .
17.333	1189.6224	1487.16	. . Q . V. .
17.417	1199.2102	1392.14	. . Q . V. .
17.500	1208.2092	1306.65	. . Q . V. .
17.583	1216.6511	1225.77	. Q . V .
17.667	1224.5975	1153.82	.Q . V .
17.750	1232.0947	1088.59	Q . V .
17.833	1239.1868	1029.77	Q . V .
17.917	1245.9502	982.06	Q. . V .
18.000	1252.4412	942.49	Q. . V .
18.083	1258.7025	909.15	Q. . .V .
18.167	1264.8065	886.30	Q . . .V .
18.250	1270.7983	870.01	Q . . .V .
18.333	1276.7196	859.77	Q . . .V .
18.417	1282.6299	858.17	Q . . .V .
18.500	1288.5741	863.09	Q . . .V .
18.583	1294.5397	866.21	Q . . .V .
18.667	1300.5007	865.54	Q . . . V .
18.750	1306.4353	861.70	Q . . . V .
18.833	1312.3243	855.09	Q . . . V .
18.917	1318.1678	848.47	Q . . . V .
19.000	1323.9530	840.01	Q . . . V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1145.0
10%	1145.0
20%	355.0
30%	160.0
40%	75.0
50%	55.0
60%	40.0
70%	30.0
80%	25.0

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            90%                             15.0
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   END OF FLOODSCx ROUTING ANALYSIS

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