

THE RANCH PLAN PLANNED COMMUNITY  
PLANNING AREAS 3 AND 4 RUNOFF MANAGEMENT PLAN

**Michael Baker**  
INTERNATIONAL

**TECHNICAL APPENDIX G.1**

**Rational Method Expected Value  
(2-, 5-, 10-, 25-, 50-, and 100-year) – Free Draining**

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S19- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
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FILE NAME: RU02EV19.DAT  
TIME/DATE OF STUDY: 11:27 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.878
- 2) 10.00; 1.253
- 3) 15.00; 0.953
- 4) 20.00; 0.778
- 5) 25.00; 0.670
- 6) 30.00; 0.594
- 7) 40.00; 0.512
- 8) 50.00; 0.455
- 9) 60.00; 0.400
- 10) 90.00; 0.346
- 11) 120.00; 0.290
- 12) 180.00; 0.236
- 13) 360.00; 0.180
- 14) 1200.00; 0.084

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	MANNING LIP (FT)	HIKE FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167 0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

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FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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INITIAL SUBAREA FLOW-LENGTH(FEET) = 295.79  
ELEVATION DATA: UPSTREAM(FEET) = 2369.48 DOWNSTREAM(FEET) = 2332.92

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.203  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.603  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL ".4 DWELLING/ACRE"	-	1.62	0.60	0.999	0	7.20

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
SUBAREA RUNOFF(CFS) = 1.46  
TOTAL AREA(ACRES) = 1.62 PEAK FLOW RATE(CFS) = 1.46

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FLOW PROCESS FROM NODE 11901.00 TO NODE 11902.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 2332.92 DOWNSTREAM(FEET) = 2297.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 664.26 CHANNEL SLOPE = 0.0530  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.177  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.35	0.60	0.906	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.90  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.72  
AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 4.07  
Tc(MIN.) = 11.27  
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 4.76  
EFFECTIVE AREA(ACRES) = 9.97 AREA-AVERAGED Fm(INCH/HR) = 0.55  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 5.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.79 FLOW VELOCITY(FEET/SEC.) = 2.99  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.00 = 960.05 FEET.

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FLOW PROCESS FROM NODE 11902.00 TO NODE 11902.50 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2297.70 DOWNSTREAM(FEET) = 2263.40
CHANNEL LENGTH THRU SUBAREA(FEET) = 928.77 CHANNEL SLOPE = 0.0369
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.909
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 34.48 0.60 0.904 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.47
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.11
AVERAGE FLOW DEPTH(FEET) = 1.11 TRAVEL TIME(MIN.) = 4.98
Tc(MIN.) = 16.25
SUBAREA AREA(ACRES) = 34.48 SUBAREA RUNOFF(CFS) = 11.39
EFFECTIVE AREA(ACRES) = 44.45 AREA-AVERAGED Fm(INCH/HR) = 0.54
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 44.5 PEAK FLOW RATE(CFS) = 14.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.22 FLOW VELOCITY(FEET/SEC.) = 3.29
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.50 = 1888.82 FEET.

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FLOW PROCESS FROM NODE 11902.50 TO NODE 11903.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2263.40 DOWNSTREAM(FEET) = 2252.14
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.50 CHANNEL SLOPE = 0.0126
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.716
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 23.65 0.60 0.958 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.958
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.14
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.26
AVERAGE FLOW DEPTH(FEET) = 1.54 TRAVEL TIME(MIN.) = 6.61
Tc(MIN.) = 22.86
SUBAREA AREA(ACRES) = 23.65 SUBAREA RUNOFF(CFS) = 3.01
EFFECTIVE AREA(ACRES) = 68.10 AREA-AVERAGED Fm(INCH/HR) = 0.56
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68.1 PEAK FLOW RATE(CFS) = 14.59
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.48 FLOW VELOCITY(FEET/SEC.) = 2.21

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11903.00 = 2784.32 FEET.

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FLOW PROCESS FROM NODE 11903.00 TO NODE 11904.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2252.14 DOWNSTREAM(FEET) = 2186.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1924.35 CHANNEL SLOPE = 0.0343
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.571
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 68.53 0.60 0.961 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.28
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.24
AVERAGE FLOW DEPTH(FEET) = 1.25 TRAVEL TIME(MIN.) = 9.90
Tc(MIN.) = 32.77
SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 1.37
EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 14.59
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.23 FLOW VELOCITY(FEET/SEC.) = 3.21
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

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FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34
CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.520
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 63.15 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.59
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.13

AVERAGE FLOW DEPTH (FEET) = 0.97 TRAVEL TIME (MIN.) = 6.26  
Tc (MIN.) = 39.03  
SUBAREA AREA (ACRES) = 63.15 SUBAREA RUNOFF (CFS) = 0.00  
EFFECTIVE AREA (ACRES) = 199.78 AREA-AVERAGED Fm (INCH/HR) = 0.58  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.96  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 199.8 PEAK FLOW RATE (CFS) = 14.59  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.97 FLOW VELOCITY (FEET/SEC.) = 5.13  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

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FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 1957.34 DOWNSTREAM (FEET) = 1244.16  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2498.96 CHANNEL SLOPE = 0.2854  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.484

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	84.87	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 14.59  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.08  
AVERAGE FLOW DEPTH (FEET) = 0.83 TRAVEL TIME (MIN.) = 5.88  
Tc (MIN.) = 44.91  
SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 0.00  
EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.58  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 14.59  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.83 FLOW VELOCITY (FEET/SEC.) = 7.08  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

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FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95  
CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.421  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	199.43	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 14.59  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.97  
AVERAGE FLOW DEPTH (FEET) = 0.99 TRAVEL TIME (MIN.) = 11.30  
Tc (MIN.) = 56.21

SUBAREA AREA (ACRES) = 199.43 SUBAREA RUNOFF (CFS) = 0.00  
EFFECTIVE AREA (ACRES) = 484.08 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 484.1 PEAK FLOW RATE (CFS) = 14.59  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.99 FLOW VELOCITY (FEET/SEC.) = 4.97  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1  
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

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TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION (MIN.) = 56.21  
RAINFALL INTENSITY (INCH/HR) = 0.42  
AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.98  
EFFECTIVE STREAM AREA (ACRES) = 484.08  
TOTAL STREAM AREA (ACRES) = 484.08  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 14.59

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FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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INITIAL SUBAREA FLOW-LENGTH (FEET) = 517.62  
ELEVATION DATA: UPSTREAM (FEET) = 2531.88 DOWNSTREAM (FEET) = 2441.33

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.185  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.122  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						

"CHAPARRAL,BROADLEAF" - 3.46 0.60 1.000 0 12.19  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 1.63  
TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 1.63

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2441.33 DOWNSTREAM(FEET) = 2382.20  
CHANNEL LENGTH THRU SUBAREA(FEET) = 397.30 CHANNEL SLOPE = 0.1488  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.012  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 5.79 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.71  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.63  
AVERAGE FLOW DEPTH(FEET) = 0.50 TRAVEL TIME(MIN.) = 1.82  
Tc(MIN.) = 14.01  
SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 2.15  
EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 3.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.54 FLOW VELOCITY(FEET/SEC.) = 3.86  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2382.20 DOWNSTREAM(FEET) = 2263.77  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.47 CHANNEL SLOPE = 0.0626  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.702  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 54.30 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.71  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.32  
AVERAGE FLOW DEPTH(FEET) = 0.82 TRAVEL TIME(MIN.) = 9.50  
Tc(MIN.) = 23.51  
SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 5.00

EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 5.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.78 FLOW VELOCITY(FEET/SEC.) = 3.20  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2263.77 DOWNSTREAM(FEET) = 1845.23  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1957.31 CHANNEL SLOPE = 0.2138  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.595  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 65.14 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.01  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.07  
AVERAGE FLOW DEPTH(FEET) = 0.63 TRAVEL TIME(MIN.) = 6.43  
Tc(MIN.) = 29.94  
SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 5.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.62 FLOW VELOCITY(FEET/SEC.) = 5.06  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.545  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 78.52 0.60 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.85  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.68  
AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 6.01  
Tc(MIN.) = 35.95  
SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 5.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 4.68  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.484  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 70.48 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.85  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.52  
AVERAGE FLOW DEPTH(FEET) = 0.74 TRAVEL TIME(MIN.) = 9.05  
Tc(MIN.) = 44.99  
SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 5.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 3.52  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.444  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 232.20 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.85  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.60  
AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 7.05  
Tc(MIN.) = 52.04  
SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 5.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 4.60  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.392  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 110.82 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.85  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.52  
AVERAGE FLOW DEPTH(FEET) = 0.74 TRAVEL TIME(MIN.) = 12.15  
Tc(MIN.) = 64.19  
SUBAREA AREA(ACRES) = 110.82 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 620.71 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 620.7 PEAK FLOW RATE (CFS) = 5.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.74 FLOW VELOCITY (FEET/SEC.) = 3.52  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 64.19  
 RAINFALL INTENSITY (INCH/HR) = 0.39  
 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 1.00  
 EFFECTIVE STREAM AREA (ACRES) = 620.71  
 TOTAL STREAM AREA (ACRES) = 620.71  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 5.85

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.59	56.21	0.421	0.60 ( 0.59)	0.98	484.1	11900.00
2	5.85	64.19	0.392	0.60 ( 0.60)	1.00	620.7	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.08	56.21	0.421	0.60 ( 0.60)	0.99	1027.6	11900.00
2	19.46	64.19	0.392	0.60 ( 0.60)	0.99	1104.8	11910.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE (CFS) = 20.08 Tc (MIN.) = 56.21  
 EFFECTIVE AREA (ACRES) = 1027.65 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA (ACRES) = 1104.8  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11920.00 TO NODE 11921.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM (FEET) = 873.95 DOWNSTREAM (FEET) = 827.94  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1417.25 CHANNEL SLOPE = 0.0325  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.394  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 107.47 0.60 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 20.08  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.41  
 AVERAGE FLOW DEPTH (FEET) = 1.40 TRAVEL TIME (MIN.) = 6.93  
 Tc (MIN.) = 63.14  
 SUBAREA AREA (ACRES) = 107.47 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 1135.12 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 1212.3 PEAK FLOW RATE (CFS) = 20.08  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.40 FLOW VELOCITY (FEET/SEC.) = 3.41  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM (FEET) = 827.94 DOWNSTREAM (FEET) = 753.55  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1886.43 CHANNEL SLOPE = 0.0394  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.379

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 344.27 0.60 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 20.08  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.66  
 AVERAGE FLOW DEPTH (FEET) = 1.35 TRAVEL TIME (MIN.) = 8.60  
 Tc (MIN.) = 71.74  
 SUBAREA AREA (ACRES) = 344.27 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 1479.39 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 1556.5 PEAK FLOW RATE (CFS) = 20.08  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.35 FLOW VELOCITY (FEET/SEC.) = 3.66

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 753.55 DOWNSTREAM(FEET) = 641.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.88 CHANNEL SLOPE = 0.0391  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.355

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.08

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.65

AVERAGE FLOW DEPTH(FEET) = 1.36 TRAVEL TIME(MIN.) = 13.08

Tc(MIN.) = 84.82

SUBAREA AREA(ACRES) = 165.18 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 1644.57 AREA-AVERAGED Fm(INCH/HR) = 0.60

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 1721.7 PEAK FLOW RATE(CFS) = 20.08

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.36 FLOW VELOCITY(FEET/SEC.) = 3.65

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11923.00 = 19034.16 FEET.

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FLOW PROCESS FROM NODE 11923.00 TO NODE 11924.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 641.58 DOWNSTREAM(FEET) = 579.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1844.02 CHANNEL SLOPE = 0.0335  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.339

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	433.73	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.08

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.45

AVERAGE FLOW DEPTH(FEET) = 1.39 TRAVEL TIME(MIN.) = 8.91

Tc(MIN.) = 93.73

SUBAREA AREA(ACRES) = 433.73 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 2078.30 AREA-AVERAGED Fm(INCH/HR) = 0.60

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 2155.4 PEAK FLOW RATE(CFS) = 20.08

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.39 FLOW VELOCITY(FEET/SEC.) = 3.45

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11924.00 = 20878.18 FEET.

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FLOW PROCESS FROM NODE 11924.00 TO NODE 11925.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 579.89 DOWNSTREAM(FEET) = 494.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2756.15 CHANNEL SLOPE = 0.0311  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.313

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	265.42	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.08

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.35

AVERAGE FLOW DEPTH(FEET) = 1.41 TRAVEL TIME(MIN.) = 13.73

Tc(MIN.) = 107.46

SUBAREA AREA(ACRES) = 265.42 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 2343.72 AREA-AVERAGED Fm(INCH/HR) = 0.60

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 2420.9 PEAK FLOW RATE(CFS) = 20.08

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.41 FLOW VELOCITY(FEET/SEC.) = 3.35

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11925.00 = 23634.33 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11925.00 TO NODE 11926.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 494.12 DOWNSTREAM(FEET) = 458.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1922.70 CHANNEL SLOPE = 0.0186  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.292  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 97.46 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 20.08  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 2.75  
 AVERAGE FLOW DEPTH (FEET) = 1.56 TRAVEL TIME (MIN.) = 11.64  
 Tc (MIN.) = 119.10  
 SUBAREA AREA (ACRES) = 97.46 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 2441.18 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 2518.3 PEAK FLOW RATE (CFS) = 20.08  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.56 FLOW VELOCITY (FEET/SEC.) = 2.75  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11926.00 = 25557.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 51  
 -----

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW <<<<<  
 >>>> TRAVELTIME THRU SUBAREA (EXISTING ELEMENT) <<<<<  
 -----

ELEVATION DATA: UPSTREAM (FEET) = 458.40 DOWNSTREAM (FEET) = 399.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2710.13 CHANNEL SLOPE = 0.0219  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.277  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 53.83 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 20.08  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 2.94  
 AVERAGE FLOW DEPTH (FEET) = 1.51 TRAVEL TIME (MIN.) = 15.34  
 Tc (MIN.) = 134.44  
 SUBAREA AREA (ACRES) = 53.83 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 2495.01 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 2572.1 PEAK FLOW RATE (CFS) = 20.08  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.51 FLOW VELOCITY (FEET/SEC.) = 2.94  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 28267.16 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 10  
 -----

>>>> MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1  
 -----

>>>> DEFINE MEMORY BANK # 1 <<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: P401XX02.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26.02	43.27	0.60 ( 0.60)	1.00	607.9	40130.00
2	25.27	47.99	0.60 ( 0.60)	1.00	654.2	40100.00
TOTAL AREA (ACRES) =			654.2			

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20.08	134.44	0.277	0.60 ( 0.60)	1.00	2495.0	11900.00
2	19.46	143.09	0.269	0.60 ( 0.60)	1.00	2572.1	11910.00
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 =			28267.16 FEET.				

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26.02	43.27	0.493	0.60 ( 0.60)	1.00	607.9	40130.00
2	25.27	47.99	0.466	0.60 ( 0.60)	1.00	654.2	40100.00
LONGEST FLOWPATH FROM NODE 40100.00 TO NODE 11927.00 =			10245.00 FEET.				

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.54	43.27	0.493	0.60 ( 0.60)	1.00	1411.0	40130.00
2	37.34	47.99	0.466	0.60 ( 0.60)	1.00	1544.9	40100.00
3	35.09	134.44	0.277	0.60 ( 0.60)	1.00	3149.2	11900.00
4	34.04	143.09	0.269	0.60 ( 0.60)	1.00	3226.4	11910.00
TOTAL AREA (ACRES) =			3226.4				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 37.54 Tc (MIN.) = 43.272  
 EFFECTIVE AREA (ACRES) = 1410.97 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3226.4  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 28267.16 FEET.

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*****
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 12
-----
>>>>CLEAR MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.50 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 399.00 DOWNSTREAM(FEET) = 384.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 986.26 CHANNEL SLOPE = 0.0152
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 37.54
FLOW VELOCITY(FEET/SEC.) = 2.98 FLOW DEPTH(FEET) = 2.05
TRAVEL TIME(MIN.) = 5.51 Tc(MIN.) = 48.78
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.50 = 29253.42 FEET.
*****
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 48.78
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.462
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 2.40 0.60 1.000 -
USER-DEFINED - 1.70 0.60 1.000 -
USER-DEFINED - 1.50 0.60 1.000 -
USER-DEFINED - 1.30 0.60 1.000 -
USER-DEFINED - 0.90 0.60 1.000 -
USER-DEFINED - 0.60 0.60 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 8.40 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1419.37 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3234.8 PEAK FLOW RATE(CFS) = 37.54
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
*****
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 48.78
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.462
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.01 0.60 0.984 -

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LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.30 0.60 1.000 -
USER-DEFINED - 0.10 0.60 1.000 -
USER-DEFINED - 0.10 0.60 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 0.50 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1419.87 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3235.2 PEAK FLOW RATE(CFS) = 37.54
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
*****
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 48.78
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.462
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.80 0.60 1.000 -
USER-DEFINED - 0.70 0.60 1.000 -
USER-DEFINED - 0.20 0.60 1.000 -
USER-DEFINED - 0.20 0.60 0.000 -
USER-DEFINED - 0.10 0.60 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.900
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 2.00 SUBAREA RUNOFF(CFS) = 0.08
EFFECTIVE AREA(ACRES) = 1421.87 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3237.2 PEAK FLOW RATE(CFS) = 37.54
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
*****
FLOW PROCESS FROM NODE 11927.50 TO NODE 11928.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 384.00 DOWNSTREAM(FEET) = 359.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.19 CHANNEL SLOPE = 0.0386
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.448
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.01 0.60 0.984 -

```



SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.984  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 37.79  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.25  
 AVERAGE FLOW DEPTH(FEET) = 1.72 TRAVEL TIME(MIN.) = 2.54  
 Tc(MIN.) = 51.32  
 SUBAREA AREA(ACRES) = 78.01 SUBAREA RUNOFF(CFS) = 0.50  
 EFFECTIVE AREA(ACRES) = 1499.88 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 3315.3 PEAK FLOW RATE(CFS) = 37.54  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.72 FLOW VELOCITY(FEET/SEC.) = 4.23  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29900.61 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11928.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 51.32  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.448  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.10	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 1501.58 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 3317.0 PEAK FLOW RATE(CFS) = 37.54  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 359.00 DOWNSTREAM(FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1322.66 CHANNEL SLOPE = 0.0131  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.405  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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USER-DEFINED - 8.18 0.60 0.890 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 37.70  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.84  
 AVERAGE FLOW DEPTH(FEET) = 2.10 TRAVEL TIME(MIN.) = 7.76  
 Tc(MIN.) = 59.07  
 SUBAREA AREA(ACRES) = 8.18 SUBAREA RUNOFF(CFS) = 0.33  
 EFFECTIVE AREA(ACRES) = 1509.76 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 3325.1 PEAK FLOW RATE(CFS) = 37.54  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.10 FLOW VELOCITY(FEET/SEC.) = 2.83  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 31223.27 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 59.07  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.405  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.90	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 2.50 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 1512.26 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 3327.6 PEAK FLOW RATE(CFS) = 37.54  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 10

-----  
 >>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 15.1

-----  
 >>>>DEFINE MEMORY BANK # 1 <<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S18X02.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	368.65	67.72	0.60 ( 0.60)	0.99	5288.9	11831.00
2	465.61	93.02	0.60 ( 0.60)	0.99	7637.9	11530.00
3	535.78	108.89	0.60 ( 0.60)	0.99	9918.6	11701.00
4	556.64	113.96	0.60 ( 0.60)	0.99	10678.6	11000.00
5	648.54	131.44	0.60 ( 0.60)	1.00	14702.7	11350.00
6	669.95	137.84	0.60 ( 0.60)	1.00	16212.5	10850.00
7	634.45	145.72	0.60 ( 0.60)	1.00	17563.5	10800.00
8	586.10	152.52	0.60 ( 0.60)	1.00	18539.6	11220.00
9	519.45	163.12	0.60 ( 0.60)	1.00	19646.2	10910.00
10	469.53	171.24	0.60 ( 0.60)	1.00	20293.7	10630.00
11	347.01	209.19	0.60 ( 0.60)	1.00	24538.0	10600.00
12	331.29	220.41	0.60 ( 0.60)	1.00	26174.2	11600.00
13	322.91	238.24	0.60 ( 0.60)	1.00	28033.8	10710.00
14	317.31	246.05	0.60 ( 0.60)	1.00	28544.1	10410.00
15	303.17	267.47	0.60 ( 0.60)	1.00	29747.0	10700.00
16	301.61	284.97	0.60 ( 0.60)	1.00	30768.1	10200.00
17	295.49	303.27	0.60 ( 0.60)	1.00	31516.6	10320.00
18	293.33	307.96	0.60 ( 0.60)	1.00	31656.1	10300.00
19	283.27	326.33	0.60 ( 0.60)	1.00	31924.4	10210.00
20	238.59	442.68	0.60 ( 0.60)	1.00	32916.6	10100.00
TOTAL AREA (ACRES) =						32916.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<<  
=====

PEAK FLOWRATE TABLE FILE NAME: S25X02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	125.40	141.27	0.60 ( 0.59)	0.99	4854.0	12500.00
2	161.45	169.35	0.60 ( 0.59)	0.99	6554.4	12300.00
3	161.10	174.44	0.60 ( 0.59)	0.99	6936.3	12330.00
4	157.88	201.19	0.60 ( 0.59)	0.98	8762.3	12410.00
5	155.88	214.55	0.60 ( 0.59)	0.98	9659.4	12400.00
6	155.08	218.12	0.60 ( 0.59)	0.98	9844.2	12211.00
7	166.76	226.18	0.60 ( 0.59)	0.98	10504.5	12201.00
8	174.86	233.49	0.60 ( 0.58)	0.97	10953.4	12261.00
9	174.65	235.08	0.60 ( 0.58)	0.98	11005.7	12111.00
10	174.14	239.69	0.60 ( 0.59)	0.98	11204.7	12231.00
11	171.80	258.00	0.60 ( 0.59)	0.98	11864.4	12101.10
12	151.73	298.09	0.60 ( 0.59)	0.98	13091.3	12010.00
13	99.71	374.11	0.60 ( 0.59)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =						13237.1

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	125.40	141.27	0.60 ( 0.59)	0.99	4854.0	12500.00

2	161.45	169.35	0.60 ( 0.59)	0.99	6554.4	12300.00
3	161.10	174.44	0.60 ( 0.59)	0.99	6936.3	12330.00
4	157.88	201.19	0.60 ( 0.59)	0.98	8762.3	12410.00
5	155.88	214.55	0.60 ( 0.59)	0.98	9659.4	12400.00
6	155.08	218.12	0.60 ( 0.59)	0.98	9844.2	12211.00
7	166.76	226.18	0.60 ( 0.59)	0.98	10504.5	12201.00
8	174.86	233.49	0.60 ( 0.58)	0.97	10953.4	12261.00
9	174.65	235.08	0.60 ( 0.58)	0.98	11005.7	12111.00
10	174.14	239.69	0.60 ( 0.59)	0.98	11204.7	12231.00
11	171.80	258.00	0.60 ( 0.59)	0.98	11864.4	12101.10
12	151.73	298.09	0.60 ( 0.59)	0.98	13091.3	12010.00
13	99.71	374.11	0.60 ( 0.59)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =						13237.1

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	125.40	141.27	0.271	0.60 ( 0.59)	0.99	4854.0	12500.00
2	161.45	169.35	0.246	0.60 ( 0.59)	0.99	6554.4	12300.00
3	161.10	174.44	0.241	0.60 ( 0.59)	0.99	6936.3	12330.00
4	157.88	201.19	0.229	0.60 ( 0.59)	0.98	8762.3	12410.00
5	155.88	214.55	0.225	0.60 ( 0.59)	0.98	9659.4	12400.00
6	155.08	218.12	0.224	0.60 ( 0.59)	0.98	9844.2	12211.00
7	166.76	226.18	0.222	0.60 ( 0.59)	0.98	10504.5	12201.00
8	174.86	233.49	0.219	0.60 ( 0.58)	0.97	10953.4	12261.00
9	174.65	235.08	0.219	0.60 ( 0.58)	0.98	11005.7	12111.00
10	174.14	239.69	0.217	0.60 ( 0.59)	0.98	11204.7	12231.00
11	171.80	258.00	0.212	0.60 ( 0.59)	0.98	11864.4	12101.10
12	151.73	298.09	0.199	0.60 ( 0.59)	0.98	13091.3	12010.00
13	99.71	374.11	0.178	0.60 ( 0.59)	0.98	13237.1	12000.00
LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 =							77156.98 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	368.65	67.72	0.386	0.60 ( 0.60)	0.99	5288.9	11831.00
2	465.61	93.02	0.340	0.60 ( 0.60)	0.99	7637.9	11530.00
3	535.78	108.89	0.311	0.60 ( 0.60)	0.99	9918.6	11701.00
4	556.64	113.96	0.301	0.60 ( 0.60)	0.99	10678.6	11000.00
5	648.54	131.44	0.280	0.60 ( 0.60)	1.00	14702.7	11350.00
6	669.95	137.84	0.274	0.60 ( 0.60)	1.00	16212.5	10850.00
7	634.45	145.72	0.267	0.60 ( 0.60)	1.00	17563.5	10800.00
8	586.10	152.52	0.261	0.60 ( 0.60)	1.00	18539.6	11220.00
9	519.45	163.12	0.251	0.60 ( 0.60)	1.00	19646.2	10910.00
10	469.53	171.24	0.244	0.60 ( 0.60)	1.00	20293.7	10630.00
11	347.01	209.19	0.227	0.60 ( 0.60)	1.00	24538.0	10600.00
12	331.29	220.41	0.223	0.60 ( 0.60)	1.00	26174.2	11600.00
13	322.91	238.24	0.218	0.60 ( 0.60)	1.00	28033.8	10710.00
14	317.31	246.05	0.215	0.60 ( 0.60)	1.00	28544.1	10410.00
15	303.17	267.47	0.209	0.60 ( 0.60)	1.00	29747.0	10700.00
16	301.61	284.97	0.203	0.60 ( 0.60)	1.00	30768.1	10200.00
17	295.49	303.27	0.198	0.60 ( 0.60)	1.00	31516.6	10320.00

18 293.33 307.96 0.196 0.60( 0.60) 1.00 31656.1 10300.00  
 19 283.27 326.33 0.190 0.60( 0.60) 1.00 31924.4 10210.00  
 20 238.59 442.68 0.171 0.60( 0.60) 1.00 32916.6 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	454.34	67.72	0.386	0.60( 0.60)	0.99	7615.8	11831.00
2	569.38	93.02	0.340	0.60( 0.60)	0.99	10834.1	11530.00
3	646.68	108.89	0.311	0.60( 0.60)	0.99	13660.2	11701.00
4	669.16	113.96	0.301	0.60( 0.60)	0.99	14594.1	11000.00
5	769.03	131.44	0.280	0.60( 0.60)	0.99	19219.0	11350.00
6	793.71	137.84	0.274	0.60( 0.60)	0.99	20948.8	10850.00
7	779.92	141.27	0.271	0.60( 0.60)	0.99	21653.9	12500.00
8	765.57	145.72	0.267	0.60( 0.60)	0.99	22687.0	10800.00
9	725.95	152.52	0.261	0.60( 0.60)	0.99	24074.8	11220.00
10	672.92	163.12	0.251	0.60( 0.60)	0.99	25823.7	10910.00
11	642.64	169.35	0.246	0.60( 0.60)	0.99	26696.9	12300.00
12	630.86	171.24	0.244	0.60( 0.60)	0.99	26990.1	10630.00
13	620.31	174.44	0.241	0.60( 0.60)	0.99	27587.8	12330.00
14	530.72	201.19	0.229	0.60( 0.60)	0.99	32405.3	12410.00
15	503.69	209.19	0.227	0.60( 0.60)	0.99	33837.6	10600.00
16	495.39	214.55	0.225	0.60( 0.60)	0.99	34978.5	12400.00
17	489.58	218.12	0.224	0.60( 0.59)	0.99	35684.0	12211.00
18	489.69	220.41	0.223	0.60( 0.59)	0.99	36206.2	11600.00
19	495.34	226.18	0.222	0.60( 0.59)	0.99	37280.7	12201.00
20	500.01	233.49	0.219	0.60( 0.59)	0.99	38491.2	12261.00
21	499.05	235.08	0.219	0.60( 0.59)	0.99	38709.5	12111.00
22	497.21	238.24	0.218	0.60( 0.59)	0.99	39176.2	10710.00
23	496.02	239.69	0.217	0.60( 0.59)	0.99	39332.8	12231.00
24	490.64	246.05	0.215	0.60( 0.59)	0.99	39977.8	10410.00
25	481.22	258.00	0.212	0.60( 0.59)	0.99	41079.8	12101.10
26	470.23	267.47	0.209	0.60( 0.59)	0.99	41901.2	10700.00
27	459.92	284.97	0.203	0.60( 0.59)	0.99	43457.9	10200.00
28	448.96	298.09	0.199	0.60( 0.59)	0.99	44396.1	12010.00
29	443.68	303.27	0.198	0.60( 0.59)	0.99	44617.8	10320.00
30	438.31	307.96	0.196	0.60( 0.59)	0.99	44766.3	10300.00
31	415.69	326.33	0.190	0.60( 0.60)	0.99	45069.8	10210.00
32	364.64	374.11	0.178	0.60( 0.60)	0.99	45568.9	12000.00
33	333.92	442.68	0.171	0.60( 0.60)	0.99	46153.7	10100.00

TOTAL AREA(ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 793.71 Tc(MIN.) = 137.844  
 EFFECTIVE AREA(ACRES) = 20948.83 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 46153.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.273

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.60	0.987	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 793.73  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.69  
 AVERAGE FLOW DEPTH(FEET) = 5.86 TRAVEL TIME(MIN.) = 1.15  
 Tc(MIN.) = 139.00  
 SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 0.05  
 EFFECTIVE AREA(ACRES) = 20963.20 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 793.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.86 FLOW VELOCITY(FEET/SEC.) = 7.69  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	454.34	69.05	0.384	0.60( 0.60)	0.99	7630.2	11831.00
2	569.38	94.27	0.338	0.60( 0.60)	0.99	10848.4	11530.00
3	646.68	110.11	0.308	0.60( 0.60)	0.99	13674.5	11701.00
4	669.16	115.16	0.299	0.60( 0.60)	0.99	14608.5	11000.00
5	769.03	132.60	0.279	0.60( 0.60)	0.99	19233.4	11350.00
6	793.71	139.00	0.273	0.60( 0.60)	0.99	20963.2	10850.00
7	779.92	142.43	0.270	0.60( 0.60)	0.99	21668.2	12500.00
8	765.57	146.88	0.266	0.60( 0.60)	0.99	22701.4	10800.00
9	725.95	153.70	0.260	0.60( 0.60)	0.99	24089.2	11220.00
10	672.92	164.33	0.250	0.60( 0.60)	0.99	25838.1	10910.00
11	642.64	170.56	0.244	0.60( 0.60)	0.99	26711.3	12300.00
12	630.86	172.47	0.243	0.60( 0.60)	0.99	27004.5	10630.00
13	620.31	175.67	0.240	0.60( 0.60)	0.99	27602.2	12330.00
14	530.72	202.46	0.229	0.60( 0.60)	0.99	32419.7	12410.00
15	503.69	210.48	0.227	0.60( 0.60)	0.99	33852.0	10600.00
16	495.39	215.85	0.225	0.60( 0.60)	0.99	34992.9	12400.00
17	489.58	219.42	0.224	0.60( 0.59)	0.99	35698.4	12211.00
18	489.69	221.71	0.223	0.60( 0.59)	0.99	36220.6	11600.00
19	495.34	227.48	0.221	0.60( 0.59)	0.99	37295.0	12201.00
20	500.01	234.78	0.219	0.60( 0.59)	0.99	38505.6	12261.00
21	499.05	236.37	0.218	0.60( 0.59)	0.99	38723.9	12111.00
22	497.21	239.54	0.217	0.60( 0.59)	0.99	39190.6	10710.00

23	496.02	240.98	0.217	0.60 ( 0.59)	0.99	39347.2	12231.00
24	490.64	247.35	0.215	0.60 ( 0.59)	0.99	39992.2	10410.00
25	481.22	259.31	0.211	0.60 ( 0.59)	0.99	41094.2	12101.10
26	470.23	268.79	0.208	0.60 ( 0.59)	0.99	41915.6	10700.00
27	459.92	286.29	0.203	0.60 ( 0.59)	0.99	43472.2	10200.00
28	448.96	299.42	0.199	0.60 ( 0.59)	0.99	44410.5	12010.00
29	443.68	304.60	0.197	0.60 ( 0.59)	0.99	44632.2	10320.00
30	438.31	309.30	0.196	0.60 ( 0.59)	0.99	44780.7	10300.00
31	415.69	327.68	0.190	0.60 ( 0.60)	0.99	45084.2	10210.00
32	364.64	375.51	0.178	0.60 ( 0.60)	0.99	45583.3	12000.00
33	333.92	444.11	0.170	0.60 ( 0.60)	0.99	46168.0	10100.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	37.54	59.07	0.405	0.60 ( 0.60)	1.00	1512.3	40130.00
2	37.34	63.82	0.393	0.60 ( 0.60)	1.00	1646.2	40100.00
3	35.09	150.49	0.263	0.60 ( 0.60)	1.00	3250.5	11900.00
4	34.04	159.28	0.255	0.60 ( 0.60)	1.00	3327.6	11910.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 31223.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	447.92	59.07	0.405	0.60 ( 0.60)	0.99	8040.4	40130.00
2	467.58	63.82	0.393	0.60 ( 0.60)	0.99	8698.7	40100.00
3	491.55	69.05	0.384	0.60 ( 0.60)	0.99	9373.2	11831.00
4	605.93	94.27	0.338	0.60 ( 0.60)	0.99	13058.3	11530.00
5	682.82	110.11	0.308	0.60 ( 0.60)	0.99	16177.5	11701.00
6	705.17	115.16	0.299	0.60 ( 0.60)	0.99	17205.0	11000.00
7	804.59	132.60	0.279	0.60 ( 0.60)	0.99	22152.7	11350.00
8	829.10	139.00	0.273	0.60 ( 0.60)	0.99	24000.9	10850.00
9	815.22	142.43	0.270	0.60 ( 0.60)	0.99	24769.4	12500.00
10	800.75	146.88	0.266	0.60 ( 0.60)	0.99	25885.1	10800.00
11	779.66	150.49	0.263	0.60 ( 0.60)	0.99	26687.4	11900.00
12	760.65	153.70	0.260	0.60 ( 0.60)	0.99	27367.8	11220.00
13	732.14	159.28	0.255	0.60 ( 0.60)	0.99	28335.4	11910.00
14	706.35	164.33	0.250	0.60 ( 0.60)	0.99	29165.7	10910.00
15	675.33	170.56	0.244	0.60 ( 0.60)	0.99	30038.9	12300.00
16	663.31	172.47	0.243	0.60 ( 0.60)	0.99	30332.2	10630.00
17	652.38	175.67	0.240	0.60 ( 0.60)	0.99	30929.8	12330.00
18	561.34	202.46	0.229	0.60 ( 0.60)	0.99	35747.4	12410.00
19	533.97	210.48	0.227	0.60 ( 0.60)	0.99	37179.6	10600.00
20	525.44	215.85	0.225	0.60 ( 0.60)	0.99	38320.6	12400.00
21	519.49	219.42	0.224	0.60 ( 0.60)	0.99	39026.0	12211.00
22	519.50	221.71	0.223	0.60 ( 0.60)	0.99	39548.2	11600.00
23	524.91	227.48	0.221	0.60 ( 0.59)	0.99	40622.7	12201.00
24	529.28	234.78	0.219	0.60 ( 0.59)	0.99	41833.3	12261.00
25	528.26	236.37	0.218	0.60 ( 0.59)	0.99	42051.5	12111.00
26	526.28	239.54	0.217	0.60 ( 0.59)	0.99	42518.2	10710.00
27	525.03	240.98	0.217	0.60 ( 0.59)	0.99	42674.8	12231.00
28	519.39	247.35	0.215	0.60 ( 0.59)	0.99	43319.9	10410.00
29	509.47	259.31	0.211	0.60 ( 0.59)	0.99	44421.8	12101.10
30	498.09	268.79	0.208	0.60 ( 0.59)	0.99	45243.2	10700.00
31	487.05	286.29	0.203	0.60 ( 0.60)	0.99	46799.9	10200.00
32	475.54	299.42	0.199	0.60 ( 0.60)	0.99	47738.1	12010.00
33	470.05	304.60	0.197	0.60 ( 0.60)	0.99	47959.9	10320.00

34	464.49	309.30	0.196	0.60 ( 0.60)	0.99	48108.4	10300.00
35	441.09	327.68	0.190	0.60 ( 0.60)	0.99	48411.9	10210.00
36	388.46	375.51	0.178	0.60 ( 0.60)	0.99	48910.9	12000.00
37	356.70	444.11	0.170	0.60 ( 0.60)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 829.10 Tc (MIN.) = 138.997  
EFFECTIVE AREA (ACRES) = 24000.90 AREA-AVERAGED Fm (INCH/HR) = 0.60  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49495.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 49495.7 TC (MIN.) = 139.00  
EFFECTIVE AREA (ACRES) = 24000.90 AREA-AVERAGED Fm (INCH/HR) = 0.60  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.995  
PEAK FLOW RATE (CFS) = 829.10

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	447.92	59.07	0.405	0.60 ( 0.60)	0.99	8040.4	40130.00
2	467.58	63.82	0.393	0.60 ( 0.60)	0.99	8698.7	40100.00
3	491.55	69.05	0.384	0.60 ( 0.60)	0.99	9373.2	11831.00
4	605.93	94.27	0.338	0.60 ( 0.60)	0.99	13058.3	11530.00
5	682.82	110.11	0.308	0.60 ( 0.60)	0.99	16177.5	11701.00
6	705.17	115.16	0.299	0.60 ( 0.60)	0.99	17205.0	11000.00
7	804.59	132.60	0.279	0.60 ( 0.60)	0.99	22152.7	11350.00
8	829.10	139.00	0.273	0.60 ( 0.60)	0.99	24000.9	10850.00
9	815.22	142.43	0.270	0.60 ( 0.60)	0.99	24769.4	12500.00
10	800.75	146.88	0.266	0.60 ( 0.60)	0.99	25885.1	10800.00
11	779.66	150.49	0.263	0.60 ( 0.60)	0.99	26687.4	11900.00
12	760.65	153.70	0.260	0.60 ( 0.60)	0.99	27367.8	11220.00
13	732.14	159.28	0.255	0.60 ( 0.60)	0.99	28335.4	11910.00
14	706.35	164.33	0.250	0.60 ( 0.60)	0.99	29165.7	10910.00
15	675.33	170.56	0.244	0.60 ( 0.60)	0.99	30038.9	12300.00
16	663.31	172.47	0.243	0.60 ( 0.60)	0.99	30332.2	10630.00
17	652.38	175.67	0.240	0.60 ( 0.60)	0.99	30929.8	12330.00
18	561.34	202.46	0.229	0.60 ( 0.60)	0.99	35747.4	12410.00
19	533.97	210.48	0.227	0.60 ( 0.60)	0.99	37179.6	10600.00
20	525.44	215.85	0.225	0.60 ( 0.60)	0.99	38320.6	12400.00
21	519.49	219.42	0.224	0.60 ( 0.60)	0.99	39026.0	12211.00
22	519.50	221.71	0.223	0.60 ( 0.60)	0.99	39548.2	11600.00
23	524.91	227.48	0.221	0.60 ( 0.59)	0.99	40622.7	12201.00
24	529.28	234.78	0.219	0.60 ( 0.59)	0.99	41833.3	12261.00
25	528.26	236.37	0.218	0.60 ( 0.59)	0.99	42051.5	12111.00
26	526.28	239.54	0.217	0.60 ( 0.59)	0.99	42518.2	10710.00
27	525.03	240.98	0.217	0.60 ( 0.59)	0.99	42674.8	12231.00
28	519.39	247.35	0.215	0.60 ( 0.59)	0.99	43319.9	10410.00
29	509.47	259.31	0.211	0.60 ( 0.59)	0.99	44421.8	12101.10
30	498.09	268.79	0.208	0.60 ( 0.59)	0.99	45243.2	10700.00
31	487.05	286.29	0.203	0.60 ( 0.60)	0.99	46799.9	10200.00
32	475.54	299.42	0.199	0.60 ( 0.60)	0.99	47738.1	12010.00
33	470.05	304.60	0.197	0.60 ( 0.60)	0.99	47959.9	10320.00
34	464.49	309.30	0.196	0.60 ( 0.60)	0.99	48108.4	10300.00
35	441.09	327.68	0.190	0.60 ( 0.60)	0.99	48411.9	10210.00
36	388.46	375.51	0.178	0.60 ( 0.60)	0.99	48910.9	12000.00

37 356.70 444.11 0.170 0.60 ( 0.60) 0.99 49495.7 10100.00

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=====  
END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S26- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV26.DAT  
TIME/DATE OF STUDY: 11:27 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.873
- 2) 10.00; 1.249
- 3) 15.00; 0.951
- 4) 20.00; 0.777
- 5) 25.00; 0.669
- 6) 30.00; 0.593
- 7) 40.00; 0.511
- 8) 50.00; 0.454
- 9) 60.00; 0.400
- 10) 90.00; 0.346
- 11) 120.00; 0.290
- 12) 180.00; 0.236
- 13) 360.00; 0.180
- 14) 1200.00; 0.084

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU02EV19.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	491.55	69.05	0.60 ( 0.60)	0.99	9373.2	11831.00
2	605.93	94.27	0.60 ( 0.60)	0.99	13058.3	11530.00
3	705.17	115.16	0.60 ( 0.60)	0.99	17205.0	11000.00
4	804.59	132.60	0.60 ( 0.60)	0.99	22152.7	11350.00
5	829.10	139.00	0.60 ( 0.60)	0.99	24000.9	10850.00
6	800.75	146.88	0.60 ( 0.60)	0.99	25885.1	10800.00
7	732.14	159.28	0.60 ( 0.60)	0.99	28335.4	11910.00
8	675.33	170.56	0.60 ( 0.60)	0.99	30038.9	12300.00
9	561.34	202.46	0.60 ( 0.60)	0.99	35747.4	12410.00
10	533.97	210.48	0.60 ( 0.60)	0.99	37179.6	10600.00
11	524.91	227.48	0.60 ( 0.59)	0.99	40622.7	12201.00
12	529.28	234.78	0.60 ( 0.59)	0.99	41833.3	12261.00
13	519.39	247.35	0.60 ( 0.59)	0.99	43319.9	10410.00
14	509.47	259.31	0.60 ( 0.59)	0.99	44421.8	12101.10
15	498.09	268.79	0.60 ( 0.59)	0.99	45243.2	10700.00
16	487.05	286.29	0.60 ( 0.60)	0.99	46799.9	10200.00
17	475.54	299.42	0.60 ( 0.60)	0.99	47738.1	12010.00
18	441.09	327.68	0.60 ( 0.60)	0.99	48411.9	10210.00
19	388.46	375.51	0.60 ( 0.60)	0.99	48910.9	12000.00
20	356.70	444.11	0.60 ( 0.60)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	491.55	69.05	0.60 ( 0.60)	0.99	9373.2	11831.00
2	605.93	94.27	0.60 ( 0.60)	0.99	13058.3	11530.00
3	705.17	115.16	0.60 ( 0.60)	0.99	17205.0	11000.00
4	804.59	132.60	0.60 ( 0.60)	0.99	22152.7	11350.00
5	829.10	139.00	0.60 ( 0.60)	0.99	24000.9	10850.00
6	800.75	146.88	0.60 ( 0.60)	0.99	25885.1	10800.00
7	732.14	159.28	0.60 ( 0.60)	0.99	28335.4	11910.00
8	675.33	170.56	0.60 ( 0.60)	0.99	30038.9	12300.00
9	561.34	202.46	0.60 ( 0.60)	0.99	35747.4	12410.00
10	533.97	210.48	0.60 ( 0.60)	0.99	37179.6	10600.00
11	524.91	227.48	0.60 ( 0.59)	0.99	40622.7	12201.00
12	529.28	234.78	0.60 ( 0.59)	0.99	41833.3	12261.00
13	519.39	247.35	0.60 ( 0.59)	0.99	43319.9	10410.00

14	509.47	259.31	0.60	( 0.59)	0.99	44421.8	12101.10
15	498.09	268.79	0.60	( 0.59)	0.99	45243.2	10700.00
16	487.05	286.29	0.60	( 0.60)	0.99	46799.9	10200.00
17	475.54	299.42	0.60	( 0.60)	0.99	47738.1	12010.00
18	441.09	327.68	0.60	( 0.60)	0.99	48411.9	10210.00
19	388.46	375.51	0.60	( 0.60)	0.99	48910.9	12000.00
20	356.70	444.11	0.60	( 0.60)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 341.63 DOWNSTREAM (FEET) = 325.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1467.93 CHANNEL SLOPE = 0.0113  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.271

S26-01

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.11	0.60	0.700	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 829.61

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.77

AVERAGE FLOW DEPTH (FEET) = 5.32 TRAVEL TIME (MIN.) = 2.50

Tc (MIN.) = 141.50

SUBAREA AREA (ACRES) = 14.11 SUBAREA RUNOFF (CFS) = 1.03

EFFECTIVE AREA (ACRES) = 24015.01 AREA-AVERAGED Fm (INCH/HR) = 0.60

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 49509.8 PEAK FLOW RATE (CFS) = 829.10

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 5.32 FLOW VELOCITY (FEET/SEC.) = 9.76

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3002EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

Local Offsite

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	8.00	20.74	0.60 ( 0.59)	0.99	48.4	600.00

TOTAL AREA (ACRES) = 48.4

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	491.55	71.90	0.379	0.60 ( 0.60)	0.99	9387.3	11831.00
2	605.93	96.98	0.333	0.60 ( 0.60)	0.99	13072.4	11530.00
3	705.17	117.77	0.294	0.60 ( 0.60)	0.99	17219.1	11000.00
4	804.59	135.12	0.276	0.60 ( 0.60)	0.99	22166.9	11350.00
5	829.10	141.50	0.271	0.60 ( 0.60)	0.99	24015.0	10850.00
6	800.75	149.41	0.264	0.60 ( 0.60)	0.99	25899.2	10800.00
7	732.14	161.86	0.252	0.60 ( 0.60)	0.99	28349.5	11910.00
8	675.33	173.20	0.242	0.60 ( 0.60)	0.99	30053.0	12300.00
9	561.34	205.22	0.228	0.60 ( 0.60)	0.99	35761.5	12410.00
10	533.97	213.28	0.226	0.60 ( 0.60)	0.99	37193.7	10600.00
11	524.91	230.29	0.220	0.60 ( 0.59)	0.99	40636.8	12201.00
12	529.28	237.59	0.218	0.60 ( 0.59)	0.99	41847.4	12261.00
13	519.39	250.16	0.214	0.60 ( 0.59)	0.99	43334.0	10410.00
14	509.47	262.14	0.210	0.60 ( 0.59)	0.99	44435.9	12101.10
15	498.09	271.64	0.207	0.60 ( 0.59)	0.99	45257.3	10700.00
16	487.05	289.15	0.202	0.60 ( 0.60)	0.99	46814.0	10200.00
17	475.54	302.30	0.198	0.60 ( 0.60)	0.99	47752.2	12010.00
18	441.09	330.62	0.189	0.60 ( 0.60)	0.99	48426.0	10210.00
19	388.46	378.54	0.178	0.60 ( 0.60)	0.99	48925.0	12000.00
20	356.70	447.21	0.170	0.60 ( 0.60)	0.99	49509.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	8.00	20.74	0.761	0.60 ( 0.59)	0.99	48.4	600.00

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	293.01	20.74	0.761	0.60 ( 0.60)	0.99	2755.9	600.00
2	491.79	71.90	0.379	0.60 ( 0.60)	0.99	9435.7	11831.00
3	606.14	96.98	0.333	0.60 ( 0.60)	0.99	13120.8	11530.00
4	705.35	117.77	0.294	0.60 ( 0.60)	0.99	17267.5	11000.00
5	804.76	135.12	0.276	0.60 ( 0.60)	0.99	22215.3	11350.00
6	829.27	141.50	0.271	0.60 ( 0.60)	0.99	24063.4	10850.00
7	800.92	149.41	0.264	0.60 ( 0.60)	0.99	25947.6	10800.00
8	732.29	161.86	0.252	0.60 ( 0.60)	0.99	28397.9	11910.00
9	675.48	173.20	0.242	0.60 ( 0.60)	0.99	30101.4	12300.00
10	561.48	205.22	0.228	0.60 ( 0.60)	0.99	35809.9	12410.00
11	534.11	213.28	0.226	0.60 ( 0.60)	0.99	37242.1	10600.00
12	525.05	230.29	0.220	0.60 ( 0.59)	0.99	40685.2	12201.00
13	529.42	237.59	0.218	0.60 ( 0.59)	0.99	41895.8	12261.00
14	519.53	250.16	0.214	0.60 ( 0.59)	0.99	43382.4	10410.00
15	509.60	262.14	0.210	0.60 ( 0.59)	0.99	44484.3	12101.10
16	498.22	271.64	0.207	0.60 ( 0.59)	0.99	45305.7	10700.00
17	487.17	289.15	0.202	0.60 ( 0.60)	0.99	46862.4	10200.00
18	475.66	302.30	0.198	0.60 ( 0.60)	0.99	47800.6	12010.00
19	441.21	330.62	0.189	0.60 ( 0.60)	0.99	48474.4	10210.00
20	388.57	378.54	0.178	0.60 ( 0.60)	0.99	48973.4	12000.00

21 356.81 447.21 0.170 0.60( 0.60) 0.99 49558.2 10100.00  
 TOTAL AREA(ACRES) = 49558.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 829.27 Tc(MIN.) = 141.501  
 EFFECTIVE AREA(ACRES) = 24063.41 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49558.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 325.00 DOWNSTREAM(FEET) = 313.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1377.46 CHANNEL SLOPE = 0.0087  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 829.27  
 FLOW VELOCITY(FEET/SEC.) = 8.85 FLOW DEPTH(FEET) = 5.59  
 TRAVEL TIME(MIN.) = 2.59 Tc(MIN.) = 144.09  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12602.00 = 101245.91 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 313.00 DOWNSTREAM(FEET) = 310.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 312.40 CHANNEL SLOPE = 0.0096  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 829.27  
 FLOW VELOCITY(FEET/SEC.) = 9.18 FLOW DEPTH(FEET) = 5.49  
 TRAVEL TIME(MIN.) = 0.57 Tc(MIN.) = 144.66  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4E02EVRL.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	120.67	10.61	0.60( 0.31)	0.52	147.4	800.00
2	98.94	14.81	0.60( 0.34)	0.57	167.3	818.00
3	87.28	16.53	0.60( 0.35)	0.58	171.0	810.00

Local Area E

TOTAL AREA(ACRES) = 171.0

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	293.01	24.83	0.673	0.60( 0.60)	0.99	2755.9	600.00
2	491.79	75.50	0.372	0.60( 0.60)	0.99	9435.7	11831.00
3	606.14	100.40	0.327	0.60( 0.60)	0.99	13120.8	11530.00
4	705.35	121.06	0.289	0.60( 0.60)	0.99	17267.5	11000.00
5	804.76	138.31	0.274	0.60( 0.60)	0.99	22215.3	11350.00
6	829.27	144.66	0.268	0.60( 0.60)	0.99	24063.4	10850.00
7	800.92	152.59	0.261	0.60( 0.60)	0.99	25947.6	10800.00
8	732.29	165.12	0.249	0.60( 0.60)	0.99	28397.9	11910.00
9	675.48	176.53	0.239	0.60( 0.60)	0.99	30101.4	12300.00
10	561.48	208.70	0.227	0.60( 0.60)	0.99	35809.9	12410.00
11	534.11	216.80	0.225	0.60( 0.60)	0.99	37242.1	10600.00
12	525.05	233.83	0.219	0.60( 0.59)	0.99	40685.2	12201.00
13	529.42	241.12	0.217	0.60( 0.59)	0.99	41895.8	12261.00
14	519.53	253.71	0.213	0.60( 0.59)	0.99	43382.4	10410.00
15	509.60	265.71	0.209	0.60( 0.59)	0.99	44484.3	12101.10
16	498.22	275.22	0.206	0.60( 0.59)	0.99	45305.7	10700.00
17	487.17	292.76	0.201	0.60( 0.60)	0.99	46862.4	10200.00
18	475.66	305.93	0.197	0.60( 0.60)	0.99	47800.6	12010.00
19	441.21	334.32	0.188	0.60( 0.60)	0.99	48474.4	10210.00
20	388.57	382.36	0.177	0.60( 0.60)	0.99	48973.4	12000.00
21	356.81	451.11	0.170	0.60( 0.60)	0.99	49558.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	120.67	10.61	1.213	0.60( 0.31)	0.52	147.4	800.00
2	98.94	14.81	0.962	0.60( 0.34)	0.57	167.3	818.00
3	87.28	16.53	0.898	0.60( 0.35)	0.58	171.0	810.00

LONGEST FLOWPATH FROM NODE 810.00 TO NODE 12603.00 = 3814.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	413.68	10.61	1.213	0.60( 0.56)	0.94	1324.4	800.00
2	391.95	14.81	0.962	0.60( 0.57)	0.95	1811.3	818.00
3	380.30	16.53	0.898	0.60( 0.57)	0.96	2006.0	810.00
4	344.57	24.83	0.673	0.60( 0.58)	0.97	2926.9	600.00
5	516.61	75.50	0.372	0.60( 0.59)	0.99	9606.7	11831.00
6	627.92	100.40	0.327	0.60( 0.59)	0.99	13291.8	11530.00
7	724.63	121.06	0.289	0.60( 0.59)	0.99	17438.5	11000.00
8	823.00	138.31	0.274	0.60( 0.59)	0.99	22386.3	11350.00
9	847.13	144.66	0.268	0.60( 0.59)	0.99	24234.4	10850.00
10	818.30	152.59	0.261	0.60( 0.60)	0.99	26118.6	10800.00
11	748.93	165.12	0.249	0.60( 0.60)	0.99	28568.9	11910.00
12	691.43	176.53	0.239	0.60( 0.60)	0.99	30272.4	12300.00
13	576.63	208.70	0.227	0.60( 0.59)	0.99	35980.9	12410.00



14	549.09	216.80	0.225	0.60	( 0.59)	0.99	37413.1	10600.00
15	539.68	233.83	0.219	0.60	( 0.59)	0.99	40856.2	12201.00
16	543.89	241.12	0.217	0.60	( 0.59)	0.99	42066.8	12261.00
17	533.74	253.71	0.213	0.60	( 0.59)	0.99	43553.4	10410.00
18	523.57	265.71	0.209	0.60	( 0.59)	0.99	44655.3	12101.10
19	511.98	275.22	0.206	0.60	( 0.59)	0.99	45476.7	10700.00
20	500.57	292.76	0.201	0.60	( 0.59)	0.99	47033.4	10200.00
21	488.79	305.93	0.197	0.60	( 0.59)	0.99	47971.6	12010.00
22	453.75	334.32	0.188	0.60	( 0.59)	0.99	48645.4	10210.00
23	400.41	382.36	0.177	0.60	( 0.59)	0.99	49144.4	12000.00
24	368.12	451.11	0.170	0.60	( 0.59)	0.99	49729.2	10100.00

TOTAL AREA (ACRES) = 49729.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 847.13 Tc (MIN.) = 144.662  
EFFECTIVE AREA (ACRES) = 24234.41 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49729.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 144.66  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.268 **S26.3-2**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.30	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	12.00	0.60	1.000	-
USER-DEFINED	-	1.40	0.60	1.000	-
USER-DEFINED	-	26.90	0.60	1.000	-
USER-DEFINED	-	1.60	0.60	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA (ACRES) = 43.40 SUBAREA RUNOFF (CFS) = 0.04  
EFFECTIVE AREA (ACRES) = 24277.81 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 49772.6 PEAK FLOW RATE (CFS) = 847.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 144.66  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.268 **S26.3-2**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	5.60	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	2.90	0.60	1.000	-
USER-DEFINED	-	0.70	0.60	1.000	-
USER-DEFINED	-	1.20	0.60	1.000	-

USER-DEFINED - 0.90 0.60 0.850 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA (ACRES) = 0.90 SUBAREA RUNOFF (CFS) = 0.03  
EFFECTIVE AREA (ACRES) = 24278.71 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 49773.5 PEAK FLOW RATE (CFS) = 847.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 144.66  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.268 **S26.3-3**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	0.200	-
USER-DEFINED	-	1.40	0.60	0.900	-
USER-DEFINED	-	1.00	0.60	0.900	-
USER-DEFINED	-	0.60	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	9.00	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.974  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA (ACRES) = 12.20 SUBAREA RUNOFF (CFS) = 0.08  
EFFECTIVE AREA (ACRES) = 24290.91 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 49785.7 PEAK FLOW RATE (CFS) = 847.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 144.66  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.268 **S26.3-3**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	5.60	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	2.90	0.60	1.000	-
USER-DEFINED	-	0.70	0.60	1.000	-
USER-DEFINED	-	1.20	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 24301.71 AREA-AVERAGED Fm (INCH/HR) = 0.59  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 49796.5 PEAK FLOW RATE (CFS) = 847.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 144.66  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.268  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.10	0.60	1.000	-
USER-DEFINED	-	1.00	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 4.10 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 24305.81 AREA-AVERAGED Fm (INCH/HR) = 0.59  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 49800.6 PEAK FLOW RATE (CFS) = 847.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12604.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 310.00 DOWNSTREAM (FEET) = 307.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 459.69 CHANNEL SLOPE = 0.0065  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 847.13  
 FLOW VELOCITY (FEET/SEC.) = 7.99 FLOW DEPTH (FEET) = 5.95  
 TRAVEL TIME (MIN.) = 0.96 Tc (MIN.) = 145.62  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12604.00 = 102017.99 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12604.00 TO NODE 12604.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 145.62

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.267 **S26.3-4**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	0.850	-
USER-DEFINED	-	0.40	0.60	1.000	-
USER-DEFINED	-	0.90	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.991  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 1.60 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 24307.41 AREA-AVERAGED Fm (INCH/HR) = 0.59  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 49802.2 PEAK FLOW RATE (CFS) = 847.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12604.00 TO NODE 12605.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 307.00 DOWNSTREAM (FEET) = 305.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 427.54 CHANNEL SLOPE = 0.0047  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 847.13  
 FLOW VELOCITY (FEET/SEC.) = 7.05 FLOW DEPTH (FEET) = 6.33  
 TRAVEL TIME (MIN.) = 1.01 Tc (MIN.) = 146.63  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12605.00 = 102445.53 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 146.63 **S26.3-5**

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.266  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	0.900	-
USER-DEFINED	-	1.30	0.60	0.900	-
USER-DEFINED	-	1.90	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	6.60	0.60	0.850	-
USER-DEFINED	-	0.20	0.60	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 10.60 SUBAREA RUNOFF (CFS) = 0.28  
 EFFECTIVE AREA (ACRES) = 24318.01 AREA-AVERAGED Fm (INCH/HR) = 0.59  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 49812.8 PEAK FLOW RATE (CFS) = 847.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 146.63  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.266 **S26.3-5**

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 3.10 0.60 1.000 -  
 USER-DEFINED - 0.30 0.60 0.500 -  
 USER-DEFINED - 1.40 0.60 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 4.80 SUBAREA RUNOFF (CFS) = 0.04  
 EFFECTIVE AREA (ACRES) = 24322.81 AREA-AVERAGED Fm (INCH/HR) = 0.59  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 49817.6 PEAK FLOW RATE (CFS) = 847.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 305.00 DOWNSTREAM (FEET) = 286.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2159.47 CHANNEL SLOPE = 0.0088  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 847.13  
 FLOW VELOCITY (FEET/SEC.) = 8.94 FLOW DEPTH (FEET) = 5.62  
 TRAVEL TIME (MIN.) = 4.03 Tc (MIN.) = 150.66  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F02EVRL.DNA **Local Area F**  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	222.53	11.09	0.60 ( 0.46)	0.76	340.6	940.00
2	221.70	11.29	0.60 ( 0.46)	0.77	345.5	930.00
3	176.56	15.44	0.60 ( 0.48)	0.81	435.0	910.00
4	122.82	20.68	0.60 ( 0.51)	0.84	531.5	900.00

5	113.09	21.88	0.60 ( 0.51)	0.85	553.3	920.00
6	112.26	21.97	0.60 ( 0.51)	0.85	553.8	950.00
TOTAL AREA (ACRES) = 553.8						

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	813.40	16.66	0.893	0.60 ( 0.57)	0.94	1412.8	800.00
2	659.30	21.20	0.751	0.60 ( 0.57)	0.95	1899.7	818.00
3	602.77	23.07	0.711	0.60 ( 0.58)	0.96	2094.4	810.00
4	344.57	32.34	0.574	0.60 ( 0.58)	0.97	3015.3	600.00
5	516.61	82.30	0.360	0.60 ( 0.59)	0.99	9695.1	11831.00
6	627.92	106.87	0.315	0.60 ( 0.59)	0.99	13380.2	11530.00
7	724.63	127.29	0.283	0.60 ( 0.59)	0.99	17526.9	11000.00
8	823.00	144.35	0.268	0.60 ( 0.59)	0.99	22474.7	11350.00
9	847.13	150.66	0.262	0.60 ( 0.59)	0.99	24322.8	10850.00
10	818.30	158.65	0.255	0.60 ( 0.60)	0.99	26207.0	10800.00
11	748.93	171.31	0.244	0.60 ( 0.60)	0.99	28657.3	11910.00
12	691.43	182.84	0.235	0.60 ( 0.60)	0.99	30360.8	12300.00
13	576.63	215.31	0.225	0.60 ( 0.59)	0.99	36069.3	12410.00
14	549.09	223.49	0.222	0.60 ( 0.59)	0.99	37501.5	10600.00
15	539.68	240.54	0.217	0.60 ( 0.59)	0.99	40944.6	12201.00
16	543.89	247.82	0.215	0.60 ( 0.59)	0.99	42155.2	12261.00
17	533.74	260.45	0.211	0.60 ( 0.59)	0.99	43641.8	10410.00
18	523.57	272.48	0.207	0.60 ( 0.59)	0.99	44743.7	12101.10
19	511.98	282.03	0.204	0.60 ( 0.59)	0.99	45565.1	10700.00
20	500.57	299.60	0.199	0.60 ( 0.59)	0.99	47121.8	10200.00
21	488.79	312.81	0.195	0.60 ( 0.59)	0.99	48060.0	12010.00
22	453.75	341.34	0.186	0.60 ( 0.59)	0.99	48733.8	10210.00
23	400.41	389.59	0.177	0.60 ( 0.59)	0.99	49232.8	12000.00
24	368.12	458.50	0.169	0.60 ( 0.59)	0.99	49817.6	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.							

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	222.53	11.09	1.184	0.60 ( 0.46)	0.76	340.6	940.00
2	221.70	11.29	1.172	0.60 ( 0.46)	0.77	345.5	930.00
3	176.56	15.44	0.936	0.60 ( 0.48)	0.81	435.0	910.00
4	122.82	20.68	0.762	0.60 ( 0.51)	0.84	531.5	900.00
5	113.09	21.88	0.736	0.60 ( 0.51)	0.85	553.3	920.00
6	112.26	21.97	0.735	0.60 ( 0.51)	0.85	553.8	950.00
LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1035.93	11.09	1.184	0.60 ( 0.54)	0.89	1280.6	940.00
2	1035.10	11.29	1.172	0.60 ( 0.54)	0.90	1302.5	930.00
3	989.96	15.44	0.936	0.60 ( 0.55)	0.91	1744.3	910.00
4	977.45	16.66	0.893	0.60 ( 0.55)	0.91	1870.2	800.00
5	799.67	20.68	0.762	0.60 ( 0.56)	0.93	2375.7	900.00

6	777.93	21.20	0.751	0.60	(0.56)	0.93	2440.6	818.00
7	751.65	21.88	0.736	0.60	(0.56)	0.93	2524.5	920.00
8	748.32	21.97	0.735	0.60	(0.56)	0.93	2533.5	950.00
9	703.19	23.07	0.711	0.60	(0.56)	0.94	2648.2	810.00
10	387.75	32.34	0.574	0.60	(0.57)	0.95	3569.1	600.00
11	543.69	82.30	0.360	0.60	(0.59)	0.98	10248.9	11831.00
12	651.59	106.87	0.315	0.60	(0.59)	0.98	13934.0	11530.00
13	745.96	127.29	0.283	0.60	(0.59)	0.99	18080.7	11000.00
14	843.17	144.35	0.268	0.60	(0.59)	0.99	23028.5	11350.00
15	866.88	150.66	0.262	0.60	(0.59)	0.99	24876.6	10850.00
16	837.51	158.65	0.255	0.60	(0.59)	0.99	26760.8	10800.00
17	767.27	171.31	0.244	0.60	(0.59)	0.99	29211.1	11910.00
18	709.12	182.84	0.235	0.60	(0.59)	0.99	30914.6	12300.00
19	593.56	215.31	0.225	0.60	(0.59)	0.99	36623.1	12410.00
20	565.83	223.49	0.222	0.60	(0.59)	0.99	38055.3	10600.00
21	556.02	240.54	0.217	0.60	(0.59)	0.99	41498.4	12201.00
22	560.06	247.82	0.215	0.60	(0.59)	0.99	42709.0	12261.00
23	549.61	260.45	0.211	0.60	(0.59)	0.99	44195.6	10410.00
24	539.16	272.48	0.207	0.60	(0.59)	0.99	45297.5	12101.10
25	527.35	282.03	0.204	0.60	(0.59)	0.99	46118.9	10700.00
26	515.53	299.60	0.199	0.60	(0.59)	0.99	47675.6	10200.00
27	503.44	312.81	0.195	0.60	(0.59)	0.99	48613.8	12010.00
28	467.73	341.34	0.186	0.60	(0.59)	0.99	49287.6	10210.00
29	413.70	389.59	0.177	0.60	(0.59)	0.99	49786.6	12000.00
30	380.82	458.50	0.169	0.60	(0.59)	0.99	50371.4	10100.00
TOTAL AREA (ACRES) =		50371.4						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1035.93 Tc(MIN.) = 11.086  
EFFECTIVE AREA(ACRES) = 1280.58 AREA-AVERAGED Fm(INCH/HR) = 0.54  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 50371.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 11.09 **S26.3-6**

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.184

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	0.70	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	11.90	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	0.850	-
USER-DEFINED	-	1.50	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.953

SUBAREA AREA(ACRES) = 16.00 SUBAREA RUNOFF(CFS) = 8.82

EFFECTIVE AREA(ACRES) = 1296.58 AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90

TOTAL AREA(ACRES) = 50387.4 PEAK FLOW RATE(CFS) = 1035.93

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 11.09

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.184

**S26.3-6**

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.40	0.60	0.100	-
USER-DEFINED	-	8.20	0.60	1.000	-
USER-DEFINED	-	3.90	0.60	1.000	-
USER-DEFINED	-	1.60	0.60	1.000	-
USER-DEFINED	-	1.90	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978

SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 8.93

EFFECTIVE AREA(ACRES) = 1313.18 AREA-AVERAGED Fm(INCH/HR) = 0.54

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90

TOTAL AREA(ACRES) = 50404.0 PEAK FLOW RATE(CFS) = 1035.93

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 11.09

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.184

**S26.3-6**

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.80	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 0.95  
EFFECTIVE AREA(ACRES) = 1314.98 AREA-AVERAGED Fm(INCH/HR) = 0.54  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90

TOTAL AREA(ACRES) = 50405.8 PEAK FLOW RATE(CFS) = 1035.93

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 11.09  
EFFECTIVE AREA(ACRES) = 1314.98 AREA-AVERAGED Fm(INCH/HR) = 0.54  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.897  
PEAK FLOW RATE(CFS) = 1035.93

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1035.93	11.09	1.184	0.60(0.54)	0.90	1315.0	940.00
2	1035.10	11.29	1.172	0.60(0.54)	0.90	1336.9	930.00
3	989.96	15.44	0.936	0.60(0.55)	0.91	1778.7	910.00
4	977.45	16.66	0.893	0.60(0.55)	0.91	1904.6	800.00
5	799.67	20.68	0.762	0.60(0.56)	0.93	2410.1	900.00
6	777.93	21.20	0.751	0.60(0.56)	0.93	2475.0	818.00

7	751.65	21.88	0.736	0.60	( 0.56)	0.93	2558.9	920.00
8	748.32	21.97	0.735	0.60	( 0.56)	0.93	2567.9	950.00
9	703.19	23.07	0.711	0.60	( 0.56)	0.94	2682.6	810.00
10	387.75	32.34	0.574	0.60	( 0.57)	0.95	3603.5	600.00
11	543.69	82.30	0.360	0.60	( 0.59)	0.98	10283.3	11831.00
12	651.59	106.87	0.315	0.60	( 0.59)	0.98	13968.4	11530.00
13	745.96	127.29	0.283	0.60	( 0.59)	0.99	18115.1	11000.00
14	843.17	144.35	0.268	0.60	( 0.59)	0.99	23062.9	11350.00
15	866.88	150.66	0.262	0.60	( 0.59)	0.99	24911.0	10850.00
16	837.51	158.65	0.255	0.60	( 0.59)	0.99	26795.2	10800.00
17	767.27	171.31	0.244	0.60	( 0.59)	0.99	29245.5	11910.00
18	709.12	182.84	0.235	0.60	( 0.59)	0.99	30949.0	12300.00
19	593.56	215.31	0.225	0.60	( 0.59)	0.99	36657.5	12410.00
20	565.83	223.49	0.222	0.60	( 0.59)	0.99	38089.7	10600.00
21	556.02	240.54	0.217	0.60	( 0.59)	0.99	41532.8	12201.00
22	560.06	247.82	0.215	0.60	( 0.59)	0.99	42743.4	12261.00
23	549.61	260.45	0.211	0.60	( 0.59)	0.99	44230.0	10410.00
24	539.16	272.48	0.207	0.60	( 0.59)	0.99	45331.9	12101.10
25	527.35	282.03	0.204	0.60	( 0.59)	0.99	46153.3	10700.00
26	515.53	299.60	0.199	0.60	( 0.59)	0.99	47710.0	10200.00
27	503.44	312.81	0.195	0.60	( 0.59)	0.99	48648.2	12010.00
28	467.73	341.34	0.186	0.60	( 0.59)	0.99	49322.0	10210.00
29	413.70	389.59	0.177	0.60	( 0.59)	0.99	49821.0	12000.00
30	380.82	458.50	0.169	0.60	( 0.59)	0.99	50405.8	10100.00

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 =====  
 END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S27- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV27.DAT  
TIME/DATE OF STUDY: 11:28 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*

NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.862
- 2) 10.00; 1.241
- 3) 15.00; 0.946
- 4) 20.00; 0.775
- 5) 25.00; 0.667
- 6) 30.00; 0.592
- 7) 40.00; 0.510
- 8) 50.00; 0.453
- 9) 60.00; 0.399
- 10) 90.00; 0.345
- 11) 120.00; 0.290
- 12) 180.00; 0.236
- 13) 360.00; 0.180
- 14) 1200.00; 0.083

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU02EV26.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

S26

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1035.93	11.09	0.60 ( 0.54)	0.90	1315.0	940.00
2	799.67	20.68	0.60 ( 0.56)	0.93	2410.1	900.00
3	387.75	32.34	0.60 ( 0.57)	0.95	3603.5	600.00
4	543.69	82.30	0.60 ( 0.59)	0.98	10283.3	11831.00
5	651.59	106.87	0.60 ( 0.59)	0.98	13968.4	11530.00
6	745.96	127.29	0.60 ( 0.59)	0.99	18115.1	11000.00
7	866.88	150.66	0.60 ( 0.59)	0.99	24911.0	10850.00
8	767.27	171.31	0.60 ( 0.59)	0.99	29245.5	11910.00
9	709.12	182.84	0.60 ( 0.59)	0.99	30949.0	12300.00
10	593.56	215.31	0.60 ( 0.59)	0.99	36657.5	12410.00
11	565.83	223.49	0.60 ( 0.59)	0.99	38089.7	10600.00
12	560.06	247.82	0.60 ( 0.59)	0.99	42743.4	12261.00
13	549.61	260.45	0.60 ( 0.59)	0.99	44230.0	10410.00
14	539.16	272.48	0.60 ( 0.59)	0.99	45331.9	12101.10
15	527.35	282.03	0.60 ( 0.59)	0.99	46153.3	10700.00
16	515.53	299.60	0.60 ( 0.59)	0.99	47710.0	10200.00
17	503.44	312.81	0.60 ( 0.59)	0.99	48648.2	12010.00
18	467.73	341.34	0.60 ( 0.59)	0.99	49322.0	10210.00
19	413.70	389.59	0.60 ( 0.59)	0.99	49821.0	12000.00
20	380.82	458.50	0.60 ( 0.59)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =						50405.8

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1035.93	11.09	0.60 ( 0.54)	0.90	1315.0	940.00
2	799.67	20.68	0.60 ( 0.56)	0.93	2410.1	900.00
3	387.75	32.34	0.60 ( 0.57)	0.95	3603.5	600.00
4	543.69	82.30	0.60 ( 0.59)	0.98	10283.3	11831.00
5	651.59	106.87	0.60 ( 0.59)	0.98	13968.4	11530.00
6	745.96	127.29	0.60 ( 0.59)	0.99	18115.1	11000.00
7	866.88	150.66	0.60 ( 0.59)	0.99	24911.0	10850.00
8	767.27	171.31	0.60 ( 0.59)	0.99	29245.5	11910.00
9	709.12	182.84	0.60 ( 0.59)	0.99	30949.0	12300.00
10	593.56	215.31	0.60 ( 0.59)	0.99	36657.5	12410.00
11	565.83	223.49	0.60 ( 0.59)	0.99	38089.7	10600.00
12	560.06	247.82	0.60 ( 0.59)	0.99	42743.4	12261.00
13	549.61	260.45	0.60 ( 0.59)	0.99	44230.0	10410.00

14 539.16 272.48 0.60( 0.59) 0.99 45331.9 12101.10  
 15 527.35 282.03 0.60( 0.59) 0.99 46153.3 10700.00  
 16 515.53 299.60 0.60( 0.59) 0.99 47710.0 10200.00  
 17 503.44 312.81 0.60( 0.59) 0.99 48648.2 12010.00  
 18 467.73 341.34 0.60( 0.59) 0.99 49322.0 10210.00  
 19 413.70 389.59 0.60( 0.59) 0.99 49821.0 12000.00  
 20 380.82 458.50 0.60( 0.59) 0.99 50405.8 10100.00  
 TOTAL AREA(ACRES) = 50405.8

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 286.00 DOWNSTREAM(FEET) = 276.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.19 CHANNEL SLOPE = 0.0079  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.040

S27-15.5

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 7.55 0.60 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1037.42  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.04  
 AVERAGE FLOW DEPTH(FEET) = 6.18 TRAVEL TIME(MIN.) = 2.32  
 Tc(MIN.) = 13.41  
 SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 2.99  
 EFFECTIVE AREA(ACRES) = 1322.53 AREA-AVERAGED Fm(INCH/HR) = 0.54  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 50413.3 PEAK FLOW RATE(CFS) = 1035.93  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 6.18 FLOW VELOCITY(FEET/SEC.) = 9.03  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 105865.19 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 13.41  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.040

S27.3-1

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.90 0.60 0.850 -  
 USER-DEFINED - 3.40 0.60 1.000 -  
 USER-DEFINED - 0.40 0.60 0.500 -  
 USER-DEFINED - 23.00 0.60 1.000 -  
 USER-DEFINED - 3.30 0.60 1.000 -  
 USER-DEFINED - 0.40 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.989

SUBAREA AREA(ACRES) = 31.40 SUBAREA RUNOFF(CFS) = 12.61  
 EFFECTIVE AREA(ACRES) = 1353.93 AREA-AVERAGED Fm(INCH/HR) = 0.54  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 50444.7 PEAK FLOW RATE(CFS) = 1035.93  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 13.41  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.040  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 1.70 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 0.67  
 EFFECTIVE AREA(ACRES) = 1355.63 AREA-AVERAGED Fm(INCH/HR) = 0.54  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 50446.4 PEAK FLOW RATE(CFS) = 1035.93  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 276.00 DOWNSTREAM(FEET) = 275.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 147.65 CHANNEL SLOPE = 0.0068  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.023

S27-15.6

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 1.49 0.60 0.850 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1036.27  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.52  
 AVERAGE FLOW DEPTH(FEET) = 6.37 TRAVEL TIME(MIN.) = 0.29  
 Tc(MIN.) = 13.70  
 SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 0.69  
 EFFECTIVE AREA(ACRES) = 1357.12 AREA-AVERAGED Fm(INCH/HR) = 0.54  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 50447.9 PEAK FLOW RATE(CFS) = 1035.93  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 6.37 FLOW VELOCITY(FEET/SEC.) = 8.52  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 1



-----  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
-----

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 13.70  
RAINFALL INTENSITY(INCH/HR) = 1.02  
AREA-AVERAGED Fm(INCH/HR) = 0.54  
AREA-AVERAGED Fp(INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.90  
EFFECTIVE STREAM AREA(ACRES) = 1357.12  
TOTAL STREAM AREA(ACRES) = 50447.93  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1035.93

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12710.00 TO NODE 12711.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
-----

INITIAL SUBAREA FLOW-LENGTH(FEET) = 943.56  
ELEVATION DATA: UPSTREAM(FEET) = 940.78 DOWNSTREAM(FEET) = 657.79

$T_c = K * ((LENGTH ** 3.00) / (ELEVATION CHANGE)) ** 0.20$   
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.910  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.010  
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" - 6.56 0.60 1.000 0 13.91  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 2.42  
TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 2.42

S27-11

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12711.00 TO NODE 12712.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 657.79 DOWNSTREAM(FEET) = 585.63  
CHANNEL LENGTH THRU SUBAREA(FEET) = 766.00 CHANNEL SLOPE = 0.0942  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.865  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 26.94 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.73  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.68  
AVERAGE FLOW DEPTH(FEET) = 0.72 TRAVEL TIME(MIN.) = 3.47  
Tc(MIN.) = 17.37  
SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 6.42

S27-12

EFFECTIVE AREA(ACRES) = 33.50 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 33.5 PEAK FLOW RATE(CFS) = 7.99

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.81 FLOW VELOCITY(FEET/SEC.) = 4.02  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12712.00 = 1709.56 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12712.00 TO NODE 12713.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 585.63 DOWNSTREAM(FEET) = 463.75  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1025.79 CHANNEL SLOPE = 0.1188  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.757  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 14.73 0.60 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.58  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.95  
AVERAGE FLOW DEPTH(FEET) = 0.92 TRAVEL TIME(MIN.) = 3.45  
Tc(MIN.) = 20.83  
SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 9.24  
EFFECTIVE AREA(ACRES) = 48.23 AREA-AVERAGED Fm(INCH/HR) = 0.43  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73  
TOTAL AREA(ACRES) = 48.2 PEAK FLOW RATE(CFS) = 13.98

S27-13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.96 FLOW VELOCITY(FEET/SEC.) = 5.07  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12713.00 = 2735.35 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12713.00 TO NODE 12714.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 463.75 DOWNSTREAM(FEET) = 360.30  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1148.54 CHANNEL SLOPE = 0.0901  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.689  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 105.64 0.60 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 43.55  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.03  
AVERAGE FLOW DEPTH(FEET) = 1.55 TRAVEL TIME(MIN.) = 3.17

S27-14



Tc(MIN.) = 24.00  
 SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 59.76  
 EFFECTIVE AREA(ACRES) = 153.87 AREA-AVERAGED Fm(INCH/HR) = 0.18  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.30  
 TOTAL AREA(ACRES) = 153.9 PEAK FLOW RATE(CFS) = 70.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.86 FLOW VELOCITY(FEET/SEC.) = 6.83  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12714.00 = 3883.89 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12714.00 TO NODE 12720.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 360.30 DOWNSTREAM(FEET) = 275.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1314.99 CHANNEL SLOPE = 0.0649  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00

**S27-15**

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.632  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 127.13 0.60 0.100 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 103.49  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.65  
 AVERAGE FLOW DEPTH(FEET) = 2.28 TRAVEL TIME(MIN.) = 3.30  
 Tc(MIN.) = 27.30  
 SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 65.50  
 EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.12  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.21  
 TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 128.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.47 FLOW VELOCITY(FEET/SEC.) = 7.03  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 27.30  
 RAINFALL INTENSITY(INCH/HR) = 0.63  
 AREA-AVERAGED Fm(INCH/HR) = 0.12  
 AREA-AVERAGED Fp(INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.21  
 EFFECTIVE STREAM AREA(ACRES) = 281.00  
 TOTAL STREAM AREA(ACRES) = 281.00  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 128.51

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1035.93	13.70	1.023	0.60( 0.54)	0.90	1357.1	940.00
1	799.67	23.47	0.700	0.60( 0.56)	0.93	2452.2	900.00
1	387.75	35.68	0.545	0.60( 0.57)	0.95	3645.7	600.00
1	543.69	85.37	0.353	0.60( 0.59)	0.98	10325.4	11831.00
1	651.59	109.80	0.309	0.60( 0.59)	0.98	14010.5	11530.00
1	745.96	130.13	0.281	0.60( 0.59)	0.99	18157.2	11000.00
1	866.88	153.39	0.260	0.60( 0.59)	0.99	24953.1	10850.00
1	767.27	174.12	0.241	0.60( 0.59)	0.99	29287.7	11910.00
1	709.12	185.71	0.234	0.60( 0.59)	0.99	30991.2	12300.00
1	593.56	218.31	0.224	0.60( 0.59)	0.99	36699.6	12410.00
1	565.83	226.53	0.222	0.60( 0.59)	0.99	38131.8	10600.00
1	560.06	250.87	0.214	0.60( 0.59)	0.99	42785.5	12261.00
1	549.61	263.51	0.210	0.60( 0.59)	0.99	44272.1	10410.00
1	539.16	275.55	0.206	0.60( 0.59)	0.99	45374.1	12101.10
1	527.35	285.12	0.203	0.60( 0.59)	0.99	46195.4	10700.00
1	515.53	302.71	0.198	0.60( 0.59)	0.99	47752.1	10200.00
1	503.44	315.95	0.194	0.60( 0.59)	0.99	48690.4	12010.00
1	467.73	344.52	0.185	0.60( 0.59)	0.99	49364.1	10210.00
1	413.70	392.88	0.176	0.60( 0.59)	0.99	49863.2	12000.00
1	380.82	461.85	0.168	0.60( 0.59)	0.99	50447.9	10100.00
2	128.51	27.30	0.632	0.60( 0.12)	0.21	281.0	12710.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1149.93	13.70	1.023	0.60( 0.50)	0.83	1498.1	940.00
2	924.83	23.47	0.700	0.60( 0.52)	0.87	2693.8	900.00
3	798.89	27.30	0.632	0.60( 0.52)	0.87	3107.8	12710.00
4	497.10	35.68	0.545	0.60( 0.54)	0.90	3926.7	600.00
5	614.52	85.37	0.353	0.60( 0.57)	0.96	10606.4	11831.00
6	713.47	109.80	0.309	0.60( 0.58)	0.97	14291.5	11530.00
7	802.27	130.13	0.281	0.60( 0.58)	0.97	18438.2	11000.00
8	918.99	153.39	0.260	0.60( 0.59)	0.98	25234.1	10850.00
9	815.65	174.12	0.241	0.60( 0.59)	0.98	29568.7	11910.00
10	756.08	185.71	0.234	0.60( 0.59)	0.98	31272.2	12300.00
11	638.48	218.31	0.224	0.60( 0.59)	0.98	36980.6	12410.00
12	610.24	226.53	0.222	0.60( 0.59)	0.98	38412.8	10600.00
13	602.95	250.87	0.214	0.60( 0.59)	0.98	43066.5	12261.00
14	591.72	263.51	0.210	0.60( 0.59)	0.98	44553.1	10410.00
15	580.51	275.55	0.206	0.60( 0.59)	0.98	45655.1	12101.10
16	568.11	285.12	0.203	0.60( 0.59)	0.98	46476.4	10700.00
17	555.19	302.71	0.198	0.60( 0.59)	0.98	48033.1	10200.00
18	542.27	315.95	0.194	0.60( 0.59)	0.98	48971.4	12010.00
19	504.78	344.52	0.185	0.60( 0.59)	0.98	49645.1	10210.00
20	449.02	392.88	0.176	0.60( 0.59)	0.98	50144.2	12000.00
21	414.54	461.85	0.168	0.60( 0.59)	0.99	50728.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 1149.93 Tc(MIN.) = 13.70  
 EFFECTIVE AREA(ACRES) = 1498.11 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 50728.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

```

*****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 13.70
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.023
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         3.80   0.50   1.000   -
USER-DEFINED        -         0.40   0.60   0.850   -
USER-DEFINED        -         0.20   0.60   0.500   -
USER-DEFINED        -         0.10   0.60   1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.51
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.964
SUBAREA AREA(ACRES) = 4.50   SUBAREA RUNOFF(CFS) = 2.14
EFFECTIVE AREA(ACRES) = 1502.61   AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.60   AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 50733.4   PEAK FLOW RATE(CFS) = 1149.93
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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S27.3-2

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*****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 275.00   DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21   CHANNEL SLOPE = 0.0064
CHANNEL BASE(FEET) = 0.00   "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.813
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -        62.15   0.60   0.100   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1171.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.59
AVERAGE FLOW DEPTH(FEET) = 6.74   TRAVEL TIME(MIN.) = 5.18
Tc(MIN.) = 18.88
SUBAREA AREA(ACRES) = 62.15   SUBAREA RUNOFF(CFS) = 42.14
EFFECTIVE AREA(ACRES) = 1564.76   AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60   AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 50795.6   PEAK FLOW RATE(CFS) = 1149.93
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.70   FLOW VELOCITY(FEET/SEC.) = 8.55
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

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*****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 18.88
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.813
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.10   0.60   0.100   -
USER-DEFINED        -         0.70   0.60   1.000   -
USER-DEFINED        -         0.30   0.60   1.000   -
USER-DEFINED        -        17.90   0.60   1.000   -
USER-DEFINED        -         0.20   0.60   1.000   -
USER-DEFINED        -         0.30   0.60   0.850   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.993
SUBAREA AREA(ACRES) = 19.50   SUBAREA RUNOFF(CFS) = 3.82
EFFECTIVE AREA(ACRES) = 1584.26   AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60   AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 50815.1   PEAK FLOW RATE(CFS) = 1149.93
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

```

S27.3-3

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*****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====

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```

MAINLINE Tc(MIN.) = 18.88
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.813
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.50   0.60   1.000   -
USER-DEFINED        -         0.60   0.60   0.900   -
USER-DEFINED        -         0.30   0.60   0.900   -
USER-DEFINED        -         0.10   0.60   0.500   -
USER-DEFINED        -         1.10   0.60   1.000   -
USER-DEFINED        -         0.90   0.60   1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960
SUBAREA AREA(ACRES) = 3.50   SUBAREA RUNOFF(CFS) = 0.75
EFFECTIVE AREA(ACRES) = 1587.76   AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.60   AREA-AVERAGED Ap = 0.81
TOTAL AREA(ACRES) = 50818.6   PEAK FLOW RATE(CFS) = 1149.93
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

```

S27.3-3

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*****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 2 <<<<
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```

PEAK FLOWRATE TABLE FILE NAME: 3D02EVRL.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)      (MIN.)      (INCH/HR)      (ACRES)      NODE
1          172.85    26.93    0.60( 0.28) 0.48    349.7    413.00
2          167.02    36.36    0.60( 0.29) 0.48    430.2    430.00
3          154.32    39.50    0.60( 0.29) 0.48    439.5    400.00
TOTAL AREA(ACRES) = 439.5

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Local Area D

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1149.93	18.88	0.813	0.60 ( 0.48)	0.81	1587.8	940.00
2	924.83	28.95	0.608	0.60 ( 0.51)	0.85	2783.5	900.00
3	798.89	32.97	0.568	0.60 ( 0.51)	0.86	3197.5	12710.00
4	497.10	42.07	0.498	0.60 ( 0.53)	0.89	4016.3	600.00
5	614.52	91.43	0.342	0.60 ( 0.57)	0.95	10696.1	11831.00
6	713.47	115.64	0.298	0.60 ( 0.58)	0.96	14381.2	11530.00
7	802.27	135.81	0.276	0.60 ( 0.58)	0.97	18527.9	11000.00
8	918.99	158.89	0.255	0.60 ( 0.59)	0.98	25323.8	10850.00
9	815.65	179.78	0.236	0.60 ( 0.59)	0.98	29658.3	11910.00
10	756.08	191.48	0.232	0.60 ( 0.59)	0.98	31361.8	12300.00
11	638.48	224.33	0.222	0.60 ( 0.59)	0.98	37070.3	12410.00
12	610.24	232.62	0.220	0.60 ( 0.59)	0.98	38502.5	10600.00
13	602.95	256.97	0.212	0.60 ( 0.59)	0.98	43156.2	12261.00
14	591.72	269.64	0.208	0.60 ( 0.59)	0.98	44642.8	10410.00
15	580.51	281.72	0.204	0.60 ( 0.59)	0.98	45744.7	12101.10
16	568.11	291.32	0.201	0.60 ( 0.59)	0.98	46566.1	10700.00
17	555.19	308.94	0.196	0.60 ( 0.59)	0.98	48122.8	10200.00
18	542.27	322.21	0.192	0.60 ( 0.59)	0.98	49061.0	12010.00
19	504.78	350.90	0.183	0.60 ( 0.59)	0.98	49734.8	10210.00
20	449.02	399.45	0.175	0.60 ( 0.59)	0.98	50233.8	12000.00
21	414.54	468.56	0.167	0.60 ( 0.59)	0.98	50818.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	172.85	26.93	0.638	0.60 ( 0.28)	0.48	349.7	413.00
2	167.02	36.36	0.540	0.60 ( 0.29)	0.48	430.2	430.00
3	154.32	39.50	0.514	0.60 ( 0.29)	0.48	439.5	400.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 12720.50 = 11352.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1322.79	18.88	0.813	0.60 ( 0.46)	0.76	1832.9	940.00
2	1142.73	26.93	0.638	0.60 ( 0.48)	0.80	2893.9	413.00
3	1096.44	28.95	0.608	0.60 ( 0.48)	0.81	3150.4	900.00
4	968.00	32.97	0.568	0.60 ( 0.49)	0.81	3598.8	12710.00
5	853.61	36.36	0.540	0.60 ( 0.49)	0.82	3932.4	430.00
6	736.52	39.50	0.514	0.60 ( 0.50)	0.84	4224.9	400.00
7	646.65	42.07	0.498	0.60 ( 0.51)	0.85	4455.8	600.00
8	717.29	91.43	0.342	0.60 ( 0.56)	0.93	11135.6	11831.00
9	802.92	115.64	0.298	0.60 ( 0.57)	0.95	14820.7	11530.00
10	885.05	135.81	0.276	0.60 ( 0.58)	0.96	18967.4	11000.00
11	995.53	158.89	0.255	0.60 ( 0.58)	0.97	25763.3	10850.00
12	886.55	179.78	0.236	0.60 ( 0.58)	0.97	30097.8	11910.00
13	825.85	191.48	0.232	0.60 ( 0.58)	0.97	31801.3	12300.00
14	705.18	224.33	0.222	0.60 ( 0.59)	0.98	37509.8	12410.00
15	676.17	232.62	0.220	0.60 ( 0.59)	0.98	38942.0	10600.00

16	666.61	256.97	0.212	0.60 ( 0.59)	0.98	43595.7	12261.00
17	654.19	269.64	0.208	0.60 ( 0.59)	0.98	45082.3	10410.00
18	641.86	281.72	0.204	0.60 ( 0.59)	0.98	46184.2	12101.10
19	628.55	291.32	0.201	0.60 ( 0.59)	0.98	47005.6	10700.00
20	613.99	308.94	0.196	0.60 ( 0.59)	0.98	48562.3	10200.00
21	599.83	322.21	0.192	0.60 ( 0.59)	0.98	49500.5	12010.00
22	559.66	350.90	0.183	0.60 ( 0.59)	0.98	50174.2	10210.00
23	501.69	399.45	0.175	0.60 ( 0.59)	0.98	50673.3	12000.00
24	464.81	468.56	0.167	0.60 ( 0.59)	0.98	51258.1	10100.00

TOTAL AREA (ACRES) = 51258.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1322.79 Tc (MIN.) = 18.878  
EFFECTIVE AREA (ACRES) = 1832.88 AREA-AVERAGED Fm (INCH/HR) = 0.46  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
TOTAL AREA (ACRES) = 51258.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*

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

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

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 258.00 DOWNSTREAM (FEET) = 256.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 438.77 CHANNEL SLOPE = 0.0046  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 1322.79  
FLOW VELOCITY (FEET/SEC.) = 7.80 FLOW DEPTH (FEET) = 7.52  
TRAVEL TIME (MIN.) = 0.94 Tc (MIN.) = 19.82  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12721.00 TO NODE 12722.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 256.00 DOWNSTREAM (FEET) = 255.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 830.42 CHANNEL SLOPE = 0.0012  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.716

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	11.24	0.60	0.100	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1326.11  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.74

S27-22

AVERAGE FLOW DEPTH (FEET) = 9.66 TRAVEL TIME (MIN.) = 2.92  
 Tc (MIN.) = 22.73  
 SUBAREA AREA (ACRES) = 11.24 SUBAREA RUNOFF (CFS) = 6.64  
 EFFECTIVE AREA (ACRES) = 1844.12 AREA-AVERAGED Fm (INCH/HR) = 0.46  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA (ACRES) = 51269.3 PEAK FLOW RATE (CFS) = 1322.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 9.65 FLOW VELOCITY (FEET/SEC.) = 4.74  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 22.73  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.716 **S27.3-4**  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.10	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	3.60	0.60	1.000	-
USER-DEFINED	-	4.10	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 9.90 SUBAREA RUNOFF (CFS) = 1.03  
 EFFECTIVE AREA (ACRES) = 1854.02 AREA-AVERAGED Fm (INCH/HR) = 0.46  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA (ACRES) = 51279.2 PEAK FLOW RATE (CFS) = 1322.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 22.73  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.716 **S27.3-4**  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.60	0.60	0.900	-
USER-DEFINED	-	1.90	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.977  
 SUBAREA AREA (ACRES) = 2.60 SUBAREA RUNOFF (CFS) = 0.30  
 EFFECTIVE AREA (ACRES) = 1856.62 AREA-AVERAGED Fm (INCH/HR) = 0.46  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA (ACRES) = 51281.8 PEAK FLOW RATE (CFS) = 1322.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM (FEET) = 255.00 DOWNSTREAM (FEET) = 252.10  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 624.00 CHANNEL SLOPE = 0.0046  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.687 **S27-23**

SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.50	0.60	0.100	-
USER-DEFINED	-	2.50	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	0.70	0.60	1.000	-
USER-DEFINED	-	6.20	0.60	1.000	-
USER-DEFINED	-	6.50	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.925  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1323.86  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.87  
 AVERAGE FLOW DEPTH (FEET) = 7.49 TRAVEL TIME (MIN.) = 1.32  
 Tc (MIN.) = 24.06  
 SUBAREA AREA (ACRES) = 17.90 SUBAREA RUNOFF (CFS) = 2.14  
 EFFECTIVE AREA (ACRES) = 1874.52 AREA-AVERAGED Fm (INCH/HR) = 0.46  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA (ACRES) = 51299.7 PEAK FLOW RATE (CFS) = 1322.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 7.49 FLOW VELOCITY (FEET/SEC.) = 7.86  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 24.06  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.687 **S27-23**  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.70	0.60	1.000	-
USER-DEFINED	-	6.70	0.60	1.000	-
USER-DEFINED	-	12.00	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	20.20	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 44.40 SUBAREA RUNOFF (CFS) = 3.50  
 EFFECTIVE AREA (ACRES) = 1918.92 AREA-AVERAGED Fm (INCH/HR) = 0.46  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA (ACRES) = 51344.1 PEAK FLOW RATE (CFS) = 1322.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1  
 -----

-----  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
-----

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 24.06  
RAINFALL INTENSITY(INCH/HR) = 0.69  
AREA-AVERAGED Fm(INCH/HR) = 0.46  
AREA-AVERAGED Fp(INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.77  
EFFECTIVE STREAM AREA(ACRES) = 1918.92  
TOTAL STREAM AREA(ACRES) = 51344.12  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1322.79

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12730.00 TO NODE 12731.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
-----

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

Tc = K\*((LENGTH\*\* 3.00)/(ELEVATION CHANGE)\*\*0.20) **S27-31**  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.823  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.015  
SUBAREA Tc AND LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
NATURAL FAIR COVER  
"CHAPARRAL,BROADLEAF" - 6.33 0.60 1.000 0 13.82  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 2.37  
TOTAL AREA(ACRES) = 6.33 PEAK FLOW RATE(CFS) = 2.37

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.845 **S27-32**  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 34.62 0.60 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.32  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.92  
AVERAGE FLOW DEPTH(FEET) = 1.10 TRAVEL TIME(MIN.) = 4.13  
Tc(MIN.) = 17.96  
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 24.46

EFFECTIVE AREA(ACRES) = 40.95 AREA-AVERAGED Fm(INCH/HR) = 0.14  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.24  
TOTAL AREA(ACRES) = 40.9 PEAK FLOW RATE(CFS) = 25.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.38 FLOW VELOCITY(FEET/SEC.) = 4.54  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.737 **S27-33**  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 59.52 0.60 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 43.99  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.04  
AVERAGE FLOW DEPTH(FEET) = 1.71 TRAVEL TIME(MIN.) = 3.83  
Tc(MIN.) = 21.78  
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 36.24  
EFFECTIVE AREA(ACRES) = 100.47 AREA-AVERAGED Fm(INCH/HR) = 0.09  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.16  
TOTAL AREA(ACRES) = 100.5 PEAK FLOW RATE(CFS) = 58.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.89 FLOW VELOCITY(FEET/SEC.) = 5.39  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12733.00 = 2689.86 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12733.00 TO NODE 12734.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 431.00 DOWNSTREAM(FEET) = 367.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1654.48 CHANNEL SLOPE = 0.0386  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.633 **S27-34**  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 64.05 0.60 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 74.63  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.03  
AVERAGE FLOW DEPTH(FEET) = 2.22 TRAVEL TIME(MIN.) = 5.48

Tc(MIN.) = 27.26  
 SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 33.04  
 EFFECTIVE AREA(ACRES) = 164.52 AREA-AVERAGED Fm(INCH/HR) = 0.08  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.13  
 TOTAL AREA(ACRES) = 164.5 PEAK FLOW RATE(CFS) = 81.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.30 FLOW VELOCITY(FEET/SEC.) = 5.16  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12734.00 = 4344.34 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12734.00 TO NODE 12740.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 367.11 DOWNSTREAM(FEET) = 252.10  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1880.98 CHANNEL SLOPE = 0.0611  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.573  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 26.02 0.60 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 81.79  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.13  
 AVERAGE FLOW DEPTH(FEET) = 2.11 TRAVEL TIME(MIN.) = 5.11  
 Tc(MIN.) = 32.37

S27-35

SUBAREA AREA(ACRES) = 26.02 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 190.54 AREA-AVERAGED Fm(INCH/HR) = 0.15  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.25  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 190.5 PEAK FLOW RATE(CFS) = 81.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.11 FLOW VELOCITY(FEET/SEC.) = 6.13  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<  
 =====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 32.37  
 RAINFALL INTENSITY(INCH/HR) = 0.57  
 AREA-AVERAGED Fm(INCH/HR) = 0.15  
 AREA-AVERAGED Fp(INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.25

EFFECTIVE STREAM AREA(ACRES) = 190.54  
 TOTAL STREAM AREA(ACRES) = 190.54  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 81.79

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1322.79	24.06	0.687	0.60( 0.46)	0.77	1918.9	940.00
1	1142.73	32.31	0.573	0.60( 0.48)	0.80	2980.0	413.00
1	1096.44	34.38	0.556	0.60( 0.48)	0.81	3236.4	900.00
1	968.00	38.57	0.522	0.60( 0.49)	0.82	3684.8	12710.00
1	853.61	42.13	0.498	0.60( 0.50)	0.83	4018.4	430.00
1	736.52	45.50	0.479	0.60( 0.50)	0.84	4310.9	400.00
1	646.65	48.26	0.463	0.60( 0.51)	0.85	4541.8	600.00
1	717.29	97.47	0.331	0.60( 0.56)	0.93	11221.6	11831.00
1	802.92	121.51	0.289	0.60( 0.57)	0.95	14906.7	11530.00
1	885.05	141.54	0.271	0.60( 0.57)	0.96	19053.4	11000.00
1	995.53	164.45	0.250	0.60( 0.58)	0.97	25849.3	10850.00
1	886.55	185.50	0.234	0.60( 0.58)	0.97	30183.9	11910.00
1	825.85	197.31	0.231	0.60( 0.58)	0.97	31887.4	12300.00
1	705.18	230.39	0.220	0.60( 0.59)	0.98	37595.8	12410.00
1	676.17	238.74	0.218	0.60( 0.59)	0.98	39028.0	10600.00
1	666.61	263.12	0.210	0.60( 0.59)	0.98	43681.7	12261.00
1	654.19	275.82	0.206	0.60( 0.59)	0.98	45168.3	10410.00
1	641.86	287.92	0.202	0.60( 0.59)	0.98	46270.2	12101.10
1	628.55	297.56	0.199	0.60( 0.59)	0.98	47091.6	10700.00
1	613.99	315.22	0.194	0.60( 0.59)	0.98	48648.3	10200.00
1	599.83	328.53	0.190	0.60( 0.59)	0.98	49586.6	12010.00
1	559.66	357.33	0.181	0.60( 0.59)	0.98	50260.3	10210.00
1	501.69	406.05	0.175	0.60( 0.59)	0.98	50759.4	12000.00
1	464.81	475.29	0.167	0.60( 0.59)	0.98	51344.1	10100.00
2	81.79	32.37	0.573	0.60( 0.15)	0.25	190.5	12730.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1398.90	24.06	0.687	0.60( 0.44)	0.73	2060.5	940.00
2	1224.42	32.31	0.573	0.60( 0.46)	0.77	3170.1	413.00
3	1223.01	32.37	0.573	0.60( 0.46)	0.77	3178.8	12730.00
4	1175.88	34.38	0.556	0.60( 0.47)	0.78	3427.0	900.00
5	1042.52	38.57	0.522	0.60( 0.47)	0.79	3875.4	12710.00
6	924.73	42.13	0.498	0.60( 0.48)	0.80	4209.0	430.00
7	804.89	45.50	0.479	0.60( 0.49)	0.81	4501.5	400.00
8	712.78	48.26	0.463	0.60( 0.49)	0.82	4732.4	600.00
9	764.62	97.47	0.331	0.60( 0.55)	0.92	11412.2	11831.00
10	844.15	121.51	0.289	0.60( 0.56)	0.94	15097.3	11530.00
11	923.71	141.54	0.271	0.60( 0.57)	0.95	19244.0	11000.00
12	1031.24	164.45	0.250	0.60( 0.58)	0.96	26039.9	10850.00
13	920.02	185.50	0.234	0.60( 0.58)	0.97	30374.4	11910.00
14	858.79	197.31	0.231	0.60( 0.58)	0.97	32077.9	12300.00
15	736.65	230.39	0.220	0.60( 0.58)	0.97	37786.3	12410.00
16	707.27	238.74	0.218	0.60( 0.58)	0.97	39218.6	10600.00
17	696.62	263.12	0.210	0.60( 0.58)	0.97	43872.2	12261.00
18	683.64	275.82	0.206	0.60( 0.58)	0.97	45358.8	10410.00
19	670.77	287.92	0.202	0.60( 0.58)	0.97	46460.8	12101.10



20	657.04	297.56	0.199	0.60	( 0.58)	0.97	47282.2	10700.00
21	641.69	315.22	0.194	0.60	( 0.59)	0.98	48838.9	10200.00
22	626.94	328.53	0.190	0.60	( 0.59)	0.98	49777.1	12010.00
23	585.49	357.33	0.181	0.60	( 0.59)	0.98	50450.8	10210.00
24	526.64	406.05	0.175	0.60	( 0.59)	0.98	50949.9	12000.00
25	488.62	475.29	0.167	0.60	( 0.59)	0.98	51534.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1398.90 Tc(MIN.) = 24.06  
EFFECTIVE AREA(ACRES) = 2060.52 AREA-AVERAGED Fm(INCH/HR) = 0.44  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73  
TOTAL AREA(ACRES) = 51534.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12741.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 247.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 401.47 CHANNEL SLOPE = 0.0127  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 1398.90  
FLOW VELOCITY(FEET/SEC.) = 11.62 FLOW DEPTH(FEET) = 6.34  
TRAVEL TIME(MIN.) = 0.58 Tc(MIN.) = 24.63  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 24.63  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.675  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.10	0.60	0.100	-
USER-DEFINED	-	7.50	0.60	1.000	-
USER-DEFINED	-	0.90	0.60	1.000	-
USER-DEFINED	-	1.90	0.60	0.850	-
USER-DEFINED	-	0.40	0.60	0.900	-
USER-DEFINED	-	0.50	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.833  
SUBAREA AREA(ACRES) = 13.30 SUBAREA RUNOFF(CFS) = 2.09  
EFFECTIVE AREA(ACRES) = 2073.82 AREA-AVERAGED Fm(INCH/HR) = 0.44  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73  
TOTAL AREA(ACRES) = 51548.0 PEAK FLOW RATE(CFS) = 1398.90  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 24.63  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.675  
SUBAREA LOSS RATE DATA(AMC II):

S27.3-5

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.90	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 0.06  
EFFECTIVE AREA(ACRES) = 2074.72 AREA-AVERAGED Fm(INCH/HR) = 0.44  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73  
TOTAL AREA(ACRES) = 51548.9 PEAK FLOW RATE(CFS) = 1398.90  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: 3C02EVRL.DNA **Local Area C**  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	276.34	22.35	0.60( 0.27)	0.45	614.4	300.00
2	258.19	28.49	0.60( 0.28)	0.46	740.3	327.00
3	243.33	30.04	0.60( 0.28)	0.46	754.5	350.00
4	231.62	31.60	0.60( 0.28)	0.46	765.7	320.00
5	207.64	36.15	0.60( 0.28)	0.47	785.4	306.00
6	155.62	63.34	0.60( 0.30)	0.50	870.6	390.00
TOTAL AREA(ACRES) =		870.6				

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 11  
-----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1398.90	24.63	0.675	0.60( 0.44)	0.73	2074.7	940.00
2	1224.42	32.90	0.568	0.60( 0.46)	0.77	3184.3	413.00
3	1223.01	32.97	0.568	0.60( 0.46)	0.77	3193.0	12730.00
4	1175.88	34.98	0.551	0.60( 0.47)	0.78	3441.2	900.00
5	1042.52	39.19	0.517	0.60( 0.47)	0.79	3889.6	12710.00
6	924.73	42.77	0.494	0.60( 0.48)	0.80	4223.2	430.00
7	804.89	46.16	0.475	0.60( 0.49)	0.81	4515.7	400.00
8	712.78	48.94	0.459	0.60( 0.49)	0.82	4746.6	600.00
9	764.62	98.14	0.330	0.60( 0.55)	0.92	11426.4	11831.00
10	844.15	122.17	0.288	0.60( 0.56)	0.94	15111.5	11530.00
11	923.71	142.18	0.270	0.60( 0.57)	0.95	19258.2	11000.00
12	1031.24	165.07	0.249	0.60( 0.58)	0.96	26054.1	10850.00
13	920.02	186.14	0.234	0.60( 0.58)	0.97	30388.6	11910.00
14	858.79	197.96	0.230	0.60( 0.58)	0.97	32092.1	12300.00
15	736.65	231.06	0.220	0.60( 0.58)	0.97	37800.5	12410.00
16	707.27	239.42	0.218	0.60( 0.58)	0.97	39232.8	10600.00
17	696.62	263.81	0.210	0.60( 0.58)	0.97	43886.4	12261.00
18	683.64	276.51	0.206	0.60( 0.58)	0.97	45373.0	10410.00

19 670.77 288.62 0.202 0.60 ( 0.58) 0.97 46475.0 12101.10  
 20 657.04 298.26 0.199 0.60 ( 0.58) 0.97 47296.4 10700.00  
 21 641.69 315.91 0.194 0.60 ( 0.59) 0.98 48853.1 10200.00  
 22 626.94 329.23 0.190 0.60 ( 0.59) 0.98 49791.3 12010.00  
 23 585.49 358.04 0.181 0.60 ( 0.59) 0.98 50465.0 10210.00  
 24 526.64 406.79 0.175 0.60 ( 0.59) 0.98 50964.1 12000.00  
 25 488.62 476.04 0.167 0.60 ( 0.59) 0.98 51548.9 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	276.34	22.35	0.724	0.60 ( 0.27)	0.45	614.4	300.00
2	258.19	28.49	0.615	0.60 ( 0.28)	0.46	740.3	327.00
3	243.33	30.04	0.592	0.60 ( 0.28)	0.46	754.5	350.00
4	231.62	31.60	0.579	0.60 ( 0.28)	0.46	765.7	320.00
5	207.64	36.15	0.542	0.60 ( 0.28)	0.47	785.4	306.00
6	155.62	63.34	0.393	0.60 ( 0.30)	0.50	870.6	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12741.00 = 15238.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1675.24	22.35	0.724	0.60 ( 0.40)	0.66	2497.2	300.00
2	1668.49	24.63	0.675	0.60 ( 0.40)	0.67	2735.9	940.00
3	1575.76	28.49	0.615	0.60 ( 0.41)	0.68	3332.3	327.00
4	1528.15	30.04	0.592	0.60 ( 0.42)	0.69	3554.7	350.00
5	1483.57	31.60	0.579	0.60 ( 0.42)	0.70	3775.0	320.00
6	1449.18	32.90	0.568	0.60 ( 0.42)	0.71	3955.7	413.00
7	1447.42	32.97	0.568	0.60 ( 0.42)	0.71	3964.7	12730.00
8	1389.70	34.98	0.551	0.60 ( 0.43)	0.72	4221.5	900.00
9	1346.31	36.15	0.542	0.60 ( 0.43)	0.72	4351.7	306.00
10	1244.35	39.19	0.517	0.60 ( 0.44)	0.73	4684.5	12710.00
11	1119.70	42.77	0.494	0.60 ( 0.45)	0.75	5029.3	430.00
12	993.39	46.16	0.475	0.60 ( 0.46)	0.76	5332.4	400.00
13	895.95	48.94	0.459	0.60 ( 0.46)	0.77	5572.1	600.00
14	883.57	63.34	0.393	0.60 ( 0.49)	0.81	7572.6	390.00
15	895.33	98.14	0.330	0.60 ( 0.54)	0.89	12297.0	11831.00
16	958.22	122.17	0.288	0.60 ( 0.55)	0.92	15982.1	11530.00
17	1030.64	142.18	0.270	0.60 ( 0.56)	0.93	20128.8	11000.00
18	1130.02	165.07	0.249	0.60 ( 0.57)	0.95	26924.7	10850.00
19	1012.72	186.14	0.234	0.60 ( 0.57)	0.95	31259.2	11910.00
20	950.03	197.96	0.230	0.60 ( 0.57)	0.96	32962.7	12300.00
21	823.82	231.06	0.220	0.60 ( 0.58)	0.96	38671.1	12410.00
22	793.41	239.42	0.218	0.60 ( 0.58)	0.96	40103.4	10600.00
23	779.75	263.81	0.210	0.60 ( 0.58)	0.96	44757.0	12261.00
24	765.21	276.51	0.206	0.60 ( 0.58)	0.96	46243.6	10410.00
25	750.85	288.62	0.202	0.60 ( 0.58)	0.97	47345.6	12101.10
26	735.93	298.26	0.199	0.60 ( 0.58)	0.97	48167.0	10700.00
27	718.41	315.91	0.194	0.60 ( 0.58)	0.97	49723.7	10200.00
28	702.02	329.23	0.190	0.60 ( 0.58)	0.97	50661.9	12010.00
29	657.02	358.04	0.181	0.60 ( 0.58)	0.97	51335.6	10210.00
30	595.78	406.79	0.175	0.60 ( 0.58)	0.97	51834.7	12000.00
31	554.60	476.04	0.167	0.60 ( 0.58)	0.97	52419.5	10100.00

TOTAL AREA (ACRES) = 52419.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1675.24 Tc (MIN.) = 22.354

EFFECTIVE AREA (ACRES) = 2497.17 AREA-AVERAGED Fm (INCH/HR) = 0.40  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 52419.5  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 247.00 DOWNSTREAM (FEET) = 240.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 819.00 CHANNEL SLOPE = 0.0085  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 1675.24  
 FLOW VELOCITY (FEET/SEC.) = 10.48 FLOW DEPTH (FEET) = 7.30  
 TRAVEL TIME (MIN.) = 1.30 Tc (MIN.) = 23.66  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc (MIN.) = 23.66  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.696 **S27-41**  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	17.31	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 17.31 SUBAREA RUNOFF (CFS) = 1.50  
 EFFECTIVE AREA (ACRES) = 2514.48 AREA-AVERAGED Fm (INCH/HR) = 0.40  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.67  
 TOTAL AREA (ACRES) = 52436.8 PEAK FLOW RATE (CFS) = 1675.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 =====

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52436.8 TC (MIN.) = 23.66  
 EFFECTIVE AREA (ACRES) = 2514.48 AREA-AVERAGED Fm (INCH/HR) = 0.40  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.667  
 PEAK FLOW RATE (CFS) = 1675.24

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1675.24	23.66	0.696	0.60 ( 0.40)	0.67	2514.5	300.00
2	1668.49	25.94	0.653	0.60 ( 0.40)	0.67	2753.2	940.00
3	1575.76	29.81	0.595	0.60 ( 0.41)	0.69	3349.6	327.00
4	1528.15	31.37	0.581	0.60 ( 0.42)	0.69	3572.0	350.00



5	1483.57	32.94	0.568	0.60	( 0.42)	0.70	3792.3	320.00
6	1449.18	34.25	0.557	0.60	( 0.43)	0.71	3973.0	413.00
7	1447.42	34.32	0.557	0.60	( 0.43)	0.71	3982.0	12730.00
8	1389.70	36.34	0.540	0.60	( 0.43)	0.72	4238.8	900.00
9	1346.31	37.53	0.530	0.60	( 0.44)	0.73	4369.0	306.00
10	1244.35	40.60	0.507	0.60	( 0.44)	0.74	4701.8	12710.00
11	1119.70	44.21	0.486	0.60	( 0.45)	0.75	5046.6	430.00
12	993.39	47.64	0.466	0.60	( 0.46)	0.76	5349.7	400.00
13	895.95	50.47	0.450	0.60	( 0.46)	0.77	5589.4	600.00
14	883.57	64.87	0.390	0.60	( 0.49)	0.81	7589.9	390.00
15	895.33	99.66	0.327	0.60	( 0.54)	0.89	12314.3	11831.00
16	958.22	123.66	0.287	0.60	( 0.55)	0.92	15999.4	11530.00
17	1030.64	143.65	0.269	0.60	( 0.56)	0.93	20146.1	11000.00
18	1130.02	166.51	0.248	0.60	( 0.57)	0.95	26942.0	10850.00
19	1012.72	187.62	0.234	0.60	( 0.57)	0.95	31276.5	11910.00
20	950.03	199.46	0.230	0.60	( 0.57)	0.96	32980.0	12300.00
21	823.82	232.62	0.220	0.60	( 0.58)	0.96	38688.4	12410.00
22	793.41	240.99	0.217	0.60	( 0.58)	0.96	40120.7	10600.00
23	779.75	265.38	0.209	0.60	( 0.58)	0.96	44774.3	12261.00
24	765.21	278.09	0.205	0.60	( 0.58)	0.96	46260.9	10410.00
25	750.85	290.21	0.202	0.60	( 0.58)	0.97	47362.9	12101.10
26	735.93	299.86	0.199	0.60	( 0.58)	0.97	48184.3	10700.00
27	718.41	317.52	0.193	0.60	( 0.58)	0.97	49741.0	10200.00
28	702.02	330.85	0.189	0.60	( 0.58)	0.97	50679.2	12010.00
29	657.02	359.69	0.180	0.60	( 0.58)	0.97	51352.9	10210.00
30	595.78	408.47	0.174	0.60	( 0.58)	0.97	51852.0	12000.00
31	554.60	477.76	0.166	0.60	( 0.58)	0.97	52436.8	10100.00

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 =====  
 END OF RATIONAL METHOD ANALYSIS

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S28- FREE DRAINING - ULTIMATE CONDITIION \*  
\* 2-YR RM EV NOVEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV28.DAT  
TIME/DATE OF STUDY: 11:28 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.862
- 2) 10.00; 1.241
- 3) 15.00; 0.946
- 4) 20.00; 0.775
- 5) 25.00; 0.667
- 6) 30.00; 0.592
- 7) 40.00; 0.510
- 8) 50.00; 0.453
- 9) 60.00; 0.399
- 10) 90.00; 0.345
- 11) 120.00; 0.290
- 12) 180.00; 0.236
- 13) 360.00; 0.180
- 14) 1200.00; 0.083

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

PEAK FLOWRATE TABLE FILE NAME: RU02EV27.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1675.24	23.66	0.60 ( 0.40)	0.67	2514.5	300.00
2	1389.70	36.34	0.60 ( 0.43)	0.72	4238.8	900.00
3	883.57	64.87	0.60 ( 0.49)	0.81	7589.9	390.00
4	895.33	99.66	0.60 ( 0.54)	0.89	12314.3	11831.00
5	958.22	123.66	0.60 ( 0.55)	0.92	15999.4	11530.00
6	1030.64	143.65	0.60 ( 0.56)	0.93	20146.1	11000.00
7	1130.02	166.51	0.60 ( 0.57)	0.95	26942.0	10850.00
8	1012.72	187.62	0.60 ( 0.57)	0.95	31276.5	11910.00
9	950.03	199.46	0.60 ( 0.57)	0.96	32980.0	12300.00
10	823.82	232.62	0.60 ( 0.58)	0.96	38688.4	12410.00
11	793.41	240.99	0.60 ( 0.58)	0.96	40120.7	10600.00
12	779.75	265.38	0.60 ( 0.58)	0.96	44774.3	12261.00
13	765.21	278.09	0.60 ( 0.58)	0.96	46260.9	10410.00
14	750.85	290.21	0.60 ( 0.58)	0.97	47362.9	12101.10
15	735.93	299.86	0.60 ( 0.58)	0.97	48184.3	10700.00
16	718.41	317.52	0.60 ( 0.58)	0.97	49741.0	10200.00
17	702.02	330.85	0.60 ( 0.58)	0.97	50679.2	12010.00
18	657.02	359.69	0.60 ( 0.58)	0.97	51352.9	10210.00
19	595.78	408.47	0.60 ( 0.58)	0.97	51852.0	12000.00
20	554.60	477.76	0.60 ( 0.58)	0.97	52436.8	10100.00
TOTAL AREA (ACRES) =						52436.8

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\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<<

PEAK FLOWRATE TABLE FILE NAME: P501XX02.DNA  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	55.42	15.69	0.60 ( 0.50)	0.83	166.9	50110.00
2	49.27	21.93	0.60 ( 0.51)	0.85	223.2	50100.00
TOTAL AREA (ACRES) =						223.2

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

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

1 55.42 15.69 0.60( 0.50) 0.83 166.9 50110.00  
 2 49.27 21.93 0.60( 0.51) 0.85 223.2 50100.00  
 TOTAL AREA (ACRES) = 223.2

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	55.42	15.69	0.923	0.60( 0.50)	0.83	166.9	50110.00
2	49.27	21.93	0.733	0.60( 0.51)	0.85	223.2	50100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1675.24	23.66	0.696	0.60( 0.40)	0.67	2514.5	300.00
2	1389.70	36.34	0.540	0.60( 0.43)	0.72	4238.8	900.00
3	883.57	64.87	0.390	0.60( 0.49)	0.81	7589.9	390.00
4	895.33	99.66	0.327	0.60( 0.54)	0.89	12314.3	11831.00
5	958.22	123.66	0.287	0.60( 0.55)	0.92	15999.4	11530.00
6	1030.64	143.65	0.269	0.60( 0.56)	0.93	20146.1	11000.00
7	1130.02	166.51	0.248	0.60( 0.57)	0.95	26942.0	10850.00
8	1012.72	187.62	0.234	0.60( 0.57)	0.95	31276.5	11910.00
9	950.03	199.46	0.230	0.60( 0.57)	0.96	32980.0	12300.00
10	823.82	232.62	0.220	0.60( 0.58)	0.96	38688.4	12410.00
11	793.41	240.99	0.217	0.60( 0.58)	0.96	40120.7	10600.00
12	779.75	265.38	0.209	0.60( 0.58)	0.96	44774.3	12261.00
13	765.21	278.09	0.205	0.60( 0.58)	0.96	46260.9	10410.00
14	750.85	290.21	0.202	0.60( 0.58)	0.97	47362.9	12101.10
15	735.93	299.86	0.199	0.60( 0.58)	0.97	48184.3	10700.00
16	718.41	317.52	0.193	0.60( 0.58)	0.97	49741.0	10200.00
17	702.02	330.85	0.189	0.60( 0.58)	0.97	50679.2	12010.00
18	657.02	359.69	0.180	0.60( 0.58)	0.97	51352.9	10210.00
19	595.78	408.47	0.174	0.60( 0.58)	0.97	51852.0	12000.00
20	554.60	477.76	0.166	0.60( 0.58)	0.97	52436.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1730.66	15.69	0.923	0.60( 0.41)	0.68	1834.2	50110.00
2	1724.51	21.93	0.733	0.60( 0.41)	0.68	2554.3	50100.00
3	1716.28	23.66	0.696	0.60( 0.41)	0.68	2737.7	300.00
4	1407.52	36.34	0.540	0.60( 0.44)	0.73	4462.0	900.00
5	896.45	64.87	0.390	0.60( 0.49)	0.81	7813.1	390.00
6	906.13	99.66	0.327	0.60( 0.53)	0.89	12537.5	11831.00
7	967.68	123.66	0.287	0.60( 0.55)	0.91	16222.6	11530.00
8	1039.51	143.65	0.269	0.60( 0.56)	0.93	20369.3	11000.00
9	1138.21	166.51	0.248	0.60( 0.57)	0.95	27165.2	10850.00
10	1020.43	187.62	0.234	0.60( 0.57)	0.95	31499.7	11910.00
11	957.62	199.46	0.230	0.60( 0.57)	0.96	33203.2	12300.00
12	831.07	232.62	0.220	0.60( 0.58)	0.96	38911.6	12410.00
13	800.57	240.99	0.217	0.60( 0.58)	0.96	40343.9	10600.00

14	786.67	265.38	0.209	0.60( 0.58)	0.96	44997.5	12261.00
15	771.99	278.09	0.205	0.60( 0.58)	0.96	46484.1	10410.00
16	757.50	290.21	0.202	0.60( 0.58)	0.97	47586.1	12101.10
17	742.49	299.86	0.199	0.60( 0.58)	0.97	48407.5	10700.00
18	724.78	317.52	0.193	0.60( 0.58)	0.97	49964.2	10200.00
19	708.26	330.85	0.189	0.60( 0.58)	0.97	50902.4	12010.00
20	662.96	359.69	0.180	0.60( 0.58)	0.97	51576.1	10210.00
21	601.54	408.47	0.174	0.60( 0.58)	0.97	52075.2	12000.00
22	560.09	477.76	0.166	0.60( 0.58)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1730.66 Tc (MIN.) = 15.686  
 EFFECTIVE AREA (ACRES) = 1834.16 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.68  
 TOTAL AREA (ACRES) = 52660.0  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52660.0 TC (MIN.) = 15.69  
 EFFECTIVE AREA (ACRES) = 1834.16 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.682  
 PEAK FLOW RATE (CFS) = 1730.66

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1730.66	15.69	0.923	0.60( 0.41)	0.68	1834.2	50110.00
2	1724.51	21.93	0.733	0.60( 0.41)	0.68	2554.3	50100.00
3	1716.28	23.66	0.696	0.60( 0.41)	0.68	2737.7	300.00
4	1407.52	36.34	0.540	0.60( 0.44)	0.73	4462.0	900.00
5	896.45	64.87	0.390	0.60( 0.49)	0.81	7813.1	390.00
6	906.13	99.66	0.327	0.60( 0.53)	0.89	12537.5	11831.00
7	967.68	123.66	0.287	0.60( 0.55)	0.91	16222.6	11530.00
8	1039.51	143.65	0.269	0.60( 0.56)	0.93	20369.3	11000.00
9	1138.21	166.51	0.248	0.60( 0.57)	0.95	27165.2	10850.00
10	1020.43	187.62	0.234	0.60( 0.57)	0.95	31499.7	11910.00
11	957.62	199.46	0.230	0.60( 0.57)	0.96	33203.2	12300.00
12	831.07	232.62	0.220	0.60( 0.58)	0.96	38911.6	12410.00
13	800.57	240.99	0.217	0.60( 0.58)	0.96	40343.9	10600.00
14	786.67	265.38	0.209	0.60( 0.58)	0.96	44997.5	12261.00
15	771.99	278.09	0.205	0.60( 0.58)	0.96	46484.1	10410.00
16	757.50	290.21	0.202	0.60( 0.58)	0.97	47586.1	12101.10
17	742.49	299.86	0.199	0.60( 0.58)	0.97	48407.5	10700.00
18	724.78	317.52	0.193	0.60( 0.58)	0.97	49964.2	10200.00
19	708.26	330.85	0.189	0.60( 0.58)	0.97	50902.4	12010.00
20	662.96	359.69	0.180	0.60( 0.58)	0.97	51576.1	10210.00
21	601.54	408.47	0.174	0.60( 0.58)	0.97	52075.2	12000.00
22	560.09	477.76	0.166	0.60( 0.58)	0.97	52660.0	10100.00

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S29- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV29.DAT  
TIME/DATE OF STUDY: 11:28 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.853
- 2) 10.00; 1.236
- 3) 15.00; 0.943
- 4) 20.00; 0.773
- 5) 25.00; 0.666
- 6) 30.00; 0.591
- 7) 40.00; 0.509
- 8) 50.00; 0.452
- 9) 60.00; 0.398
- 10) 90.00; 0.342
- 11) 120.00; 0.286
- 12) 180.00; 0.230
- 13) 360.00; 0.176
- 14) 1200.00; 0.082

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP (FT)	MANNING HIKE FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0313	0.167 0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

PEAK FLOWRATE TABLE FILE NAME: RU02EV28.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1730.66	15.69	0.60 ( 0.41)	0.68	1834.2	50110.00
2	1407.52	36.34	0.60 ( 0.44)	0.73	4462.0	900.00
3	896.45	64.87	0.60 ( 0.49)	0.81	7813.1	390.00
4	906.13	99.66	0.60 ( 0.53)	0.89	12537.5	11831.00
5	967.68	123.66	0.60 ( 0.55)	0.91	16222.6	11530.00
6	1039.51	143.65	0.60 ( 0.56)	0.93	20369.3	11000.00
7	1138.21	166.51	0.60 ( 0.57)	0.95	27165.2	10850.00
8	1020.43	187.62	0.60 ( 0.57)	0.95	31499.7	11910.00
9	957.62	199.46	0.60 ( 0.57)	0.96	33203.2	12300.00
10	831.07	232.62	0.60 ( 0.58)	0.96	38911.6	12410.00
11	800.57	240.99	0.60 ( 0.58)	0.96	40343.9	10600.00
12	786.67	265.38	0.60 ( 0.58)	0.96	44997.5	12261.00
13	771.99	278.09	0.60 ( 0.58)	0.96	46484.1	10410.00
14	757.50	290.21	0.60 ( 0.58)	0.97	47586.1	12101.10
15	742.49	299.86	0.60 ( 0.58)	0.97	48407.5	10700.00
16	724.78	317.52	0.60 ( 0.58)	0.97	49964.2	10200.00
17	708.26	330.85	0.60 ( 0.58)	0.97	50902.4	12010.00
18	662.96	359.69	0.60 ( 0.58)	0.97	51576.1	10210.00
19	601.54	408.47	0.60 ( 0.58)	0.97	52075.2	12000.00
20	560.09	477.76	0.60 ( 0.58)	0.97	52660.0	10100.00
TOTAL AREA (ACRES) =						52660.0

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\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1730.66	15.69	0.60 ( 0.41)	0.68	1834.2	50110.00
2	1407.52	36.34	0.60 ( 0.44)	0.73	4462.0	900.00
3	896.45	64.87	0.60 ( 0.49)	0.81	7813.1	390.00
4	906.13	99.66	0.60 ( 0.53)	0.89	12537.5	11831.00
5	967.68	123.66	0.60 ( 0.55)	0.91	16222.6	11530.00
6	1039.51	143.65	0.60 ( 0.56)	0.93	20369.3	11000.00
7	1138.21	166.51	0.60 ( 0.57)	0.95	27165.2	10850.00
8	1020.43	187.62	0.60 ( 0.57)	0.95	31499.7	11910.00
9	957.62	199.46	0.60 ( 0.57)	0.96	33203.2	12300.00
10	831.07	232.62	0.60 ( 0.58)	0.96	38911.6	12410.00
11	800.57	240.99	0.60 ( 0.58)	0.96	40343.9	10600.00
12	786.67	265.38	0.60 ( 0.58)	0.96	44997.5	12261.00
13	771.99	278.09	0.60 ( 0.58)	0.96	46484.1	10410.00

14	757.50	290.21	0.60	( 0.58)	0.97	47586.1	12101.10
15	742.49	299.86	0.60	( 0.58)	0.97	48407.5	10700.00
16	724.78	317.52	0.60	( 0.58)	0.97	49964.2	10200.00
17	708.26	330.85	0.60	( 0.58)	0.97	50902.4	12010.00
18	662.96	359.69	0.60	( 0.58)	0.97	51576.1	10210.00
19	601.54	408.47	0.60	( 0.58)	0.97	52075.2	12000.00
20	560.09	477.76	0.60	( 0.58)	0.97	52660.0	10100.00

TOTAL AREA(ACRES) = 52660.0

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 1 <<<<<<  
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\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 240.00 DOWNSTREAM(FEET) = 216.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 3120.28 CHANNEL SLOPE = 0.0077  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 1730.66  
FLOW VELOCITY(FEET/SEC.) = 10.16 FLOW DEPTH(FEET) = 7.53  
TRAVEL TIME(MIN.) = 5.12 Tc(MIN.) = 20.80  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
=====

MAINLINE Tc(MIN.) = 20.80  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.756  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.60	0.60	0.100	-
USER-DEFINED	-	3.20	0.60	0.100	-
USER-DEFINED	-	1.50	0.60	0.850	-
USER-DEFINED	-	5.60	0.60	0.100	-
USER-DEFINED	-	6.50	0.60	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.409  
SUBAREA AREA(ACRES) = 19.40 SUBAREA RUNOFF(CFS) = 8.91  
EFFECTIVE AREA(ACRES) = 1853.56 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.68  
TOTAL AREA(ACRES) = 52679.4 PEAK FLOW RATE(CFS) = 1730.66  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
=====

MAINLINE Tc(MIN.) = 20.80  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.756  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.60	0.100	-
USER-DEFINED	-	4.10	0.60	0.850	-
USER-DEFINED	-	0.10	0.60	0.850	-
USER-DEFINED	-	1.60	0.60	0.900	-
USER-DEFINED	-	0.60	0.60	0.900	-
USER-DEFINED	-	1.00	0.60	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.823  
SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 1.86  
EFFECTIVE AREA(ACRES) = 1861.46 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.68  
TOTAL AREA(ACRES) = 52687.3 PEAK FLOW RATE(CFS) = 1730.66  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
=====

MAINLINE Tc(MIN.) = 20.80  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.756  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.60	0.60	0.900	-
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	12.00	0.60	1.000	-
USER-DEFINED	-	36.10	0.60	0.850	-
USER-DEFINED	-	15.90	0.60	1.000	-
USER-DEFINED	-	1.50	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA(ACRES) = 69.40 SUBAREA RUNOFF(CFS) = 12.86  
EFFECTIVE AREA(ACRES) = 1930.86 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.69  
TOTAL AREA(ACRES) = 52756.7 PEAK FLOW RATE(CFS) = 1730.66  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

Local Area G

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
=====

MAINLINE Tc(MIN.) = 20.80  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.756  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.20	0.60	1.000	-
USER-DEFINED	-	0.40	0.60	1.000	-
USER-DEFINED	-	1.00	0.60	1.000	-
USER-DEFINED	-	4.10	0.60	0.500	-
USER-DEFINED	-	3.70	0.60	0.500	-

S29.2-1

USER-DEFINED - 0.40 0.60 0.500 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60 **S29.2-1**  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.703  
 SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 4.15  
 EFFECTIVE AREA (ACRES) = 1944.66 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.69  
 TOTAL AREA (ACRES) = 52770.5 PEAK FLOW RATE (CFS) = 1730.66  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 20.80 **S29.2-1**  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.756  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.70 0.60 1.000 -  
 USER-DEFINED - 1.20 0.60 1.000 -  
 USER-DEFINED - 2.90 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 1.52  
 EFFECTIVE AREA (ACRES) = 1955.46 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.69  
 TOTAL AREA (ACRES) = 52781.3 PEAK FLOW RATE (CFS) = 1730.66  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12902.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 216.00 DOWNSTREAM (FEET) = 215.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 122.04 CHANNEL SLOPE = 0.0082  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 1730.66  
 FLOW VELOCITY (FEET/SEC.) = 10.40 FLOW DEPTH (FEET) = 7.45  
 TRAVEL TIME (MIN.) = 0.20 Tc (MIN.) = 21.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P503XX02.DNA **HZ-503**  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	249.94	24.13	0.60 (0.44)	0.74	974.1	50320.00
2	238.06	27.18	0.60 (0.44)	0.74	1066.0	50240.00
3	235.52	27.54	0.60 (0.44)	0.74	1075.7	50330.00
4	204.90	31.73	0.60 (0.44)	0.74	1176.9	50300.00

5	202.01	32.10	0.60 (0.44)	0.74	1183.1	50280.00
6	159.62	37.43	0.60 (0.44)	0.74	1246.6	50220.00
7	136.90	45.01	0.60 (0.44)	0.74	1294.0	50260.00
8	132.00	47.96	0.60 (0.44)	0.74	1298.6	50200.00
TOTAL AREA (ACRES) =		1298.6				

**HZ-504**

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1730.66	21.00	0.752	0.60 (0.41)	0.69	1955.5	50110.00
2	1407.52	41.94	0.498	0.60 (0.44)	0.73	4583.3	900.00
3	896.45	71.13	0.377	0.60 (0.49)	0.81	7934.4	390.00
4	906.13	105.90	0.312	0.60 (0.53)	0.89	12658.8	11831.00
5	967.68	129.81	0.277	0.60 (0.55)	0.91	16343.9	11530.00
6	1039.51	149.69	0.258	0.60 (0.56)	0.93	20490.6	11000.00
7	1138.21	172.41	0.237	0.60 (0.57)	0.95	27286.5	10850.00
8	1020.43	193.69	0.226	0.60 (0.57)	0.95	31621.0	11910.00
9	957.62	205.62	0.222	0.60 (0.57)	0.96	33324.5	12300.00
10	831.07	239.01	0.212	0.60 (0.58)	0.96	39032.9	12410.00
11	800.57	247.43	0.210	0.60 (0.58)	0.96	40465.2	10600.00
12	786.67	271.85	0.202	0.60 (0.58)	0.96	45118.8	12261.00
13	771.99	284.59	0.199	0.60 (0.58)	0.96	46605.4	10410.00
14	757.50	296.75	0.195	0.60 (0.58)	0.96	47707.4	12101.10
15	742.49	306.43	0.192	0.60 (0.58)	0.97	48528.8	10700.00
16	724.78	324.13	0.187	0.60 (0.58)	0.97	50085.5	10200.00
17	708.26	337.49	0.183	0.60 (0.58)	0.97	51023.7	12010.00
18	662.96	366.45	0.175	0.60 (0.58)	0.97	51697.4	10210.00
19	601.54	415.40	0.170	0.60 (0.58)	0.97	52196.5	12000.00
20	560.09	484.81	0.162	0.60 (0.58)	0.97	52781.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	249.94	24.13	0.685	0.60 (0.44)	0.74	974.1	50320.00
2	238.06	27.18	0.633	0.60 (0.44)	0.74	1066.0	50240.00
3	235.52	27.54	0.628	0.60 (0.44)	0.74	1075.7	50330.00
4	204.90	31.73	0.577	0.60 (0.44)	0.74	1176.9	50300.00
5	202.01	32.10	0.574	0.60 (0.44)	0.74	1183.1	50280.00
6	159.62	37.43	0.530	0.60 (0.44)	0.74	1246.6	50220.00
7	136.90	45.01	0.480	0.60 (0.44)	0.74	1294.0	50260.00
8	132.00	47.96	0.464	0.60 (0.44)	0.74	1298.6	50200.00

LONGEST FLOWPATH FROM NODE 50220.00 TO NODE 12902.00 = 17597.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1980.60	21.00	0.752	0.60 (0.42)	0.70	2803.2	50110.00
2	1932.32	24.13	0.685	0.60 (0.43)	0.71	3322.2	50320.00
3	1873.33	27.18	0.633	0.60 (0.43)	0.71	3797.2	50240.00
4	1865.32	27.54	0.628	0.60 (0.43)	0.71	3851.4	50330.00
5	1770.01	31.73	0.577	0.60 (0.43)	0.72	4478.7	50300.00

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
6	1761.40	32.10	0.574	0.60 ( 0.43)	0.72	4531.4	50280.00
7	1636.74	37.43	0.530	0.60 ( 0.44)	0.73	5264.0	50220.00
8	1553.63	41.94	0.498	0.60 ( 0.44)	0.73	5858.1	900.00
9	1490.65	45.01	0.480	0.60 ( 0.44)	0.74	6230.0	50260.00
10	1434.23	47.96	0.464	0.60 ( 0.45)	0.75	6572.3	50200.00
11	1003.85	71.13	0.377	0.60 ( 0.48)	0.80	9233.0	390.00
12	995.05	105.90	0.312	0.60 ( 0.53)	0.88	13957.4	11831.00
13	1046.50	129.81	0.277	0.60 ( 0.54)	0.90	17642.5	11530.00
14	1113.05	149.69	0.258	0.60 ( 0.55)	0.92	21789.2	11000.00
15	1205.71	172.41	0.237	0.60 ( 0.56)	0.94	28585.1	10850.00
16	1084.74	193.69	0.226	0.60 ( 0.57)	0.95	32919.6	11910.00
17	1020.92	205.62	0.222	0.60 ( 0.57)	0.95	34623.1	12300.00
18	891.51	239.01	0.212	0.60 ( 0.57)	0.95	40331.5	12410.00
19	860.29	247.43	0.210	0.60 ( 0.57)	0.95	41763.8	10600.00
20	844.30	271.85	0.202	0.60 ( 0.57)	0.96	46417.4	12261.00
21	828.54	284.59	0.199	0.60 ( 0.57)	0.96	47904.0	10410.00
22	813.01	296.75	0.195	0.60 ( 0.58)	0.96	49006.0	12101.10
23	797.17	306.43	0.192	0.60 ( 0.58)	0.96	49827.4	10700.00
24	777.96	324.13	0.187	0.60 ( 0.58)	0.96	51384.1	10200.00
25	760.29	337.49	0.183	0.60 ( 0.58)	0.96	52322.3	12010.00
26	712.86	366.45	0.175	0.60 ( 0.58)	0.96	52996.0	10210.00
27	649.88	415.40	0.170	0.60 ( 0.58)	0.96	53495.1	12000.00
28	606.22	484.81	0.162	0.60 ( 0.58)	0.96	54079.9	10100.00
TOTAL AREA (ACRES) = 54079.9							

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1980.60 Tc (MIN.) = 20.999  
EFFECTIVE AREA (ACRES) = 2803.23 AREA-AVERAGED Fm (INCH/HR) = 0.42  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.70  
TOTAL AREA (ACRES) = 54079.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM (FEET) = 215.00 DOWNSTREAM (FEET) = 214.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 895.53 CHANNEL SLOPE = 0.0011  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 1980.60  
FLOW VELOCITY (FEET/SEC.) = 5.09 FLOW DEPTH (FEET) = 11.39  
TRAVEL TIME (MIN.) = 2.93 Tc (MIN.) = 23.93  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P504XX02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.83	16.85	0.880	0.60 ( 0.56)	0.94	70.7	50400.00
TOTAL AREA (ACRES) = 70.7							

## Local Area B

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1980.60	23.93	0.689	0.60 ( 0.42)	0.70	2803.2	50110.00
2	1932.32	27.08	0.635	0.60 ( 0.43)	0.71	3322.2	50320.00
3	1873.33	30.15	0.590	0.60 ( 0.43)	0.71	3797.2	50240.00
4	1865.32	30.51	0.587	0.60 ( 0.43)	0.71	3851.4	50330.00
5	1770.01	34.74	0.552	0.60 ( 0.43)	0.72	4478.7	50300.00
6	1761.40	35.12	0.549	0.60 ( 0.43)	0.72	4531.4	50280.00
7	1636.74	40.51	0.506	0.60 ( 0.44)	0.73	5264.0	50220.00
8	1553.63	45.06	0.480	0.60 ( 0.44)	0.73	5858.1	900.00
9	1490.65	48.16	0.462	0.60 ( 0.44)	0.74	6230.0	50260.00
10	1434.23	51.13	0.446	0.60 ( 0.45)	0.75	6572.3	50200.00
11	1003.85	74.61	0.371	0.60 ( 0.48)	0.80	9233.0	390.00
12	995.05	109.38	0.306	0.60 ( 0.53)	0.88	13957.4	11831.00
13	1046.50	133.25	0.274	0.60 ( 0.54)	0.90	17642.5	11530.00
14	1113.05	153.07	0.255	0.60 ( 0.55)	0.92	21789.2	11000.00
15	1205.71	175.73	0.234	0.60 ( 0.56)	0.94	28585.1	10850.00
16	1084.74	197.09	0.225	0.60 ( 0.57)	0.95	32919.6	11910.00
17	1020.92	209.08	0.221	0.60 ( 0.57)	0.95	34623.1	12300.00
18	891.51	242.59	0.211	0.60 ( 0.57)	0.95	40331.5	12410.00
19	860.29	251.04	0.209	0.60 ( 0.57)	0.95	41763.8	10600.00
20	844.30	275.48	0.201	0.60 ( 0.57)	0.96	46417.4	12261.00
21	828.54	288.24	0.198	0.60 ( 0.57)	0.96	47904.0	10410.00
22	813.01	300.40	0.194	0.60 ( 0.58)	0.96	49006.0	12101.10
23	797.17	310.10	0.191	0.60 ( 0.58)	0.96	49827.4	10700.00
24	777.96	327.83	0.186	0.60 ( 0.58)	0.96	51384.1	10200.00
25	760.29	341.21	0.182	0.60 ( 0.58)	0.96	52322.3	12010.00
26	712.86	370.23	0.175	0.60 ( 0.58)	0.96	52996.0	10210.00
27	649.88	419.27	0.169	0.60 ( 0.58)	0.96	53495.1	12000.00
28	606.22	488.75	0.162	0.60 ( 0.58)	0.96	54079.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14.83	16.85	0.880	0.60 ( 0.56)	0.94	70.7	50400.00
LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1995.43	16.85	0.880	0.60 ( 0.43)	0.71	2044.9	50400.00
2	1986.50	23.93	0.689	0.60 ( 0.43)	0.71	2873.9	50110.00
3	1935.70	27.08	0.635	0.60 ( 0.43)	0.71	3392.9	50320.00



4	1875.05	30.15	0.590	0.60	(0.43)	0.72	3867.9	50240.00
5	1867.03	30.51	0.587	0.60	(0.43)	0.72	3922.1	50330.00
6	1771.61	34.74	0.552	0.60	(0.43)	0.72	4549.4	50300.00
7	1762.99	35.12	0.549	0.60	(0.43)	0.72	4602.1	50280.00
8	1638.21	40.51	0.506	0.60	(0.44)	0.73	5334.7	50220.00
9	1555.03	45.06	0.480	0.60	(0.44)	0.73	5928.8	900.00
10	1491.99	48.16	0.462	0.60	(0.44)	0.74	6300.7	50260.00
11	1435.53	51.13	0.446	0.60	(0.45)	0.75	6643.0	50200.00
12	1004.93	74.61	0.371	0.60	(0.48)	0.80	9303.7	390.00
13	995.94	109.38	0.306	0.60	(0.53)	0.88	14028.1	11831.00
14	1047.30	133.25	0.274	0.60	(0.54)	0.90	17713.2	11530.00
15	1113.79	153.07	0.255	0.60	(0.55)	0.92	21859.9	11000.00
16	1206.39	175.73	0.234	0.60	(0.56)	0.94	28655.8	10850.00
17	1085.39	197.09	0.225	0.60	(0.57)	0.95	32990.3	11910.00
18	1021.56	209.08	0.221	0.60	(0.57)	0.95	34693.8	12300.00
19	892.12	242.59	0.211	0.60	(0.57)	0.95	40402.2	12410.00
20	860.90	251.04	0.209	0.60	(0.57)	0.95	41834.5	10600.00
21	844.89	275.48	0.201	0.60	(0.57)	0.96	46488.1	12261.00
22	829.11	288.24	0.198	0.60	(0.57)	0.96	47974.7	10410.00
23	813.58	300.40	0.194	0.60	(0.58)	0.96	49076.7	12101.10
24	797.72	310.10	0.191	0.60	(0.58)	0.96	49898.1	10700.00
25	778.49	327.83	0.186	0.60	(0.58)	0.96	51454.8	10200.00
26	760.81	341.21	0.182	0.60	(0.58)	0.96	52393.0	12010.00
27	713.37	370.23	0.175	0.60	(0.58)	0.96	53066.7	10210.00
28	650.37	419.27	0.169	0.60	(0.58)	0.96	53565.8	12000.00
29	606.69	488.75	0.162	0.60	(0.58)	0.96	54150.6	10100.00

TOTAL AREA (ACRES) = 54150.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1995.43 Tc (MIN.) = 16.853  
EFFECTIVE AREA (ACRES) = 2044.92 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.96  
TOTAL AREA (ACRES) = 54150.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 214.00 DOWNSTREAM (FEET) = 213.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 767.57 CHANNEL SLOPE = 0.0013  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 1995.43  
FLOW VELOCITY (FEET/SEC.) = 5.41 FLOW DEPTH (FEET) = 11.09  
TRAVEL TIME (MIN.) = 2.37 Tc (MIN.) = 19.22  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 3B02EVRL.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	104.84	17.97	0.60 (0.25)	0.42	197.7	200.00
2	98.60	20.56	0.60 (0.25)	0.42	214.7	210.00

TOTAL AREA (ACRES) = 214.7

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11

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

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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1995.43	19.22	0.800	0.60 (0.43)	0.71	2044.9	50400.00
2	1986.50	26.30	0.647	0.60 (0.43)	0.71	2873.9	50110.00
3	1935.70	29.46	0.599	0.60 (0.43)	0.71	3392.9	50320.00
4	1875.05	32.56	0.570	0.60 (0.43)	0.72	3867.9	50240.00
5	1867.03	32.91	0.567	0.60 (0.43)	0.72	3922.1	50330.00
6	1771.61	37.18	0.532	0.60 (0.43)	0.72	4549.4	50300.00
7	1762.99	37.55	0.529	0.60 (0.43)	0.72	4602.1	50280.00
8	1638.21	42.99	0.492	0.60 (0.44)	0.73	5334.7	50220.00
9	1555.03	47.57	0.466	0.60 (0.44)	0.73	5928.8	900.00
10	1491.99	50.70	0.448	0.60 (0.44)	0.74	6300.7	50260.00
11	1435.53	53.70	0.432	0.60 (0.45)	0.75	6643.0	50200.00
12	1004.93	77.41	0.365	0.60 (0.48)	0.80	9303.7	390.00
13	995.94	112.20	0.301	0.60 (0.53)	0.88	14028.1	11831.00
14	1047.30	136.03	0.271	0.60 (0.54)	0.90	17713.2	11530.00
15	1113.79	155.81	0.253	0.60 (0.55)	0.92	21859.9	11000.00
16	1206.39	178.41	0.231	0.60 (0.56)	0.94	28655.8	10850.00
17	1085.39	199.85	0.224	0.60 (0.57)	0.95	32990.3	11910.00
18	1021.56	211.87	0.220	0.60 (0.57)	0.95	34693.8	12300.00
19	892.12	245.48	0.210	0.60 (0.57)	0.95	40402.2	12410.00
20	860.90	253.96	0.208	0.60 (0.57)	0.95	41834.5	10600.00
21	844.89	278.41	0.200	0.60 (0.57)	0.96	46488.1	12261.00
22	829.11	291.18	0.197	0.60 (0.57)	0.96	47974.7	10410.00
23	813.58	303.37	0.193	0.60 (0.58)	0.96	49076.7	12101.10
24	797.72	313.08	0.190	0.60 (0.58)	0.96	49898.1	10700.00
25	778.49	330.82	0.185	0.60 (0.58)	0.96	51454.8	10200.00
26	760.81	344.22	0.181	0.60 (0.58)	0.96	52393.0	12010.00
27	713.37	373.29	0.175	0.60 (0.58)	0.96	53066.7	10210.00
28	650.37	422.40	0.169	0.60 (0.58)	0.96	53565.8	12000.00
29	606.69	491.94	0.161	0.60 (0.58)	0.96	54150.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	104.84	17.97	0.842	0.60 (0.25)	0.42	197.7	200.00
2	98.60	20.56	0.761	0.60 (0.25)	0.42	214.7	210.00

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 5961.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2100.27	17.97	0.842	0.60 ( 0.41)	0.69	2109.2	200.00
2	2097.25	19.22	0.800	0.60 ( 0.41)	0.69	2250.8	50400.00
3	2092.34	20.56	0.761	0.60 ( 0.41)	0.69	2416.2	210.00
4	2062.88	26.30	0.647	0.60 ( 0.41)	0.69	3088.6	50110.00
5	2002.93	29.46	0.599	0.60 ( 0.42)	0.70	3607.6	50320.00
6	1939.02	32.56	0.570	0.60 ( 0.42)	0.70	4082.6	50240.00
7	1930.67	32.91	0.567	0.60 ( 0.42)	0.70	4136.8	50330.00
8	1831.34	37.18	0.532	0.60 ( 0.42)	0.71	4764.1	50300.00
9	1822.37	37.55	0.529	0.60 ( 0.42)	0.71	4816.8	50280.00
10	1693.43	42.99	0.492	0.60 ( 0.43)	0.72	5549.4	50220.00
11	1607.31	47.57	0.466	0.60 ( 0.43)	0.72	6143.5	900.00
12	1542.30	50.70	0.448	0.60 ( 0.44)	0.73	6515.4	50260.00
13	1484.01	53.70	0.432	0.60 ( 0.44)	0.74	6857.7	50200.00
14	1045.95	77.41	0.365	0.60 ( 0.48)	0.80	9518.4	390.00
15	1029.67	112.20	0.301	0.60 ( 0.52)	0.87	14242.8	11831.00
16	1077.72	136.03	0.271	0.60 ( 0.54)	0.90	17927.9	11530.00
17	1142.14	155.81	0.253	0.60 ( 0.55)	0.91	22074.6	11000.00
18	1232.37	178.41	0.231	0.60 ( 0.56)	0.93	28870.5	10850.00
19	1110.54	199.85	0.224	0.60 ( 0.56)	0.94	33205.0	11910.00
20	1046.30	211.87	0.220	0.60 ( 0.57)	0.94	34908.5	12300.00
21	915.73	245.48	0.210	0.60 ( 0.57)	0.95	40616.9	12410.00
22	884.22	253.96	0.208	0.60 ( 0.57)	0.95	42049.2	10600.00
23	867.39	278.41	0.200	0.60 ( 0.57)	0.95	46702.8	12261.00
24	851.18	291.18	0.197	0.60 ( 0.57)	0.96	48189.4	10410.00
25	835.24	303.37	0.193	0.60 ( 0.57)	0.96	49291.4	12101.10
26	819.06	313.08	0.190	0.60 ( 0.57)	0.96	50112.8	10700.00
27	799.23	330.82	0.185	0.60 ( 0.57)	0.96	51669.5	10200.00
28	781.10	344.22	0.181	0.60 ( 0.58)	0.96	52607.7	12010.00
29	732.96	373.29	0.175	0.60 ( 0.58)	0.96	53281.4	10210.00
30	669.34	422.40	0.169	0.60 ( 0.58)	0.96	53780.5	12000.00
31	624.79	491.94	0.161	0.60 ( 0.58)	0.96	54365.3	10100.00
TOTAL AREA (ACRES) =							54365.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 2100.27 Tc (MIN.) = 17.965  
 EFFECTIVE AREA (ACRES) = 2109.19 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 54365.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 17.97

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.842

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.70	0.60	0.100	-
USER-DEFINED	-	20.00	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	14.90	0.60	0.850	-
USER-DEFINED	-	2.60	0.60	0.900	-

USER-DEFINED - 0.80 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.920  
 SUBAREA AREA (ACRES) = 39.10 SUBAREA RUNOFF (CFS) = 10.21  
 EFFECTIVE AREA (ACRES) = 2148.29 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.69  
 TOTAL AREA (ACRES) = 54404.4 PEAK FLOW RATE (CFS) = 2100.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 17.97

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.842

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	0.100	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	1.70	0.60	0.900	-
USER-DEFINED	-	2.60	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.912

SUBAREA AREA (ACRES) = 5.00 SUBAREA RUNOFF (CFS) = 1.33

EFFECTIVE AREA (ACRES) = 2153.29 AREA-AVERAGED Fm (INCH/HR) = 0.41

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.69

TOTAL AREA (ACRES) = 54409.4 PEAK FLOW RATE (CFS) = 2100.27

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 17.97

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.842

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	2.60	0.60	0.900	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	3.00	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.956

SUBAREA AREA (ACRES) = 5.90 SUBAREA RUNOFF (CFS) = 1.43

EFFECTIVE AREA (ACRES) = 2159.19 AREA-AVERAGED Fm (INCH/HR) = 0.41

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.69

TOTAL AREA (ACRES) = 54415.3 PEAK FLOW RATE (CFS) = 2100.27

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 54415.3 TC (MIN.) = 17.97

EFFECTIVE AREA (ACRES) = 2159.19 AREA-AVERAGED Fm (INCH/HR) = 0.41

S29.2-4

S29.2-4

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.691  
 PEAK FLOW RATE (CFS) = 2100.27

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2100.27	17.97	0.842	0.60 ( 0.41)	0.69	2159.2	200.00
2	2097.25	19.22	0.800	0.60 ( 0.41)	0.69	2300.8	50400.00
3	2092.34	20.56	0.761	0.60 ( 0.41)	0.69	2466.2	210.00
4	2062.88	26.30	0.647	0.60 ( 0.42)	0.69	3138.6	50110.00
5	2002.93	29.46	0.599	0.60 ( 0.42)	0.70	3657.6	50320.00
6	1939.02	32.56	0.570	0.60 ( 0.42)	0.70	4132.6	50240.00
7	1930.67	32.91	0.567	0.60 ( 0.42)	0.70	4186.8	50330.00
8	1831.34	37.18	0.532	0.60 ( 0.43)	0.71	4814.1	50300.00
9	1822.37	37.55	0.529	0.60 ( 0.43)	0.71	4866.8	50280.00
10	1693.43	42.99	0.492	0.60 ( 0.43)	0.72	5599.4	50220.00
11	1607.31	47.57	0.466	0.60 ( 0.44)	0.73	6193.5	900.00
12	1542.30	50.70	0.448	0.60 ( 0.44)	0.73	6565.4	50260.00
13	1484.01	53.70	0.432	0.60 ( 0.44)	0.74	6907.7	50200.00
14	1045.95	77.41	0.365	0.60 ( 0.48)	0.80	9568.4	390.00
15	1029.67	112.20	0.301	0.60 ( 0.52)	0.87	14292.8	11831.00
16	1077.72	136.03	0.271	0.60 ( 0.54)	0.90	17977.9	11530.00
17	1142.14	155.81	0.253	0.60 ( 0.55)	0.91	22124.6	11000.00
18	1232.37	178.41	0.231	0.60 ( 0.56)	0.93	28920.5	10850.00
19	1110.54	199.85	0.224	0.60 ( 0.56)	0.94	33255.0	11910.00
20	1046.30	211.87	0.220	0.60 ( 0.57)	0.94	34958.5	12300.00
21	915.73	245.48	0.210	0.60 ( 0.57)	0.95	40666.9	12410.00
22	884.22	253.96	0.208	0.60 ( 0.57)	0.95	42099.2	10600.00
23	867.39	278.41	0.200	0.60 ( 0.57)	0.95	46752.8	12261.00
24	851.18	291.18	0.197	0.60 ( 0.57)	0.96	48239.4	10410.00
25	835.24	303.37	0.193	0.60 ( 0.57)	0.96	49341.4	12101.10
26	819.06	313.08	0.190	0.60 ( 0.57)	0.96	50162.8	10700.00
27	799.23	330.82	0.185	0.60 ( 0.57)	0.96	51719.5	10200.00
28	781.10	344.22	0.181	0.60 ( 0.58)	0.96	52657.7	12010.00
29	732.96	373.29	0.175	0.60 ( 0.58)	0.96	53331.4	10210.00
30	669.34	422.40	0.169	0.60 ( 0.58)	0.96	53830.5	12000.00
31	624.79	491.94	0.161	0.60 ( 0.58)	0.96	54415.3	10100.00

=====

END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S33- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV33.DAT  
TIME/DATE OF STUDY: 11:28 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.825
- 2) 10.00; 1.217
- 3) 15.00; 0.932
- 4) 20.00; 0.766
- 5) 25.00; 0.662
- 6) 30.00; 0.587
- 7) 40.00; 0.506
- 8) 50.00; 0.449
- 9) 60.00; 0.395
- 10) 90.00; 0.340
- 11) 120.00; 0.286
- 12) 180.00; 0.232
- 13) 360.00; 0.178
- 14) 1200.00; 0.080

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S31X02.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	170.57	51.53	0.60 ( 0.49)	0.81	2407.7	13100.00
2	195.69	91.33	0.60 ( 0.48)	0.81	3776.8	13000.00
3	193.58	94.68	0.60 ( 0.48)	0.81	3796.8	13010.00
TOTAL AREA (ACRES) =						3796.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S32X02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	71.12	52.96	0.60 ( 0.49)	0.82	1090.8	13200.00
2	65.38	59.51	0.60 ( 0.50)	0.83	1127.6	13210.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	71.12	52.96	0.60 ( 0.49)	0.82	1090.8	13200.00
2	65.38	59.51	0.60 ( 0.50)	0.83	1127.6	13210.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 11  
-----

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

=====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	71.12	52.96	0.433	0.60 ( 0.49)	0.82	1090.8	13200.00
2	65.38	59.51	0.398	0.60 ( 0.50)	0.83	1127.6	13210.00
LONGEST FLOWPATH FROM NODE 13200.00 TO NODE 13222.00 = 16821.05 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	170.57	51.53	0.441	0.60 ( 0.49)	0.81	2407.7	13100.00
2	195.69	91.33	0.338	0.60 ( 0.48)	0.81	3776.8	13000.00
3	193.58	94.68	0.332	0.60 ( 0.48)	0.81	3796.8	13010.00

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	241.00	51.53	0.441	0.60 ( 0.49)	0.81	3469.1	13100.00
2	242.59	52.96	0.433	0.60 ( 0.49)	0.81	3547.6	13200.00
3	240.98	59.51	0.398	0.60 ( 0.49)	0.81	3809.6	13210.00
4	251.19	91.33	0.338	0.60 ( 0.49)	0.81	4904.4	13000.00
5	248.09	94.68	0.332	0.60 ( 0.49)	0.81	4924.4	13010.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 251.19 Tc(MIN.) = 91.333  
 EFFECTIVE AREA(ACRES) = 4904.45 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81  
 TOTAL AREA(ACRES) = 4924.4  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00 **S33-01**  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.327

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.40	0.60	0.100	-
USER-DEFINED	-	15.60	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	0.600	-
USER-DEFINED	-	5.30	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	22.60	0.60	0.100	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.521

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 254.38  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.96  
 AVERAGE FLOW DEPTH(FEET) = 3.49 TRAVEL TIME(MIN.) = 6.06  
 Tc(MIN.) = 97.40  
 SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 6.36  
 EFFECTIVE AREA(ACRES) = 4949.65 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 276.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 3.60 FLOW VELOCITY(FEET/SEC.) = 7.11  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 97.40  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.327

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.00	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	7.40	0.60	0.100	-
USER-DEFINED	-	4.70	0.60	1.000	-
USER-DEFINED	-	2.90	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.596  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 16.50 SUBAREA RUNOFF(CFS) = 1.96  
 EFFECTIVE AREA(ACRES) = 4966.15 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 278.93

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 97.40 **S33-01**  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.327

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.30	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	0.100	-
USER-DEFINED	-	5.30	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	1.000	-

USER-DEFINED - 0.20 0.60 1.000 -  
 USER-DEFINED - 0.60 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 0.05  
 EFFECTIVE AREA (ACRES) = 4974.05 AREA-AVERAGED Fm (INCH/HR) = 0.49  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 4994.0 PEAK FLOW RATE (CFS) = 278.98

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 97.40  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.327 **HZ-31111**

SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.30	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	1.10	0.60	1.000	-
USER-DEFINED	-	6.90	0.60	1.000	-
USER-DEFINED	-	7.90	0.60	1.000	-
USER-DEFINED	-	1.00	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 22.00 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 4996.05 AREA-AVERAGED Fm (INCH/HR) = 0.49  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5016.0 PEAK FLOW RATE (CFS) = 278.98

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 97.40  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.327 **HZ-31111**

SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.40	0.60	1.000	-
USER-DEFINED	-	14.60	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 5011.05 AREA-AVERAGED Fm (INCH/HR) = 0.49

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.81  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5031.0 PEAK FLOW RATE (CFS) = 278.98

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10  
 -----

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

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

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00  
 ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641 **HZ-31111**  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.382

SUBAREA Tc AND LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL, BROADLEAF"	-	0.50	0.60	1.000	0	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	-	0.30	0.60	1.000	0	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	-	0.30	0.60	1.000	0	8.64

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF (CFS) = 0.77  
 TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 0.77

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 685.00 DOWNSTREAM (FEET) = 655.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 135.00 CHANNEL SLOPE = 0.2222  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.324 **HZ-31101**  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	0.70	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1.20  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.66

AVERAGE FLOW DEPTH(FEET) = 0.29 TRAVEL TIME(MIN.) = 0.48  
Tc(MIN.) = 9.12  
SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = 0.85  
EFFECTIVE AREA(ACRES) = 2.40 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 1.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.32 FLOW VELOCITY(FEET/SEC.) = 4.99  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 630.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 203.00 CHANNEL SLOPE = 0.1232  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00 **HZ-31102**  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.230

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	1.90	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.22  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.41  
AVERAGE FLOW DEPTH(FEET) = 0.41 TRAVEL TIME(MIN.) = 0.77  
Tc(MIN.) = 9.89  
SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 1.31  
EFFECTIVE AREA(ACRES) = 4.70 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 2.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.44 FLOW VELOCITY(FEET/SEC.) = 4.60  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 605.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 321.00 CHANNEL SLOPE = 0.0779  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00 **HZ-31103**  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.149

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.10	0.60	1.000	-

USER-DEFINED - 2.50 0.60 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.56  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.11  
AVERAGE FLOW DEPTH(FEET) = 0.54 TRAVEL TIME(MIN.) = 1.30  
Tc(MIN.) = 11.19  
SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 1.78  
EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 4.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.56 FLOW VELOCITY(FEET/SEC.) = 4.33  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00 **HZ-31104**  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.087

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.70	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	1.000	-
USER-DEFINED	-	3.00	0.60	1.000	-
USER-DEFINED	-	2.10	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.51  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.43  
AVERAGE FLOW DEPTH(FEET) = 0.64 TRAVEL TIME(MIN.) = 1.08  
Tc(MIN.) = 12.27  
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 2.81  
EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 6.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.68 FLOW VELOCITY(FEET/SEC.) = 4.62  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.022 **HZ-31106**  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.60	0.60	1.000	-
USER-DEFINED	-	2.80	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	2.60	0.60	1.000	-
USER-DEFINED	-	4.10	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 8.51  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.03  
 AVERAGE FLOW DEPTH (FEET) = 0.75 TRAVEL TIME (MIN.) = 1.14  
 Tc (MIN.) = 13.41  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 4.11  
 EFFECTIVE AREA (ACRES) = 25.50 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 25.5 PEAK FLOW RATE (CFS) = 9.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.79 FLOW VELOCITY (FEET/SEC.) = 5.20  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 560.00 DOWNSTREAM (FEET) = 530.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 619.00 CHANNEL SLOPE = 0.0485  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.911 **HZ-31106**  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	1.90	0.60	1.000	-
USER-DEFINED	-	1.50	0.60	1.000	-
USER-DEFINED	-	8.20	0.60	1.000	-
USER-DEFINED	-	2.70	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 11.83  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.67  
 AVERAGE FLOW DEPTH (FEET) = 0.92 TRAVEL TIME (MIN.) = 2.21  
 Tc (MIN.) = 15.62  
 SUBAREA AREA (ACRES) = 15.10 SUBAREA RUNOFF (CFS) = 4.23  
 EFFECTIVE AREA (ACRES) = 40.60 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 40.6 PEAK FLOW RATE (CFS) = 11.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.90 FLOW VELOCITY (FEET/SEC.) = 4.65

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 530.00 DOWNSTREAM (FEET) = 515.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 377.00 CHANNEL SLOPE = 0.0398  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.865 **HZ-31107**  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	6.50	0.60	1.000	-
USER-DEFINED	-	1.30	0.60	1.000	-
USER-DEFINED	-	1.10	0.60	1.000	-
USER-DEFINED	-	5.50	0.60	1.000	-
USER-DEFINED	-	3.40	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 13.57  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.50  
 AVERAGE FLOW DEPTH (FEET) = 1.00 TRAVEL TIME (MIN.) = 1.40  
 Tc (MIN.) = 17.02  
 SUBAREA AREA (ACRES) = 18.30 SUBAREA RUNOFF (CFS) = 4.37  
 EFFECTIVE AREA (ACRES) = 58.90 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 58.9 PEAK FLOW RATE (CFS) = 14.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.02 FLOW VELOCITY (FEET/SEC.) = 4.53  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 515.00 DOWNSTREAM (FEET) = 490.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 520.00 CHANNEL SLOPE = 0.0481  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.808 **HZ-31108**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.70	0.60	1.000	-
USER-DEFINED	-	2.20	0.60	1.000	-
USER-DEFINED	-	3.10	0.60	1.000	-
USER-DEFINED	-	0.90	0.60	1.000	-
USER-DEFINED	-	7.40	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60



SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.43  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.02  
 AVERAGE FLOW DEPTH(FEET) = 1.01 TRAVEL TIME(MIN.) = 1.73  
 Tc(MIN.) = 18.74  
 SUBAREA AREA(ACRES) = 14.60 SUBAREA RUNOFF(CFS) = 2.73  
 EFFECTIVE AREA(ACRES) = 73.50 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 73.5 PEAK FLOW RATE(CFS) = 14.06  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.98 FLOW VELOCITY(FEET/SEC.) = 4.89  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31109.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc(MIN.) = 18.74  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.808 **HZ-31108**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	11.40	0.60	1.000	-
USER-DEFINED	-	8.90	0.60	1.000	-
USER-DEFINED	-	1.90	0.60	1.000	-
USER-DEFINED	-	9.20	0.60	1.000	-
USER-DEFINED	-	1.40	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 32.80 SUBAREA RUNOFF(CFS) = 6.14  
 EFFECTIVE AREA(ACRES) = 106.30 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 106.3 PEAK FLOW RATE(CFS) = 19.89

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31110.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 490.00 DOWNSTREAM(FEET) = 432.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1420.00 CHANNEL SLOPE = 0.0408  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.695 **HZ-31109**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	0.900	-
USER-DEFINED	-	1.30	0.60	1.000	-
USER-DEFINED	-	4.00	0.60	1.000	-
USER-DEFINED	-	1.50	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.04  
 AVERAGE FLOW DEPTH(FEET) = 1.16 TRAVEL TIME(MIN.) = 4.69  
 Tc(MIN.) = 23.43  
 SUBAREA AREA(ACRES) = 8.30 SUBAREA RUNOFF(CFS) = 0.71  
 EFFECTIVE AREA(ACRES) = 114.60 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 114.6 PEAK FLOW RATE(CFS) = 19.89  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.15 FLOW VELOCITY(FEET/SEC.) = 5.02  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31110.00 = 4544.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 31110.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc(MIN.) = 23.43  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.695 **HZ-31109**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	9.60	0.60	1.000	-
USER-DEFINED	-	0.40	0.60	0.900	-
USER-DEFINED	-	6.20	0.60	1.000	-
USER-DEFINED	-	3.90	0.60	1.000	-
USER-DEFINED	-	1.40	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.998  
 SUBAREA AREA(ACRES) = 21.80 SUBAREA RUNOFF(CFS) = 1.88  
 EFFECTIVE AREA(ACRES) = 136.40 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 136.4 PEAK FLOW RATE(CFS) = 19.89  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 13301.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 432.00 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1847.00 CHANNEL SLOPE = 0.0271  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.582 **HZ-31110**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.90	0.60	1.000	-
USER-DEFINED	-	1.50	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	0.900	-
USER-DEFINED	-	2.50	0.60	1.000	-
USER-DEFINED	-	5.30	0.60	1.000	-

USER-DEFINED - 3.30 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.997  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 19.91  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.31  
 AVERAGE FLOW DEPTH (FEET) = 1.24 TRAVEL TIME (MIN.) = 7.14  
 Tc (MIN.) = 30.57  
 SUBAREA AREA (ACRES) = 18.10 SUBAREA RUNOFF (CFS) = 0.03  
 EFFECTIVE AREA (ACRES) = 154.50 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 154.5 PEAK FLOW RATE (CFS) = 19.89  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.24 FLOW VELOCITY (FEET/SEC.) = 4.31  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19.89	30.57	0.582	0.60 (0.60)	1.00	154.5	31100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	247.43	57.64	0.408	0.60 (0.49)	0.81	3575.7	13100.00
2	248.10	59.06	0.400	0.60 (0.49)	0.81	3654.2	13200.00
3	253.89	65.62	0.385	0.60 (0.49)	0.81	3916.2	13210.00
4	278.98	97.40	0.327	0.60 (0.49)	0.81	5011.0	13000.00
5	275.15	100.77	0.321	0.60 (0.49)	0.81	5031.0	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	207.33	30.57	0.582	0.60 (0.50)	0.83	2050.9	31100.00
2	261.36	57.64	0.408	0.60 (0.49)	0.82	3730.2	13100.00
3	261.77	59.06	0.400	0.60 (0.49)	0.82	3808.7	13200.00
4	267.03	65.62	0.385	0.60 (0.49)	0.82	4070.7	13210.00
5	290.14	97.40	0.327	0.60 (0.49)	0.82	5165.5	13000.00
6	286.10	100.77	0.321	0.60 (0.49)	0.82	5185.5	13010.00

TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 290.14 Tc (MIN.) = 97.396  
 EFFECTIVE AREA (ACRES) = 5165.55 AREA-AVERAGED Fm (INCH/HR) = 0.49  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82

TOTAL AREA (ACRES) = 5185.5  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 382.00 DOWNSTREAM (FEET) = 375.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1141.09 CHANNEL SLOPE = 0.0061  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.320

S33-02

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 9.42 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 290.14  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.81  
 AVERAGE FLOW DEPTH (FEET) = 4.48 TRAVEL TIME (MIN.) = 3.95  
 Tc (MIN.) = 101.35  
 SUBAREA AREA (ACRES) = 9.42 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 5174.97 AREA-AVERAGED Fm (INCH/HR) = 0.49  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5194.9 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 4.48 FLOW VELOCITY (FEET/SEC.) = 4.81  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 101.35  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.320

HZ-31112

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 13.80 0.60 1.000 -  
 USER-DEFINED - 2.60 0.60 1.000 -  
 USER-DEFINED - 1.10 0.60 0.100 -  
 USER-DEFINED - 3.50 0.60 0.900 -

USER-DEFINED - 6.90 0.60 1.000 -  
 USER-DEFINED - 0.20 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 0.39  
 EFFECTIVE AREA(ACRES) = 5203.07 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc(MIN.) = 101.35 **HZ-31112**  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	0.100	-
USER-DEFINED	-	2.40	0.60	0.900	-
USER-DEFINED	-	0.50	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 3.10 SUBAREA RUNOFF(CFS) = 0.09  
 EFFECTIVE AREA(ACRES) = 5206.17 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5226.1 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc(MIN.) = 101.35  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	2.60	0.60	1.000	-
USER-DEFINED	-	3.10	0.60	1.000	-
USER-DEFINED	-	0.40	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	13.80	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 20.20 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 5226.37 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5246.4 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc(MIN.) = 101.35 **HZ-206**  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.60	0.60	1.000	-
USER-DEFINED	-	2.40	0.60	1.000	-
USER-DEFINED	-	22.60	0.60	1.000	-
USER-DEFINED	-	11.60	0.60	1.000	-
USER-DEFINED	-	0.40	0.60	0.200	-
USER-DEFINED	-	4.80	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 76.40 SUBAREA RUNOFF(CFS) = 0.09  
 EFFECTIVE AREA(ACRES) = 5302.77 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5322.8 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc(MIN.) = 101.35 **HZ-206**  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.320  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.60	0.60	1.000	-
USER-DEFINED	-	46.40	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	0.200	-
USER-DEFINED	-	60.70	0.60	1.000	-
USER-DEFINED	-	5.80	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 114.60 SUBAREA RUNOFF(CFS) = 0.02

EFFECTIVE AREA(ACRES) = 5417.37 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5437.4 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 375.00 DOWNSTREAM(FEET) = 355.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2193.96 CHANNEL SLOPE = 0.0091  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 290.14  
 FLOW VELOCITY(FEET/SEC.) = 5.58 FLOW DEPTH(FEET) = 4.16  
 TRAVEL TIME(MIN.) = 6.55 Tc(MIN.) = 107.90  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 107.90  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.308 **HZ-207**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	0.40	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	1.40	0.60	0.100	-
USER-DEFINED	-	2.60	0.60	1.000	-
USER-DEFINED	-	2.20	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 0.35  
 EFFECTIVE AREA(ACRES) = 5424.97 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5445.0 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 107.90  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.308 **HZ-207**  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.10	0.60	1.000	-
USER-DEFINED	-	3.40	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	3.60	0.60	0.100	-
USER-DEFINED	-	4.00	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 0.90  
 EFFECTIVE AREA(ACRES) = 5439.77 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.82  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5459.8 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 107.90  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.308 **HZ-207**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.60	0.60	1.000	-
USER-DEFINED	-	6.30	0.60	1.000	-
USER-DEFINED	-	3.70	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 5464.37 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 5484.4 PEAK FLOW RATE(CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 107.90  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.308 **HZ-31113**  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	0.100	-
USER-DEFINED	-	0.20	0.60	1.000	-

USER-DEFINED - 0.80 0.60 0.900 -  
 USER-DEFINED - 1.60 0.60 1.000 -  
 USER-DEFINED - 31.90 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 35.30 SUBAREA RUNOFF (CFS) = 0.10  
 EFFECTIVE AREA (ACRES) = 5499.67 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5519.6 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 107.90 **HZ-31113**  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.308  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.70	0.60	0.100	-
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	2.60	0.60	0.900	-
USER-DEFINED	-	5.50	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 0.50  
 EFFECTIVE AREA (ACRES) = 5510.17 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 107.90 **HZ-31113**  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.308  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.30	0.60	0.900	-
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	0.100	-
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	6.50	0.60	0.900	-

USER-DEFINED - 3.00 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 0.27  
 EFFECTIVE AREA (ACRES) = 5521.77 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5541.8 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00 **S33-05.5**  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.302  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	13.84	0.60	0.850	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 290.42  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.59  
 AVERAGE FLOW DEPTH (FEET) = 4.59 TRAVEL TIME (MIN.) = 3.36  
 Tc (MIN.) = 111.26  
 SUBAREA AREA (ACRES) = 13.84 SUBAREA RUNOFF (CFS) = 0.56  
 EFFECTIVE AREA (ACRES) = 5535.61 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5555.6 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 4.59 FLOW VELOCITY (FEET/SEC.) = 4.59  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13304.00 = 38920.27 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 111.26 **HZ-31114**  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.302  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	13.84	0.60	0.850	-

USER-DEFINED - 7.80 0.60 1.000 -  
 USER-DEFINED - 1.70 0.60 1.000 -  
 USER-DEFINED - 9.40 0.60 1.000 -  
 USER-DEFINED - 1.20 0.60 1.000 -  
 USER-DEFINED - 0.10 0.60 0.900 -  
 USER-DEFINED - 2.60 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 22.80 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 5558.41 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5578.4 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 111.26  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.302 **HZ-31114**

SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	0.900	-
USER-DEFINED	-	2.70	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 3.40 SUBAREA RUNOFF (CFS) = 0.01  
 EFFECTIVE AREA (ACRES) = 5561.81 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5581.8 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 350.00 DOWNSTREAM (FEET) = 315.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2966.27 CHANNEL SLOPE = 0.0118  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.287

SUBAREA LOSS RATE DATA (AMC II):  

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

USER-DEFINED - 27.39 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp; **S33-05.6**  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 290.14  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.15  
 AVERAGE FLOW DEPTH (FEET) = 3.96 TRAVEL TIME (MIN.) = 8.03  
 Tc (MIN.) = 119.29  
 SUBAREA AREA (ACRES) = 27.39 SUBAREA RUNOFF (CFS) = 0.00  
 EFFECTIVE AREA (ACRES) = 5589.20 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5609.2 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.96 FLOW VELOCITY (FEET/SEC.) = 6.15  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 119.29  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.287 **HZ-31115**

SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	18.40	0.60	1.000	-
USER-DEFINED	-	1.20	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	26.60	0.60	1.000	-
USER-DEFINED	-	3.90	0.60	0.100	-
USER-DEFINED	-	3.00	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 53.20 SUBAREA RUNOFF (CFS) = 0.91  
 EFFECTIVE AREA (ACRES) = 5642.40 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 5662.4 PEAK FLOW RATE (CFS) = 290.14  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 119.29  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.287  
 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
USER-DEFINED	-	1.10	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	14.00	0.60	1.000	-
USER-DEFINED	-	4.30	0.60	0.100	-
USER-DEFINED	-	5.30	0.60	1.000	-
USER-DEFINED	-	2.70	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA(ACRES) = 27.60 SUBAREA RUNOFF(CFS) = 1.00  
EFFECTIVE AREA(ACRES) = 5670.00 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 5690.0 PEAK FLOW RATE(CFS) = 290.14  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**HZ-31115**

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 119.29  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.287  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.20	0.60	1.000	-
USER-DEFINED	-	6.10	0.60	1.000	-
USER-DEFINED	-	7.50	0.60	0.900	-
USER-DEFINED	-	5.40	0.60	1.000	-
USER-DEFINED	-	1.60	0.60	1.000	-
USER-DEFINED	-	1.90	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA(ACRES) = 25.70 SUBAREA RUNOFF(CFS) = 0.19  
EFFECTIVE AREA(ACRES) = 5695.70 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 5715.7 PEAK FLOW RATE(CFS) = 290.14  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**HZ-31115**

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 119.29  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.287  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.00	0.60	0.100	-

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USER-DEFINED	-	3.70	0.60	1.000	-
USER-DEFINED	-	2.10	0.60	1.000	-
USER-DEFINED	-	2.60	0.60	0.900	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA(ACRES) = 10.70 SUBAREA RUNOFF(CFS) = 0.53  
EFFECTIVE AREA(ACRES) = 5706.40 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 5726.4 PEAK FLOW RATE(CFS) = 290.14  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 119.29  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.287  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	8.20	0.60	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 0.21  
EFFECTIVE AREA(ACRES) = 5715.10 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 5735.1 PEAK FLOW RATE(CFS) = 290.14  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

**HZ-31115**

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3A02EVRL.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	253.57	16.02	0.60( 0.26)	0.43	423.9	120.00
2	249.96	16.56	0.60( 0.26)	0.43	431.7	110.00
3	195.31	25.12	0.60( 0.25)	0.42	498.0	100.00
4	160.80	32.93	0.60( 0.26)	0.43	510.2	150.00
TOTAL AREA(ACRES) =					510.2	

**Local Area A**

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	207.33	54.39	0.425	0.60( 0.51)	0.85	2600.5	31100.00
2	261.36	80.12	0.358	0.60( 0.50)	0.84	4279.8	13100.00
3	261.77	81.54	0.356	0.60( 0.50)	0.84	4358.3	13200.00
4	267.03	87.97	0.344	0.60( 0.50)	0.84	4620.2	13210.00
5	290.14	119.29	0.287	0.60( 0.50)	0.83	5715.1	13000.00
6	286.10	122.76	0.284	0.60( 0.50)	0.83	5735.1	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	253.57	16.02	0.898	0.60( 0.26)	0.43	423.9	120.00
2	249.96	16.56	0.880	0.60( 0.26)	0.43	431.7	110.00
3	195.31	25.12	0.660	0.60( 0.25)	0.42	498.0	100.00
4	160.80	32.93	0.563	0.60( 0.26)	0.43	510.2	150.00

LONGEST FLOWPATH FROM NODE 150.00 TO NODE 13305.00 = 9867.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	460.90	16.02	0.898	0.60( 0.42)	0.70	1189.8	120.00
2	457.29	16.56	0.880	0.60( 0.42)	0.70	1223.6	110.00
3	402.64	25.12	0.660	0.60( 0.44)	0.73	1698.9	100.00
4	327.05	32.93	0.563	0.60( 0.45)	0.75	2084.7	150.00
5	328.74	54.39	0.425	0.60( 0.47)	0.78	3110.7	31100.00
6	363.59	80.12	0.358	0.60( 0.48)	0.79	4790.0	13100.00
7	363.26	81.54	0.356	0.60( 0.48)	0.79	4868.5	13200.00
8	365.16	87.97	0.344	0.60( 0.48)	0.80	5130.4	13210.00
9	372.15	119.29	0.287	0.60( 0.48)	0.80	6225.3	13000.00
10	367.04	122.76	0.284	0.60( 0.48)	0.80	6245.3	13010.00

TOTAL AREA (ACRES) = 6245.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 460.90 Tc (MIN.) = 16.018  
EFFECTIVE AREA (ACRES) = 1189.76 AREA-AVERAGED Fm (INCH/HR) = 0.42  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 6245.3  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<  
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FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 51  
\*\*\*\*\*

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
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ELEVATION DATA: UPSTREAM (FEET) = 315.00 DOWNSTREAM (FEET) = 245.50  
CHANNEL LENGTH THRU SUBAREA (FEET) = 4408.41 CHANNEL SLOPE = 0.0158  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.654

S33-06

SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 68.77 0.60 0.850 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.850  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 465.38  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.72  
AVERAGE FLOW DEPTH (FEET) = 4.48 TRAVEL TIME (MIN.) = 9.52  
Tc (MIN.) = 25.54  
SUBAREA AREA (ACRES) = 68.77 SUBAREA RUNOFF (CFS) = 8.92  
EFFECTIVE AREA (ACRES) = 1258.53 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
TOTAL AREA (ACRES) = 6314.1 PEAK FLOW RATE (CFS) = 460.90  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 4.47 FLOW VELOCITY (FEET/SEC.) = 7.70  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13306.00 = 46294.95 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
\*\*\*\*\*

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 25.54  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.654 HZ-31116  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 21.50 0.60 1.000 -  
USER-DEFINED - 15.30 0.60 0.100 -  
USER-DEFINED - 0.80 0.60 1.000 -  
USER-DEFINED - 0.60 0.60 1.000 -  
USER-DEFINED - 8.00 0.60 0.900 -  
USER-DEFINED - 0.10 0.60 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.685  
SUBAREA AREA (ACRES) = 46.30 SUBAREA RUNOFF (CFS) = 10.12  
EFFECTIVE AREA (ACRES) = 1304.83 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
TOTAL AREA (ACRES) = 6360.4 PEAK FLOW RATE (CFS) = 460.90  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
\*\*\*\*\*

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 25.54  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.654 HZ-31116  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS



LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 43.30 0.60 1.000 -  
 USER-DEFINED - 4.90 0.60 0.100 -  
 USER-DEFINED - 5.70 0.60 1.000 -  
 USER-DEFINED - 0.50 0.60 1.000 -  
 USER-DEFINED - 1.10 0.60 0.850 -  
 USER-DEFINED - 3.10 0.60 0.900 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA (ACRES) = 58.60 SUBAREA RUNOFF (CFS) = 5.49  
 EFFECTIVE AREA (ACRES) = 1363.43 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
 TOTAL AREA (ACRES) = 6419.0 PEAK FLOW RATE (CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 25.54  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.654 **HZ-31116**  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.80 0.60 1.000 -  
 USER-DEFINED - 0.70 0.60 1.000 -  
 USER-DEFINED - 1.10 0.60 0.100 -  
 USER-DEFINED - 0.50 0.60 1.000 -  
 USER-DEFINED - 0.10 0.60 1.000 -  
 USER-DEFINED - 0.50 0.60 0.850 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
 SUBAREA AREA (ACRES) = 9.70 SUBAREA RUNOFF (CFS) = 1.05  
 EFFECTIVE AREA (ACRES) = 1373.13 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
 TOTAL AREA (ACRES) = 6428.7 PEAK FLOW RATE (CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 25.54  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.654 **HZ-31116**  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 2.20 0.60 0.900 -  
 USER-DEFINED - 0.10 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
 SUBAREA AREA (ACRES) = 2.30 SUBAREA RUNOFF (CFS) = 0.23  
 EFFECTIVE AREA (ACRES) = 1375.43 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
 TOTAL AREA (ACRES) = 6431.0 PEAK FLOW RATE (CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 245.50 DOWNSTREAM (FEET) = 220.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1543.21 CHANNEL SLOPE = 0.0165  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 460.90  
 FLOW VELOCITY (FEET/SEC.) = 7.84 FLOW DEPTH (FEET) = 4.43  
 TRAVEL TIME (MIN.) = 3.28 Tc (MIN.) = 28.82  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13307.00 = 47838.16 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 28.82  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.605 **HZ-31010**  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.20 0.60 0.100 -  
 USER-DEFINED - 0.10 0.60 1.000 -  
 USER-DEFINED - 0.20 0.60 1.000 -  
 USER-DEFINED - 3.70 0.60 1.000 -  
 USER-DEFINED - 0.30 0.60 0.100 -  
 USER-DEFINED - 3.20 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.942  
 SUBAREA AREA (ACRES) = 7.70 SUBAREA RUNOFF (CFS) = 0.28  
 EFFECTIVE AREA (ACRES) = 1383.13 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
 TOTAL AREA (ACRES) = 6438.7 PEAK FLOW RATE (CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 28.82  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.605 **HZ-31010**  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 3.60 0.60 1.000 -  
 USER-DEFINED - 1.90 0.60 1.000 -  
 USER-DEFINED - 0.60 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 6.10 SUBAREA RUNOFF (CFS) = 0.03  
 EFFECTIVE AREA (ACRES) = 1389.23 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72

TOTAL AREA (ACRES) = 6444.8 PEAK FLOW RATE (CFS) = 460.90  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 220.00 DOWNSTREAM (FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.62 CHANNEL SLOPE = 0.0086  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 460.90  
FLOW VELOCITY (FEET/SEC.) = 6.15 FLOW DEPTH (FEET) = 5.00  
TRAVEL TIME (MIN.) = 2.51 Tc (MIN.) = 31.33  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 31.33

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.576 **HZ-208**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	5.00	0.60	1.000	-
USER-DEFINED	-	3.20	0.60	0.100	-
USER-DEFINED	-	0.10	0.60	1.000	-
USER-DEFINED	-	0.90	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.697

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA (ACRES) = 9.50 SUBAREA RUNOFF (CFS) = 1.49

EFFECTIVE AREA (ACRES) = 1398.73 AREA-AVERAGED Fm (INCH/HR) = 0.43

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 6454.3 PEAK FLOW RATE (CFS) = 460.90

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 31.33

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.576 **HZ-208**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	0.200	-
USER-DEFINED	-	0.20	0.60	1.000	-

USER-DEFINED	-	1.00	0.60	1.000	-
USER-DEFINED	-	41.90	0.60	0.100	-
USER-DEFINED	-	7.20	0.60	1.000	-
USER-DEFINED	-	25.00	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.498

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA (ACRES) = 75.60 SUBAREA RUNOFF (CFS) = 19.68

EFFECTIVE AREA (ACRES) = 1474.33 AREA-AVERAGED Fm (INCH/HR) = 0.43

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 6529.9 PEAK FLOW RATE (CFS) = 460.90

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 31.33

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.576 **HZ-208**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	0.850	-
USER-DEFINED	-	0.90	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	0.600	-
USER-DEFINED	-	13.20	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	0.200	-
USER-DEFINED	-	0.60	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.966

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA (ACRES) = 15.60 SUBAREA RUNOFF (CFS) = 0.28

EFFECTIVE AREA (ACRES) = 1489.93 AREA-AVERAGED Fm (INCH/HR) = 0.43

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 6545.5 PEAK FLOW RATE (CFS) = 460.90

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 31.33

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.576 **HZ-208**

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	33.90	0.60	0.100	-
USER-DEFINED	-	17.60	0.60	1.000	-
USER-DEFINED	-	16.80	0.60	1.000	-
USER-DEFINED	-	0.60	0.60	0.200	-

USER-DEFINED - 1.50 0.60 0.400 -  
 USER-DEFINED - 10.00 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 80.40 SUBAREA RUNOFF(CFS) = 16.54  
 EFFECTIVE AREA(ACRES) = 1570.33 AREA-AVERAGED Fm(INCH/HR) = 0.42  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 6625.9 PEAK FLOW RATE(CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 31.33  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576 **HZ-208**

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	0.600	-
USER-DEFINED	-	0.70	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 0.06  
 EFFECTIVE AREA(ACRES) = 1571.33 AREA-AVERAGED Fm(INCH/HR) = 0.42  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 6626.9 PEAK FLOW RATE(CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 31.33  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576 **HZ-31010.2**

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.60	1.000	-
USER-DEFINED	-	0.80	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 2.10 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 1573.43 AREA-AVERAGED Fm(INCH/HR) = 0.42  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 6629.0 PEAK FLOW RATE(CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 31.33  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.576 **HZ-31010.2**

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.20	0.60	1.000	-
USER-DEFINED	-	0.50	0.60	1.000	-
USER-DEFINED	-	1.70	0.60	0.850	-
USER-DEFINED	-	7.20	0.60	1.000	-
USER-DEFINED	-	1.00	0.60	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 11.60 SUBAREA RUNOFF(CFS) = 0.13  
 EFFECTIVE AREA(ACRES) = 1585.03 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 6640.6 PEAK FLOW RATE(CFS) = 460.90  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: RU02EV29.DNA  
 MEMORY BANK # 2 DEFINED AS FOLLOWS: **S29**  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2100.27	17.97	0.60( 0.41)	0.69	2159.2	200.00
2	1693.43	42.99	0.60( 0.43)	0.72	5599.4	50220.00
3	1045.95	77.41	0.60( 0.48)	0.80	9568.4	390.00
4	1029.67	112.20	0.60( 0.52)	0.87	14292.8	11831.00
5	1077.72	136.03	0.60( 0.54)	0.90	17977.9	11530.00
6	1142.14	155.81	0.60( 0.55)	0.91	22124.6	11000.00
7	1232.37	178.41	0.60( 0.56)	0.93	28920.5	10850.00
8	1110.54	199.85	0.60( 0.56)	0.94	33255.0	11910.00
9	1046.30	211.87	0.60( 0.57)	0.94	34958.5	12300.00

10	915.73	245.48	0.60	( 0.57)	0.95	40666.9	12410.00
11	884.22	253.96	0.60	( 0.57)	0.95	42099.2	10600.00
12	867.39	278.41	0.60	( 0.57)	0.95	46752.8	12261.00
13	851.18	291.18	0.60	( 0.57)	0.96	48239.4	10410.00
14	835.24	303.37	0.60	( 0.57)	0.96	49341.4	12101.10
15	819.06	313.08	0.60	( 0.57)	0.96	50162.8	10700.00
16	799.23	330.82	0.60	( 0.57)	0.96	51719.5	10200.00
17	781.10	344.22	0.60	( 0.58)	0.96	52657.7	12010.00
18	732.96	373.29	0.60	( 0.58)	0.96	53331.4	10210.00
19	669.34	422.40	0.60	( 0.58)	0.96	53830.5	12000.00
20	624.79	491.94	0.60	( 0.58)	0.96	54415.3	10100.00

TOTAL AREA (ACRES) = 54415.3

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

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2100.27	17.97	0.60 ( 0.41)	0.69	2159.2	200.00
2	1693.43	42.99	0.60 ( 0.43)	0.72	5599.4	50220.00
3	1045.95	77.41	0.60 ( 0.48)	0.80	9568.4	390.00
4	1029.67	112.20	0.60 ( 0.52)	0.87	14292.8	11831.00
5	1077.72	136.03	0.60 ( 0.54)	0.90	17977.9	11530.00
6	1142.14	155.81	0.60 ( 0.55)	0.91	22124.6	11000.00
7	1232.37	178.41	0.60 ( 0.56)	0.93	28920.5	10850.00
8	1110.54	199.85	0.60 ( 0.56)	0.94	33255.0	11910.00
9	1046.30	211.87	0.60 ( 0.57)	0.94	34958.5	12300.00
10	915.73	245.48	0.60 ( 0.57)	0.95	40666.9	12410.00
11	884.22	253.96	0.60 ( 0.57)	0.95	42099.2	10600.00
12	867.39	278.41	0.60 ( 0.57)	0.95	46752.8	12261.00
13	851.18	291.18	0.60 ( 0.57)	0.96	48239.4	10410.00
14	835.24	303.37	0.60 ( 0.57)	0.96	49341.4	12101.10
15	819.06	313.08	0.60 ( 0.57)	0.96	50162.8	10700.00
16	799.23	330.82	0.60 ( 0.57)	0.96	51719.5	10200.00
17	781.10	344.22	0.60 ( 0.58)	0.96	52657.7	12010.00
18	732.96	373.29	0.60 ( 0.58)	0.96	53331.4	10210.00
19	669.34	422.40	0.60 ( 0.58)	0.96	53830.5	12000.00
20	624.79	491.94	0.60 ( 0.58)	0.96	54415.3	10100.00

TOTAL AREA (ACRES) = 54415.3

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<

-----  
ELEVATION DATA: UPSTREAM (FEET) = 213.00 DOWNSTREAM (FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1389.52 CHANNEL SLOPE = 0.0007  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 2100.27  
FLOW VELOCITY (FEET/SEC.) = 4.38 FLOW DEPTH (FEET) = 12.64  
TRAVEL TIME (MIN.) = 5.28 Tc (MIN.) = 23.25  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2100.27	23.25	0.698	0.60 ( 0.41)	0.69	2159.2	200.00
2	1693.43	48.56	0.457	0.60 ( 0.43)	0.72	5599.4	50220.00
3	1045.95	83.70	0.352	0.60 ( 0.48)	0.80	9568.4	390.00
4	1029.67	118.51	0.289	0.60 ( 0.52)	0.87	14292.8	11831.00
5	1077.72	142.27	0.266	0.60 ( 0.54)	0.90	17977.9	11530.00
6	1142.14	161.96	0.248	0.60 ( 0.55)	0.91	22124.6	11000.00
7	1232.37	184.45	0.231	0.60 ( 0.56)	0.93	28920.5	10850.00
8	1110.54	206.04	0.224	0.60 ( 0.56)	0.94	33255.0	11910.00
9	1046.30	218.16	0.221	0.60 ( 0.57)	0.94	34958.5	12300.00
10	915.73	251.98	0.210	0.60 ( 0.57)	0.95	40666.9	12410.00
11	884.22	260.52	0.208	0.60 ( 0.57)	0.95	42099.2	10600.00
12	867.39	285.00	0.201	0.60 ( 0.57)	0.95	46752.8	12261.00
13	851.18	297.80	0.197	0.60 ( 0.57)	0.96	48239.4	10410.00
14	835.24	310.02	0.193	0.60 ( 0.57)	0.96	49341.4	12101.10
15	819.06	319.76	0.190	0.60 ( 0.57)	0.96	50162.8	10700.00
16	799.23	337.54	0.185	0.60 ( 0.57)	0.96	51719.5	10200.00
17	781.10	350.98	0.181	0.60 ( 0.58)	0.96	52657.7	12010.00
18	732.96	380.16	0.176	0.60 ( 0.58)	0.96	53331.4	10210.00
19	669.34	429.43	0.170	0.60 ( 0.58)	0.96	53830.5	12000.00
20	624.79	499.10	0.162	0.60 ( 0.58)	0.96	54415.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	460.90	31.33	0.576	0.60 ( 0.43)	0.71	1585.0	120.00
2	457.29	31.90	0.572	0.60 ( 0.43)	0.71	1618.9	110.00
3	402.64	40.96	0.501	0.60 ( 0.44)	0.73	2094.2	100.00
4	327.05	49.63	0.451	0.60 ( 0.45)	0.75	2479.9	150.00
5	328.74	71.05	0.375	0.60 ( 0.47)	0.78	3505.9	31100.00
6	363.59	96.39	0.328	0.60 ( 0.47)	0.79	5185.2	13100.00
7	363.26	97.80	0.326	0.60 ( 0.47)	0.79	5263.8	13200.00
8	365.16	104.21	0.314	0.60 ( 0.47)	0.79	5525.7	13210.00
9	372.15	135.47	0.272	0.60 ( 0.48)	0.79	6620.6	13000.00
10	367.04	138.98	0.269	0.60 ( 0.48)	0.79	6640.6	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2561.17	23.25	0.698	0.60 ( 0.42)	0.70	3335.3	200.00
2	2431.26	31.33	0.576	0.60 ( 0.42)	0.70	4842.7	120.00
3	2418.46	31.90	0.572	0.60 ( 0.42)	0.70	4954.2	110.00
4	2218.29	40.96	0.501	0.60 ( 0.43)	0.72	6660.1	100.00
5	2029.80	48.56	0.457	0.60 ( 0.44)	0.73	8031.7	50220.00
6	2000.75	49.63	0.451	0.60 ( 0.44)	0.73	8200.2	150.00
7	1607.73	71.05	0.375	0.60 ( 0.46)	0.77	11645.7	31100.00
8	1392.08	83.70	0.352	0.60 ( 0.48)	0.79	13912.5	390.00

9	1403.60	96.39	0.328	0.60	( 0.49)	0.81	16475.9	13100.00
10	1402.61	97.80	0.326	0.60	( 0.49)	0.81	16745.8	13200.00
11	1401.51	104.21	0.314	0.60	( 0.49)	0.83	17878.1	13210.00
12	1398.03	118.51	0.289	0.60	( 0.51)	0.85	20319.3	11831.00
13	1436.12	135.47	0.272	0.60	( 0.52)	0.86	23544.0	13000.00
14	1438.11	138.98	0.269	0.60	( 0.52)	0.87	24108.9	13010.00
15	1440.72	142.27	0.266	0.60	( 0.52)	0.87	24618.4	11530.00
16	1480.95	161.96	0.248	0.60	( 0.53)	0.89	28765.1	11000.00
17	1547.20	184.45	0.231	0.60	( 0.54)	0.91	35561.0	10850.00
18	1416.53	206.04	0.224	0.60	( 0.55)	0.92	39895.6	11910.00
19	1347.32	218.16	0.221	0.60	( 0.55)	0.92	41599.1	12300.00
20	1202.91	251.98	0.210	0.60	( 0.56)	0.93	47307.5	12410.00
21	1167.90	260.52	0.208	0.60	( 0.56)	0.93	48739.7	10600.00
22	1141.05	285.00	0.201	0.60	( 0.56)	0.93	53393.4	12261.00
23	1119.59	297.80	0.197	0.60	( 0.56)	0.94	54880.0	10410.00
24	1098.65	310.02	0.193	0.60	( 0.56)	0.94	55981.9	12101.10
25	1078.48	319.76	0.190	0.60	( 0.56)	0.94	56803.3	10700.00
26	1051.37	337.54	0.185	0.60	( 0.56)	0.94	58360.0	10200.00
27	1027.74	350.98	0.181	0.60	( 0.56)	0.94	59298.3	12010.00
28	972.70	380.16	0.176	0.60	( 0.56)	0.94	59972.0	10210.00
29	901.23	429.43	0.170	0.60	( 0.56)	0.94	60471.0	12000.00
30	845.58	499.10	0.162	0.60	( 0.57)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 2561.17 Tc (MIN.) = 23.248  
EFFECTIVE AREA (ACRES) = 3335.30 AREA-AVERAGED Fm (INCH/HR) = 0.42  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.70  
TOTAL AREA (ACRES) = 61055.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 61055.8 TC (MIN.) = 23.25  
EFFECTIVE AREA (ACRES) = 3335.30 AREA-AVERAGED Fm (INCH/HR) = 0.42  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.698  
PEAK FLOW RATE (CFS) = 2561.17

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2561.17	23.25	0.698	0.60 ( 0.42)	0.70	3335.3	200.00
2	2431.26	31.33	0.576	0.60 ( 0.42)	0.70	4842.7	120.00
3	2418.46	31.90	0.572	0.60 ( 0.42)	0.70	4954.2	110.00
4	2218.29	40.96	0.501	0.60 ( 0.43)	0.72	6660.1	100.00
5	2029.80	48.56	0.457	0.60 ( 0.44)	0.73	8031.7	50220.00
6	2000.75	49.63	0.451	0.60 ( 0.44)	0.73	8200.2	150.00
7	1607.73	71.05	0.375	0.60 ( 0.46)	0.77	11645.7	31100.00
8	1392.08	83.70	0.352	0.60 ( 0.48)	0.79	13912.5	390.00
9	1403.60	96.39	0.328	0.60 ( 0.49)	0.81	16475.9	13100.00
10	1402.61	97.80	0.326	0.60 ( 0.49)	0.81	16745.8	13200.00
11	1401.51	104.21	0.314	0.60 ( 0.49)	0.83	17878.1	13210.00
12	1398.03	118.51	0.289	0.60 ( 0.51)	0.85	20319.3	11831.00
13	1436.12	135.47	0.272	0.60 ( 0.52)	0.86	23544.0	13000.00
14	1438.11	138.98	0.269	0.60 ( 0.52)	0.87	24108.9	13010.00
15	1440.72	142.27	0.266	0.60 ( 0.52)	0.87	24618.4	11530.00
16	1480.95	161.96	0.248	0.60 ( 0.53)	0.89	28765.1	11000.00
17	1547.20	184.45	0.231	0.60 ( 0.54)	0.91	35561.0	10850.00
18	1416.53	206.04	0.224	0.60 ( 0.55)	0.92	39895.6	11910.00

19	1347.32	218.16	0.221	0.60	( 0.55)	0.92	41599.1	12300.00
20	1202.91	251.98	0.210	0.60	( 0.56)	0.93	47307.5	12410.00
21	1167.90	260.52	0.208	0.60	( 0.56)	0.93	48739.7	10600.00
22	1141.05	285.00	0.201	0.60	( 0.56)	0.93	53393.4	12261.00
23	1119.59	297.80	0.197	0.60	( 0.56)	0.94	54880.0	10410.00
24	1098.65	310.02	0.193	0.60	( 0.56)	0.94	55981.9	12101.10
25	1078.48	319.76	0.190	0.60	( 0.56)	0.94	56803.3	10700.00
26	1051.37	337.54	0.185	0.60	( 0.56)	0.94	58360.0	10200.00
27	1027.74	350.98	0.181	0.60	( 0.56)	0.94	59298.3	12010.00
28	972.70	380.16	0.176	0.60	( 0.56)	0.94	59972.0	10210.00
29	901.23	429.43	0.170	0.60	( 0.56)	0.94	60471.0	12000.00
30	845.58	499.10	0.162	0.60	( 0.57)	0.94	61055.8	10100.00

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END OF RATIONAL METHOD ANALYSIS

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S34- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV34.DAT  
TIME/DATE OF STUDY: 11:29 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.819
- 2) 10.00; 1.213
- 3) 15.00; 0.930
- 4) 20.00; 0.765
- 5) 25.00; 0.661
- 6) 30.00; 0.587
- 7) 40.00; 0.505
- 8) 50.00; 0.448
- 9) 60.00; 0.390
- 10) 90.00; 0.336
- 11) 120.00; 0.280
- 12) 180.00; 0.226
- 13) 360.00; 0.170
- 14) 1200.00; 0.080

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU02EV33.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2561.17	23.25	0.60 ( 0.42)	0.70	3335.3	200.00
2	2218.29	40.96	0.60 ( 0.43)	0.72	6660.1	100.00
3	1607.73	71.05	0.60 ( 0.46)	0.77	11645.7	31100.00
4	1392.08	83.70	0.60 ( 0.48)	0.79	13912.5	390.00
5	1403.60	96.39	0.60 ( 0.49)	0.81	16475.9	13100.00
6	1398.03	118.51	0.60 ( 0.51)	0.85	20319.3	11831.00
7	1440.72	142.27	0.60 ( 0.52)	0.87	24618.4	11530.00
8	1480.95	161.96	0.60 ( 0.53)	0.89	28765.1	11000.00
9	1547.20	184.45	0.60 ( 0.54)	0.91	35561.0	10850.00
10	1416.53	206.04	0.60 ( 0.55)	0.92	39895.6	11910.00
11	1347.32	218.16	0.60 ( 0.55)	0.92	41599.1	12300.00
12	1202.91	251.98	0.60 ( 0.56)	0.93	47307.5	12410.00
13	1141.05	285.00	0.60 ( 0.56)	0.93	53393.4	12261.00
14	1119.59	297.80	0.60 ( 0.56)	0.94	54880.0	10410.00
15	1098.65	310.02	0.60 ( 0.56)	0.94	55981.9	12101.10
16	1051.37	337.54	0.60 ( 0.56)	0.94	58360.0	10200.00
17	1027.74	350.98	0.60 ( 0.56)	0.94	59298.3	12010.00
18	972.70	380.16	0.60 ( 0.56)	0.94	59972.0	10210.00
19	901.23	429.43	0.60 ( 0.56)	0.94	60471.0	12000.00
20	845.58	499.10	0.60 ( 0.57)	0.94	61055.8	10100.00
TOTAL AREA (ACRES) =						61055.8

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2561.17	23.25	0.60 ( 0.42)	0.70	3335.3	200.00
2	2218.29	40.96	0.60 ( 0.43)	0.72	6660.1	100.00
3	1607.73	71.05	0.60 ( 0.46)	0.77	11645.7	31100.00
4	1392.08	83.70	0.60 ( 0.48)	0.79	13912.5	390.00
5	1403.60	96.39	0.60 ( 0.49)	0.81	16475.9	13100.00
6	1398.03	118.51	0.60 ( 0.51)	0.85	20319.3	11831.00
7	1440.72	142.27	0.60 ( 0.52)	0.87	24618.4	11530.00
8	1480.95	161.96	0.60 ( 0.53)	0.89	28765.1	11000.00
9	1547.20	184.45	0.60 ( 0.54)	0.91	35561.0	10850.00
10	1416.53	206.04	0.60 ( 0.55)	0.92	39895.6	11910.00
11	1347.32	218.16	0.60 ( 0.55)	0.92	41599.1	12300.00
12	1202.91	251.98	0.60 ( 0.56)	0.93	47307.5	12410.00
13	1141.05	285.00	0.60 ( 0.56)	0.93	53393.4	12261.00

14	1119.59	297.80	0.60	( 0.56)	0.94	54880.0	10410.00
15	1098.65	310.02	0.60	( 0.56)	0.94	55981.9	12101.10
16	1051.37	337.54	0.60	( 0.56)	0.94	58360.0	10200.00
17	1027.74	350.98	0.60	( 0.56)	0.94	59298.3	12010.00
18	972.70	380.16	0.60	( 0.56)	0.94	59972.0	10210.00
19	901.23	429.43	0.60	( 0.56)	0.94	60471.0	12000.00
20	845.58	499.10	0.60	( 0.57)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 212.00 DOWNSTREAM(FEET) = 209.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 623.02 CHANNEL SLOPE = 0.0048  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 2561.17  
 FLOW VELOCITY(FEET/SEC.) = 9.40 FLOW DEPTH(FEET) = 9.53  
 TRAVEL TIME(MIN.) = 1.11 Tc(MIN.) = 24.35  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

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FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: P505XX02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	8.61	24.42	0.60 ( 0.58)	0.96	146.4	50500.00

TOTAL AREA (ACRES) = 146.4

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FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2561.17	24.35	0.674	0.60 ( 0.42)	0.70	3335.3	200.00
2	2218.29	42.10	0.493	0.60 ( 0.43)	0.72	6660.1	100.00
3	1607.73	72.30	0.368	0.60 ( 0.46)	0.77	11645.7	31100.00
4	1392.08	84.99	0.345	0.60 ( 0.48)	0.79	13912.5	390.00
5	1403.60	97.68	0.322	0.60 ( 0.49)	0.81	16475.9	13100.00
6	1398.03	119.80	0.280	0.60 ( 0.51)	0.85	20319.3	11831.00
7	1440.72	143.54	0.259	0.60 ( 0.52)	0.87	24618.4	11530.00
8	1480.95	163.22	0.241	0.60 ( 0.53)	0.89	28765.1	11000.00
9	1547.20	185.70	0.224	0.60 ( 0.54)	0.91	35561.0	10850.00
10	1416.53	207.32	0.217	0.60 ( 0.55)	0.92	39895.6	11910.00
11	1347.32	219.46	0.214	0.60 ( 0.55)	0.92	41599.1	12300.00
12	1202.91	253.31	0.203	0.60 ( 0.56)	0.93	47307.5	12410.00
13	1141.05	286.35	0.193	0.60 ( 0.56)	0.93	53393.4	12261.00

14	1119.59	299.16	0.189	0.60 ( 0.56)	0.94	54880.0	10410.00
15	1098.65	311.39	0.185	0.60 ( 0.56)	0.94	55981.9	12101.10
16	1051.37	338.92	0.177	0.60 ( 0.56)	0.94	58360.0	10200.00
17	1027.74	352.37	0.172	0.60 ( 0.56)	0.94	59298.3	12010.00
18	972.70	381.56	0.168	0.60 ( 0.56)	0.94	59972.0	10210.00
19	901.23	430.86	0.162	0.60 ( 0.56)	0.94	60471.0	12000.00
20	845.58	500.55	0.155	0.60 ( 0.57)	0.94	61055.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	8.61	24.42	0.673	0.60 ( 0.58)	0.96	146.4	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 5416.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2569.78	24.35	0.674	0.60 ( 0.43)	0.71	3481.3	200.00
2	2568.40	24.42	0.673	0.60 ( 0.43)	0.71	3495.1	50500.00
3	2220.08	42.10	0.493	0.60 ( 0.43)	0.72	6806.5	100.00
4	1609.07	72.30	0.368	0.60 ( 0.46)	0.77	11792.1	31100.00
5	1393.34	84.99	0.345	0.60 ( 0.48)	0.79	14058.9	390.00
6	1404.77	97.68	0.322	0.60 ( 0.49)	0.81	16622.3	13100.00
7	1399.05	119.80	0.280	0.60 ( 0.51)	0.85	20465.7	11831.00
8	1441.66	143.54	0.259	0.60 ( 0.52)	0.87	24764.8	11530.00
9	1481.83	163.22	0.241	0.60 ( 0.53)	0.89	28911.5	11000.00
10	1548.01	185.70	0.224	0.60 ( 0.54)	0.91	35707.4	10850.00
11	1417.32	207.32	0.217	0.60 ( 0.55)	0.92	40042.0	11910.00
12	1348.10	219.46	0.214	0.60 ( 0.55)	0.92	41745.4	12300.00
13	1203.65	253.31	0.203	0.60 ( 0.56)	0.93	47453.9	12410.00
14	1141.75	286.35	0.193	0.60 ( 0.56)	0.93	53539.8	12261.00
15	1120.28	299.16	0.189	0.60 ( 0.56)	0.94	55026.4	10410.00
16	1099.32	311.39	0.185	0.60 ( 0.56)	0.94	56128.3	12101.10
17	1052.01	338.92	0.177	0.60 ( 0.56)	0.94	58506.4	10200.00
18	1028.36	352.37	0.172	0.60 ( 0.56)	0.94	59444.7	12010.00
19	973.30	381.56	0.168	0.60 ( 0.56)	0.94	60118.4	10210.00
20	901.83	430.86	0.162	0.60 ( 0.56)	0.94	60617.4	12000.00
21	846.15	500.55	0.155	0.60 ( 0.57)	0.94	61202.2	10100.00

TOTAL AREA (ACRES) = 61202.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2569.78 Tc(MIN.) = 24.353  
 EFFECTIVE AREA(ACRES) = 3481.27 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
 TOTAL AREA(ACRES) = 61202.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

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FLOW PROCESS FROM NODE 13402.00 TO NODE 13404.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 209.00 DOWNSTREAM(FEET) = 207.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 395.35 CHANNEL SLOPE = 0.0051  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00



CHANNEL FLOW THRU SUBAREA(CFS) = 2569.78  
 FLOW VELOCITY(FEET/SEC.) = 9.58 FLOW DEPTH(FEET) = 9.46  
 TRAVEL TIME(MIN.) = 0.69 Tc(MIN.) = 25.04  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P506XX02.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.90	24.14	0.60 (0.58)	0.97	49.5	50600.00
TOTAL AREA (ACRES) =						49.5

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2569.78	25.04	0.660	0.60 (0.43)	0.71	3481.3	200.00
2	2568.40	25.11	0.659	0.60 (0.43)	0.71	3495.1	50500.00
3	2220.08	42.82	0.489	0.60 (0.43)	0.72	6806.5	100.00
4	1609.07	73.07	0.366	0.60 (0.46)	0.77	11792.1	31100.00
5	1393.34	85.79	0.344	0.60 (0.48)	0.79	14058.9	390.00
6	1404.77	98.48	0.320	0.60 (0.49)	0.81	16622.3	13100.00
7	1399.05	120.60	0.279	0.60 (0.51)	0.85	20465.7	11831.00
8	1441.66	144.34	0.258	0.60 (0.52)	0.87	24764.8	11530.00
9	1481.83	164.01	0.240	0.60 (0.53)	0.89	28911.5	11000.00
10	1548.01	186.48	0.224	0.60 (0.54)	0.91	35707.4	10850.00
11	1417.32	208.12	0.217	0.60 (0.55)	0.92	40042.0	11910.00
12	1348.10	220.27	0.213	0.60 (0.55)	0.92	41745.4	12300.00
13	1203.65	254.15	0.203	0.60 (0.56)	0.93	47453.9	12410.00
14	1141.75	287.19	0.193	0.60 (0.56)	0.93	53539.8	12261.00
15	1120.28	300.01	0.189	0.60 (0.56)	0.94	55026.4	10410.00
16	1099.32	312.24	0.185	0.60 (0.56)	0.94	56128.3	12101.10
17	1052.01	339.78	0.176	0.60 (0.56)	0.94	58506.4	10200.00
18	1028.36	353.24	0.172	0.60 (0.56)	0.94	59444.7	12010.00
19	973.30	382.44	0.168	0.60 (0.56)	0.94	60118.4	10210.00
20	901.83	431.76	0.162	0.60 (0.56)	0.94	60617.4	12000.00
21	846.15	501.46	0.155	0.60 (0.57)	0.94	61202.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 =							119109.03 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.90	24.14	0.679	0.60 (0.58)	0.97	49.5	50600.00
LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 =							4378.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.90	24.14	0.679	0.60 (0.58)	0.97	49.5	50600.00

1	2574.67	24.14	0.679	0.60 (0.43)	0.71	3405.9	50600.00
2	2573.77	25.04	0.660	0.60 (0.43)	0.71	3530.8	200.00
3	2572.34	25.11	0.659	0.60 (0.43)	0.71	3544.6	50500.00
4	2220.91	42.82	0.489	0.60 (0.43)	0.72	6856.0	100.00
5	1609.69	73.07	0.366	0.60 (0.46)	0.77	11841.6	31100.00
6	1393.92	85.79	0.344	0.60 (0.48)	0.79	14108.4	390.00
7	1405.31	98.48	0.320	0.60 (0.49)	0.81	16671.8	13100.00
8	1399.52	120.60	0.279	0.60 (0.51)	0.85	20515.2	11831.00
9	1442.10	144.34	0.258	0.60 (0.52)	0.87	24814.3	11530.00
10	1482.24	164.01	0.240	0.60 (0.53)	0.89	28961.0	11000.00
11	1548.39	186.48	0.224	0.60 (0.54)	0.91	35756.9	10850.00
12	1417.69	208.12	0.217	0.60 (0.55)	0.92	40091.5	11910.00
13	1348.46	220.27	0.213	0.60 (0.55)	0.92	41794.9	12300.00
14	1203.99	254.15	0.203	0.60 (0.56)	0.93	47503.4	12410.00
15	1142.07	287.19	0.193	0.60 (0.56)	0.93	53589.3	12261.00
16	1120.60	300.01	0.189	0.60 (0.56)	0.94	55075.9	10410.00
17	1099.64	312.24	0.185	0.60 (0.56)	0.94	56177.8	12101.10
18	1052.31	339.78	0.176	0.60 (0.56)	0.94	58555.9	10200.00
19	1028.66	353.24	0.172	0.60 (0.56)	0.94	59494.2	12010.00
20	973.59	382.44	0.168	0.60 (0.56)	0.94	60167.9	10210.00
21	902.10	431.76	0.162	0.60 (0.56)	0.94	60666.9	12000.00
22	846.41	501.46	0.155	0.60 (0.57)	0.94	61251.7	10100.00
TOTAL AREA (ACRES) =							61251.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2574.67 Tc(MIN.) = 24.143  
 EFFECTIVE AREA(ACRES) = 3405.94 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA(ACRES) = 61251.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 2574.67  
 FLOW VELOCITY(FEET/SEC.) = 11.10 FLOW DEPTH(FEET) = 8.79  
 TRAVEL TIME(MIN.) = 2.40 Tc(MIN.) = 26.55  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 26.55

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.638

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.20	0.60	1.000	-
USER-DEFINED	-	4.00	0.60	1.000	-

USER-DEFINED - 2.00 0.60 1.000 -  
 USER-DEFINED - 9.70 0.60 1.000 -  
 USER-DEFINED - 2.60 0.60 1.000 -  
 USER-DEFINED - 1.60 0.60 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 20.10 SUBAREA RUNOFF(CFS) = 0.69  
 EFFECTIVE AREA(ACRES) = 3426.04 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.71  
 TOTAL AREA(ACRES) = 61271.8 PEAK FLOW RATE(CFS) = 2574.67  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====  
 MAINLINE Tc(MIN.) = 26.55  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.638  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.00	0.60	1.000	-
USER-DEFINED	-	7.10	0.60	1.000	-
USER-DEFINED	-	5.80	0.60	1.000	-
USER-DEFINED	-	0.10	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 0.52  
 EFFECTIVE AREA(ACRES) = 3441.04 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
 TOTAL AREA(ACRES) = 61286.8 PEAK FLOW RATE(CFS) = 2574.67  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====  
 ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.581  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.00	0.60	1.000	-
USER-DEFINED	-	3.30	0.60	1.000	-
USER-DEFINED	-	0.40	0.60	0.100	-
USER-DEFINED	-	1.40	0.60	1.000	-
USER-DEFINED	-	0.30	0.60	0.100	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.949  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2574.84

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.75  
 AVERAGE FLOW DEPTH(FEET) = 9.38 TRAVEL TIME(MIN.) = 4.20  
 Tc(MIN.) = 30.75  
 SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 0.33  
 EFFECTIVE AREA(ACRES) = 3453.44 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 61299.2 PEAK FLOW RATE(CFS) = 2574.67  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 9.38 FLOW VELOCITY(FEET/SEC.) = 9.75  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<

=====  
 PEAK FLOWRATE TABLE FILE NAME: 2P02EVBB.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	194.02	10.81	0.60( 0.22)	0.37	221.7	429.00
2	201.81	12.63	0.60( 0.22)	0.37	258.9	425.00
3	202.30	12.83	0.60( 0.22)	0.37	263.0	400.00
4	203.94	14.48	0.60( 0.22)	0.37	297.3	300.00
5	198.94	22.38	0.60( 0.22)	0.37	440.6	210.00
6	195.86	23.21	0.60( 0.22)	0.37	449.5	410.00
7	187.76	25.35	0.60( 0.22)	0.37	471.9	200.00
8	183.91	26.92	0.60( 0.22)	0.37	487.0	230.00
9	177.74	28.12	0.60( 0.22)	0.37	491.2	220.50
TOTAL AREA(ACRES) =						491.2

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

=====  
 \*\* MAIN STREAM CONFLUENCE DATA \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2574.67	30.75	0.581	0.60( 0.43)	0.72	3453.4	50600.00
2	2573.77	31.65	0.573	0.60( 0.43)	0.72	3578.3	200.00
3	2572.34	31.72	0.573	0.60( 0.43)	0.72	3592.1	50500.00
4	2220.91	49.67	0.450	0.60( 0.43)	0.72	6903.5	100.00
5	1609.69	80.50	0.353	0.60( 0.47)	0.78	11889.1	31100.00
6	1393.92	93.49	0.329	0.60( 0.48)	0.80	14155.9	390.00
7	1405.31	106.17	0.306	0.60( 0.49)	0.81	16719.3	13100.00
8	1399.52	128.29	0.273	0.60( 0.51)	0.85	20562.7	11831.00

9	1442.10	151.98	0.251	0.60	( 0.52)	0.87	24861.8	11530.00
10	1482.24	171.60	0.234	0.60	( 0.53)	0.89	29008.5	11000.00
11	1548.39	193.99	0.222	0.60	( 0.54)	0.91	35804.4	10850.00
12	1417.69	215.79	0.215	0.60	( 0.55)	0.92	40139.0	11910.00
13	1348.46	228.04	0.211	0.60	( 0.55)	0.92	41842.4	12300.00
14	1203.99	262.13	0.200	0.60	( 0.56)	0.93	47550.9	12410.00
15	1142.07	295.29	0.190	0.60	( 0.56)	0.93	53636.8	12261.00
16	1120.60	308.14	0.186	0.60	( 0.56)	0.94	55123.4	10410.00
17	1099.64	320.40	0.182	0.60	( 0.56)	0.94	56225.3	12101.10
18	1052.31	348.05	0.174	0.60	( 0.56)	0.94	58603.4	10200.00
19	1028.66	361.54	0.170	0.60	( 0.56)	0.94	59541.7	12010.00
20	973.59	390.87	0.167	0.60	( 0.56)	0.94	60215.4	10210.00
21	902.10	440.35	0.161	0.60	( 0.56)	0.94	60714.4	12000.00
22	846.41	510.19	0.154	0.60	( 0.57)	0.94	61299.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	194.02	10.81	1.167	0.60 ( 0.22)	0.37	221.7	429.00
2	201.81	12.63	1.064	0.60 ( 0.22)	0.37	258.9	425.00
3	202.30	12.83	1.053	0.60 ( 0.22)	0.37	263.0	400.00
4	203.94	14.48	0.959	0.60 ( 0.22)	0.37	297.3	300.00
5	198.94	22.38	0.715	0.60 ( 0.22)	0.37	440.6	210.00
6	195.86	23.21	0.698	0.60 ( 0.22)	0.37	449.5	410.00
7	187.76	25.35	0.656	0.60 ( 0.22)	0.37	471.9	200.00
8	183.91	26.92	0.633	0.60 ( 0.22)	0.37	487.0	230.00
9	177.74	28.12	0.615	0.60 ( 0.22)	0.37	491.2	220.50

LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13408.00 = 11903.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2768.69	10.81	1.167	0.60 ( 0.40)	0.66	1435.5	429.00
2	2776.48	12.63	1.064	0.60 ( 0.40)	0.66	1677.2	425.00
3	2776.98	12.83	1.053	0.60 ( 0.40)	0.66	1703.8	400.00
4	2778.62	14.48	0.959	0.60 ( 0.40)	0.66	1923.9	300.00
5	2773.61	22.38	0.715	0.60 ( 0.40)	0.66	2954.4	210.00
6	2770.53	23.21	0.698	0.60 ( 0.40)	0.67	3056.7	410.00
7	2762.43	25.35	0.656	0.60 ( 0.40)	0.67	3318.5	200.00
8	2758.59	26.92	0.633	0.60 ( 0.40)	0.67	3510.3	230.00
9	2752.41	28.12	0.615	0.60 ( 0.40)	0.67	3649.8	220.50
10	2740.28	30.75	0.581	0.60 ( 0.40)	0.67	3944.6	50600.00
11	2737.27	31.65	0.573	0.60 ( 0.40)	0.67	4069.5	200.00
12	2735.67	31.72	0.573	0.60 ( 0.40)	0.67	4083.3	50500.00
13	2349.17	49.67	0.450	0.60 ( 0.42)	0.70	7394.7	100.00
14	1710.36	80.50	0.353	0.60 ( 0.46)	0.76	12380.3	31100.00
15	1487.86	93.49	0.329	0.60 ( 0.47)	0.78	14647.1	390.00
16	1492.51	106.17	0.306	0.60 ( 0.48)	0.80	17210.5	13100.00
17	1477.23	128.29	0.273	0.60 ( 0.50)	0.84	21053.9	11831.00
18	1513.72	151.98	0.251	0.60 ( 0.52)	0.86	25353.0	11530.00
19	1548.83	171.60	0.234	0.60 ( 0.53)	0.88	29499.7	11000.00
20	1611.59	193.99	0.222	0.60 ( 0.54)	0.90	36295.6	10850.00
21	1478.95	215.79	0.215	0.60 ( 0.55)	0.91	40630.2	11910.00
22	1408.64	228.04	0.211	0.60 ( 0.55)	0.91	42333.6	12300.00
23	1261.14	262.13	0.200	0.60 ( 0.55)	0.92	48042.1	12410.00
24	1196.28	295.29	0.190	0.60 ( 0.56)	0.93	54128.0	12261.00
25	1173.67	308.14	0.186	0.60 ( 0.56)	0.93	55614.6	10410.00

26	1151.62	320.40	0.182	0.60	( 0.56)	0.93	56716.5	12101.10
27	1101.84	348.05	0.174	0.60	( 0.56)	0.93	59094.6	10200.00
28	1077.08	361.54	0.170	0.60	( 0.56)	0.94	60032.9	12010.00
29	1021.11	390.87	0.167	0.60	( 0.56)	0.94	60706.6	10210.00
30	948.11	440.35	0.161	0.60	( 0.56)	0.94	61205.6	12000.00
31	890.29	510.19	0.154	0.60	( 0.56)	0.94	61790.4	10100.00

TOTAL AREA (ACRES) = 61790.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2778.62 Tc(MIN.) = 14.483  
EFFECTIVE AREA(ACRES) = 1923.92 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 61790.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

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

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P507XX02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.18	36.03	0.60 ( 0.59)	0.99	231.4	50700.00

TOTAL AREA(ACRES) = 231.4

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2768.69	10.81	1.167	0.60 ( 0.40)	0.66	1435.5	429.00
2	2776.48	12.63	1.064	0.60 ( 0.40)	0.66	1677.2	425.00
3	2776.98	12.83	1.053	0.60 ( 0.40)	0.66	1703.8	400.00
4	2778.62	14.48	0.959	0.60 ( 0.40)	0.66	1923.9	300.00
5	2773.61	22.38	0.715	0.60 ( 0.40)	0.66	2954.4	210.00
6	2770.53	23.21	0.698	0.60 ( 0.40)	0.67	3056.7	410.00
7	2762.43	25.35	0.656	0.60 ( 0.40)	0.67	3318.5	200.00
8	2758.59	26.92	0.633	0.60 ( 0.40)	0.67	3510.3	230.00
9	2752.41	28.12	0.615	0.60 ( 0.40)	0.67	3649.8	220.50
10	2740.28	30.75	0.581	0.60 ( 0.40)	0.67	3944.6	50600.00
11	2737.27	31.65	0.573	0.60 ( 0.40)	0.67	4069.5	200.00
12	2735.67	31.72	0.573	0.60 ( 0.40)	0.67	4083.3	50500.00
13	2349.17	49.67	0.450	0.60 ( 0.42)	0.70	7394.7	100.00
14	1710.36	80.50	0.353	0.60 ( 0.46)	0.76	12380.3	31100.00
15	1487.86	93.49	0.329	0.60 ( 0.47)	0.78	14647.1	390.00
16	1492.51	106.17	0.306	0.60 ( 0.48)	0.80	17210.5	13100.00

17	1477.23	128.29	0.273	0.60	( 0.50)	0.84	21053.9	11831.00
18	1513.72	151.98	0.251	0.60	( 0.52)	0.86	25353.0	11530.00
19	1548.83	171.60	0.234	0.60	( 0.53)	0.88	29499.7	11000.00
20	1611.59	193.99	0.222	0.60	( 0.54)	0.90	36295.6	10850.00
21	1478.95	215.79	0.215	0.60	( 0.55)	0.91	40630.2	11910.00
22	1408.64	228.04	0.211	0.60	( 0.55)	0.91	42333.6	12300.00
23	1261.14	262.13	0.200	0.60	( 0.55)	0.92	48042.1	12410.00
24	1196.28	295.29	0.190	0.60	( 0.56)	0.93	54128.0	12261.00
25	1173.67	308.14	0.186	0.60	( 0.56)	0.93	55614.6	10410.00
26	1151.62	320.40	0.182	0.60	( 0.56)	0.93	56716.5	12101.10
27	1101.84	348.05	0.174	0.60	( 0.56)	0.93	59094.6	10200.00
28	1077.08	361.54	0.170	0.60	( 0.56)	0.94	60032.9	12010.00
29	1021.11	390.87	0.167	0.60	( 0.56)	0.94	60706.6	10210.00
30	948.11	440.35	0.161	0.60	( 0.56)	0.94	61205.6	12000.00
31	890.29	510.19	0.154	0.60	( 0.56)	0.94	61790.4	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4.18	36.03	0.538	0.60 ( 0.59)	0.99	231.4	50700.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2771.41	10.81	1.167	0.60 ( 0.41)	0.68	1504.9	429.00
2	2779.38	12.63	1.064	0.60 ( 0.41)	0.68	1758.3	425.00
3	2779.89	12.83	1.053	0.60 ( 0.41)	0.68	1786.2	400.00
4	2781.62	14.48	0.959	0.60 ( 0.41)	0.68	2016.9	300.00
5	2777.06	22.38	0.715	0.60 ( 0.41)	0.68	3098.1	210.00
6	2774.03	23.21	0.698	0.60 ( 0.41)	0.68	3205.8	410.00
7	2766.02	25.35	0.656	0.60 ( 0.41)	0.68	3481.3	200.00
8	2762.26	26.92	0.633	0.60 ( 0.41)	0.68	3683.2	230.00
9	2756.14	28.12	0.615	0.60 ( 0.41)	0.68	3830.4	220.50
10	2744.14	30.75	0.581	0.60 ( 0.41)	0.69	4142.1	50600.00
11	2741.19	31.65	0.573	0.60 ( 0.41)	0.69	4272.7	200.00
12	2739.59	31.72	0.573	0.60 ( 0.41)	0.69	4287.0	50500.00
13	2647.12	36.03	0.538	0.60 ( 0.42)	0.69	5109.2	50700.00
14	2352.67	49.67	0.450	0.60 ( 0.43)	0.71	7626.1	100.00
15	1713.11	80.50	0.353	0.60 ( 0.46)	0.76	12611.7	31100.00
16	1490.42	93.49	0.329	0.60 ( 0.47)	0.78	14878.5	390.00
17	1494.89	106.17	0.306	0.60 ( 0.48)	0.80	17441.9	13100.00
18	1479.35	128.29	0.273	0.60 ( 0.50)	0.84	21285.3	11831.00
19	1515.68	151.98	0.251	0.60 ( 0.52)	0.86	25584.4	11530.00
20	1550.65	171.60	0.234	0.60 ( 0.53)	0.88	29731.1	11000.00
21	1613.31	193.99	0.222	0.60 ( 0.54)	0.90	36527.0	10850.00
22	1480.62	215.79	0.215	0.60 ( 0.55)	0.91	40861.6	11910.00
23	1410.28	228.04	0.211	0.60 ( 0.55)	0.91	42565.0	12300.00
24	1262.70	262.13	0.200	0.60 ( 0.55)	0.92	48273.5	12410.00
25	1197.76	295.29	0.190	0.60 ( 0.56)	0.93	54359.4	12261.00
26	1175.12	308.14	0.186	0.60 ( 0.56)	0.93	55846.0	10410.00
27	1153.03	320.40	0.182	0.60 ( 0.56)	0.93	56947.9	12101.10
28	1103.19	348.05	0.174	0.60 ( 0.56)	0.94	59326.0	10200.00
29	1078.40	361.54	0.170	0.60 ( 0.56)	0.94	60264.3	12010.00
30	1022.41	390.87	0.167	0.60 ( 0.56)	0.94	60938.0	10210.00
31	949.37	440.35	0.161	0.60 ( 0.56)	0.94	61437.0	12000.00
32	891.49	510.19	0.154	0.60 ( 0.56)	0.94	62021.8	10100.00

TOTAL AREA(ACRES) = 62021.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2781.62 Tc(MIN.) = 14.483  
EFFECTIVE AREA(ACRES) = 2016.94 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.68  
TOTAL AREA(ACRES) = 62021.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72  
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.885

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.40	0.60	1.000	-
USER-DEFINED	-	2.90	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2782.04

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.46

AVERAGE FLOW DEPTH(FEET) = 10.47 TRAVEL TIME(MIN.) = 1.88

Tc(MIN.) = 16.36

SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 0.85

EFFECTIVE AREA(ACRES) = 2020.24 AREA-AVERAGED Fm(INCH/HR) = 0.41

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.68

TOTAL AREA(ACRES) = 62025.1 PEAK FLOW RATE(CFS) = 2781.62

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 10.47 FLOW VELOCITY(FEET/SEC.) = 8.46

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU02EV36.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	212.85	41.95	0.60 ( 0.53)	0.89	1194.3	110.00
2	182.13	45.87	0.60 ( 0.53)	0.88	1308.8	100.00

3	166.70	48.25	0.60	( 0.53)	0.88	1371.9	100.00
4	138.00	55.27	0.60	( 0.54)	0.89	1542.5	130.00
5	114.28	88.34	0.60	( 0.56)	0.93	2427.8	20100.00
6	99.46	100.42	0.60	( 0.56)	0.93	2568.9	13600.00
7	61.98	214.44	0.60	( 0.56)	0.93	3822.6	13510.00
8	61.68	223.75	0.60	( 0.56)	0.93	3859.7	13500.00

TOTAL AREA (ACRES) = 3859.7

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2771.41	12.69	1.061	0.60 ( 0.41)	0.68	1508.2	429.00
2	2779.38	14.51	0.958	0.60 ( 0.41)	0.68	1761.6	425.00
3	2779.89	14.70	0.947	0.60 ( 0.41)	0.68	1789.5	400.00
4	2781.62	16.36	0.885	0.60 ( 0.41)	0.68	2020.2	300.00
5	2777.06	24.26	0.676	0.60 ( 0.41)	0.68	3101.4	210.00
6	2774.03	25.09	0.660	0.60 ( 0.41)	0.68	3209.1	410.00
7	2766.02	27.23	0.628	0.60 ( 0.41)	0.68	3484.6	200.00
8	2762.26	28.80	0.605	0.60 ( 0.41)	0.68	3686.5	230.00
9	2756.14	30.00	0.587	0.60 ( 0.41)	0.68	3833.7	220.50
10	2744.14	32.63	0.565	0.60 ( 0.41)	0.69	4145.4	50600.00
11	2741.19	33.53	0.558	0.60 ( 0.41)	0.69	4276.0	200.00
12	2739.59	33.61	0.557	0.60 ( 0.41)	0.69	4290.3	50500.00
13	2647.12	37.93	0.522	0.60 ( 0.42)	0.69	5112.5	50700.00
14	2352.67	51.63	0.439	0.60 ( 0.43)	0.71	7629.4	100.00
15	1713.11	82.62	0.349	0.60 ( 0.46)	0.76	12615.0	31100.00
16	1490.42	95.69	0.325	0.60 ( 0.47)	0.78	14881.8	390.00
17	1494.89	108.36	0.302	0.60 ( 0.48)	0.80	17445.2	13100.00
18	1479.35	130.49	0.271	0.60 ( 0.50)	0.84	21288.6	11831.00
19	1515.68	154.16	0.249	0.60 ( 0.52)	0.86	25587.7	11530.00
20	1550.65	173.77	0.232	0.60 ( 0.53)	0.88	29734.4	11000.00
21	1613.31	196.14	0.221	0.60 ( 0.54)	0.90	36530.3	10850.00
22	1480.62	217.99	0.214	0.60 ( 0.55)	0.91	40864.9	11910.00
23	1410.28	230.26	0.210	0.60 ( 0.55)	0.91	42568.3	12300.00
24	1262.70	264.42	0.200	0.60 ( 0.55)	0.92	48276.8	12410.00
25	1197.76	297.60	0.189	0.60 ( 0.56)	0.93	54362.7	12261.00
26	1175.12	310.47	0.185	0.60 ( 0.56)	0.93	55849.3	10410.00
27	1153.03	322.74	0.182	0.60 ( 0.56)	0.93	56951.2	12101.10
28	1103.19	350.41	0.173	0.60 ( 0.56)	0.94	59329.3	10200.00
29	1078.40	363.92	0.170	0.60 ( 0.56)	0.94	60267.6	12010.00
30	1022.41	393.28	0.166	0.60 ( 0.56)	0.94	60941.3	10210.00
31	949.37	442.80	0.161	0.60 ( 0.56)	0.94	61440.3	12000.00
32	891.49	512.68	0.154	0.60 ( 0.56)	0.94	62025.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	212.85	41.95	0.494	0.60 ( 0.53)	0.89	1194.3	110.00
2	182.13	45.87	0.472	0.60 ( 0.53)	0.88	1308.8	100.00
3	166.70	48.25	0.458	0.60 ( 0.53)	0.88	1371.9	100.00
4	138.00	55.27	0.417	0.60 ( 0.54)	0.89	1542.5	130.00

5	114.28	88.34	0.339	0.60 ( 0.56)	0.93	2427.8	20100.00
6	99.46	100.42	0.317	0.60 ( 0.56)	0.93	2568.9	13600.00
7	61.98	214.44	0.215	0.60 ( 0.56)	0.93	3822.6	13510.00
8	61.68	223.75	0.212	0.60 ( 0.56)	0.93	3859.7	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2984.26	12.69	1.061	0.60 ( 0.43)	0.72	1869.4	429.00
2	2992.24	14.51	0.958	0.60 ( 0.43)	0.72	2174.6	425.00
3	2992.75	14.70	0.947	0.60 ( 0.43)	0.72	2208.1	400.00
4	2994.47	16.36	0.885	0.60 ( 0.43)	0.72	2486.0	300.00
5	2989.92	24.26	0.676	0.60 ( 0.43)	0.72	3792.1	210.00
6	2986.88	25.09	0.660	0.60 ( 0.43)	0.72	3923.5	410.00
7	2978.88	27.23	0.628	0.60 ( 0.43)	0.72	4259.7	200.00
8	2952.68	28.80	0.605	0.60 ( 0.43)	0.72	4506.5	230.00
9	2937.08	30.00	0.587	0.60 ( 0.43)	0.72	4688.0	220.50
10	2933.69	32.63	0.565	0.60 ( 0.43)	0.72	5074.5	50600.00
11	2933.43	33.53	0.558	0.60 ( 0.44)	0.73	5230.8	200.00
12	2932.05	33.61	0.557	0.60 ( 0.44)	0.73	5247.1	50500.00
13	2850.52	37.93	0.522	0.60 ( 0.44)	0.73	6192.3	50700.00
14	2773.57	41.95	0.494	0.60 ( 0.44)	0.73	7045.3	110.00
15	2658.60	45.87	0.472	0.60 ( 0.44)	0.73	7879.9	100.00
16	2591.93	48.25	0.458	0.60 ( 0.44)	0.73	8381.1	100.00
17	2505.55	51.63	0.439	0.60 ( 0.44)	0.74	9083.4	100.00
18	2415.64	55.27	0.417	0.60 ( 0.45)	0.74	9756.7	130.00
19	1831.49	82.62	0.349	0.60 ( 0.47)	0.79	14889.8	31100.00
20	1729.94	88.34	0.339	0.60 ( 0.48)	0.80	16034.9	20100.00
21	1595.69	95.69	0.325	0.60 ( 0.48)	0.80	17395.5	390.00
22	1591.55	100.42	0.317	0.60 ( 0.49)	0.81	18408.2	13600.00
23	1591.74	108.36	0.302	0.60 ( 0.49)	0.82	20101.4	13100.00
24	1568.92	130.49	0.271	0.60 ( 0.51)	0.85	24188.1	11831.00
25	1597.47	154.16	0.249	0.60 ( 0.52)	0.87	28747.5	11530.00
26	1626.00	173.77	0.232	0.60 ( 0.53)	0.88	33109.8	11000.00
27	1681.31	196.14	0.221	0.60 ( 0.54)	0.90	40151.7	10850.00
28	1564.15	214.44	0.215	0.60 ( 0.55)	0.91	43983.3	13510.00
29	1542.48	217.99	0.214	0.60 ( 0.55)	0.91	44701.6	11910.00
30	1509.29	223.75	0.212	0.60 ( 0.55)	0.91	45524.0	13500.00
31	1471.37	230.26	0.210	0.60 ( 0.55)	0.92	46428.0	12300.00
32	1320.71	264.42	0.200	0.60 ( 0.55)	0.92	52136.5	12410.00
33	1252.77	297.60	0.189	0.60 ( 0.56)	0.93	58222.4	12261.00
34	1228.96	310.47	0.185	0.60 ( 0.56)	0.93	59709.0	10410.00
35	1205.77	322.74	0.182	0.60 ( 0.56)	0.93	60810.9	12101.10
36	1153.43	350.41	0.173	0.60 ( 0.56)	0.94	63189.0	10200.00
37	1127.64	363.92	0.170	0.60 ( 0.56)	0.94	64127.2	12010.00
38	1070.74	393.28	0.166	0.60 ( 0.56)	0.94	64801.0	10210.00
39	996.16	442.80	0.161	0.60 ( 0.56)	0.94	65300.0	12000.00
40	936.11	512.68	0.154	0.60 ( 0.56)	0.94	65884.8	10100.00

TOTAL AREA (ACRES) = 65884.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 2994.47 Tc (MIN.) = 16.360  
EFFECTIVE AREA (ACRES) = 2486.03 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.72  
TOTAL AREA (ACRES) = 65884.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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*****
FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 178.72 DOWNSTREAM(FEET) = 176.93
CHANNEL LENGTH THRU SUBAREA(FEET) = 169.78 CHANNEL SLOPE = 0.0105
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 2994.47
FLOW VELOCITY(FEET/SEC.) = 13.11 FLOW DEPTH(FEET) = 8.73
TRAVEL TIME(MIN.) = 0.22 Tc(MIN.) = 16.58
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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*****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 1 <<<<
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*****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1
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>>>>DEFINE MEMORY BANK # 1 <<<<
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PEAK FLOWRATE TABLE FILE NAME: 0506101G.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR)    (ACRES)  NODE
1           4.52    82.13  0.60( 0.59) 0.98    591.0   10100.00
TOTAL AREA (ACRES) = 591.0

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*****
FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 11
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<
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** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR) (INCH/HR)    (ACRES)  NODE
1           2984.26  12.90  1.049 0.60( 0.43) 0.72    1869.4   429.00
2           2992.24  14.72  0.946 0.60( 0.43) 0.72    2174.6   425.00
3           2992.75  14.92  0.935 0.60( 0.43) 0.72    2208.1   400.00
4           2994.47  16.58  0.878 0.60( 0.43) 0.72    2486.0   300.00
5           2989.92  24.48  0.672 0.60( 0.43) 0.72    3792.1   210.00
6           2986.88  25.31  0.656 0.60( 0.43) 0.72    3923.5   410.00
7           2978.88  27.44  0.625 0.60( 0.43) 0.72    4259.7   200.00
8           2952.68  29.02  0.602 0.60( 0.43) 0.72    4506.5   230.00
9           2937.08  30.22  0.585 0.60( 0.43) 0.72    4688.0   220.50
10          2933.69  32.85  0.564 0.60( 0.43) 0.72    5074.5  50600.00
11          2933.43  33.75  0.556 0.60( 0.44) 0.73    5230.8   200.00
12          2932.05  33.82  0.556 0.60( 0.44) 0.73    5247.1  50500.00
13          2850.52  38.15  0.520 0.60( 0.44) 0.73    6192.3  50700.00
14          2773.57  42.17  0.493 0.60( 0.44) 0.73    7045.3   110.00
15          2658.60  46.09  0.470 0.60( 0.44) 0.73    7879.9   100.00
16          2591.93  48.48  0.457 0.60( 0.44) 0.73    8381.1   100.00

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17          2505.55  51.86  0.437 0.60( 0.44) 0.74    9083.4   100.00
18          2415.64  55.49  0.416 0.60( 0.45) 0.74    9756.7   130.00
19          1831.49  82.87  0.349 0.60( 0.47) 0.79   14889.8  31100.00
20          1729.94  88.59  0.339 0.60( 0.48) 0.80   16034.9  20100.00
21          1595.69  95.94  0.325 0.60( 0.48) 0.80   17395.5   390.00
22          1591.55  100.67  0.316 0.60( 0.49) 0.81   18408.2  13600.00
23          1591.74  108.61  0.301 0.60( 0.49) 0.82   20101.4  13100.00
24          1568.92  130.74  0.270 0.60( 0.51) 0.85   24188.1  11831.00
25          1597.47  154.41  0.249 0.60( 0.52) 0.87   28747.5  11530.00
26          1626.00  174.02  0.231 0.60( 0.53) 0.88   33109.8  11000.00
27          1681.31  196.39  0.221 0.60( 0.54) 0.90   40151.7  10850.00
28          1564.15  214.69  0.215 0.60( 0.55) 0.91   43983.3  13510.00
29          1542.48  218.25  0.214 0.60( 0.55) 0.91   44701.6  11910.00
30          1509.29  224.01  0.212 0.60( 0.55) 0.91   45524.0  13500.00
31          1471.37  230.52  0.210 0.60( 0.55) 0.92   46428.0  12300.00
32          1320.71  264.68  0.200 0.60( 0.55) 0.92   52136.5  12410.00
33          1252.77  297.87  0.189 0.60( 0.56) 0.93   58222.4  12261.00
34          1228.96  310.74  0.185 0.60( 0.56) 0.93   59709.0  10410.00
35          1205.77  323.02  0.182 0.60( 0.56) 0.93   60810.9  12101.10
36          1153.43  350.69  0.173 0.60( 0.56) 0.94   63189.0  10200.00
37          1127.64  364.20  0.170 0.60( 0.56) 0.94   64127.2  12010.00
38          1070.74  393.56  0.166 0.60( 0.56) 0.94   64801.0  10210.00
39          996.16  443.09  0.161 0.60( 0.56) 0.94   65300.0  12000.00
40          936.11  512.97  0.154 0.60( 0.56) 0.94   65884.8  10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR) (INCH/HR)    (ACRES)  NODE
1           4.52    82.13  0.350 0.60( 0.59) 0.98    591.0   10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 14677.00 FEET.

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** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR) (INCH/HR)    (ACRES)  NODE
1           2986.39  12.90  1.049 0.60( 0.44) 0.73    1962.2   429.00
2           2994.42  14.72  0.946 0.60( 0.44) 0.73    2280.5   425.00
3           2994.94  14.92  0.935 0.60( 0.44) 0.73    2315.5   400.00
4           2996.75  16.58  0.878 0.60( 0.44) 0.73    2605.3   300.00
5           2992.50  24.48  0.672 0.60( 0.44) 0.73    3968.2   210.00
6           2989.49  25.31  0.656 0.60( 0.44) 0.73    4105.6   410.00
7           2981.57  27.44  0.625 0.60( 0.44) 0.73    4457.2   200.00
8           2955.42  29.02  0.602 0.60( 0.44) 0.73    4715.3   230.00
9           2939.86  30.22  0.585 0.60( 0.44) 0.73    4905.4   220.50
10          2936.60  32.85  0.564 0.60( 0.44) 0.74    5310.9  50600.00
11          2936.38  33.75  0.556 0.60( 0.44) 0.74    5473.6   200.00
12          2935.00  33.82  0.556 0.60( 0.44) 0.74    5490.5  50500.00
13          2853.63  38.15  0.520 0.60( 0.44) 0.74    6466.8  50700.00
14          2776.84  42.17  0.493 0.60( 0.44) 0.74    7348.8   110.00
15          2662.01  46.09  0.470 0.60( 0.45) 0.74    8211.6   100.00
16          2595.41  48.48  0.457 0.60( 0.45) 0.74    8730.0   100.00
17          2509.11  51.86  0.437 0.60( 0.45) 0.75    9456.6   100.00
18          2419.26  55.49  0.416 0.60( 0.45) 0.75   10156.1   130.00
19          1851.67  82.13  0.350 0.60( 0.48) 0.79   15343.1  10100.00
20          1835.99  82.87  0.349 0.60( 0.48) 0.79   15480.8  31100.00
21          1734.30  88.59  0.339 0.60( 0.48) 0.80   16625.9  20100.00
22          1599.88  95.94  0.325 0.60( 0.49) 0.81   17986.5   390.00
23          1595.63  100.67  0.316 0.60( 0.49) 0.82   18999.2  13600.00

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24	1595.62	108.61	0.301	0.60	(0.50)	0.83	20692.4	13100.00
25	1572.41	130.74	0.270	0.60	(0.51)	0.85	24779.1	11831.00
26	1600.69	154.41	0.249	0.60	(0.52)	0.87	29338.5	11530.00
27	1628.98	174.02	0.231	0.60	(0.53)	0.89	33700.8	11000.00
28	1684.16	196.39	0.221	0.60	(0.54)	0.91	40742.7	10850.00
29	1566.93	214.69	0.215	0.60	(0.55)	0.91	44574.3	13510.00
30	1545.24	218.25	0.214	0.60	(0.55)	0.91	45292.6	11910.00
31	1512.03	224.01	0.212	0.60	(0.55)	0.92	46115.0	13500.00
32	1474.08	230.52	0.210	0.60	(0.55)	0.92	47019.0	12300.00
33	1323.28	264.68	0.200	0.60	(0.55)	0.92	52727.5	12410.00
34	1255.21	297.87	0.189	0.60	(0.56)	0.93	58813.4	12261.00
35	1231.35	310.74	0.185	0.60	(0.56)	0.93	60300.0	10410.00
36	1208.11	323.02	0.182	0.60	(0.56)	0.93	61401.9	12101.10
37	1155.66	350.69	0.173	0.60	(0.56)	0.94	63780.0	10200.00
38	1129.83	364.20	0.170	0.60	(0.56)	0.94	64718.2	12010.00
39	1072.89	393.56	0.166	0.60	(0.56)	0.94	65392.0	10210.00
40	998.24	443.09	0.161	0.60	(0.56)	0.94	65891.0	12000.00
41	938.09	512.97	0.154	0.60	(0.56)	0.94	66475.8	10100.00
TOTAL AREA (ACRES) =		66475.8						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 2996.75 Tc (MIN.) = 16.576  
EFFECTIVE AREA (ACRES) = 2605.30 AREA-AVERAGED Fm (INCH/HR) = 0.44  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73  
TOTAL AREA (ACRES) = 66475.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 176.93 DOWNSTREAM (FEET) = 173.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 260.10 CHANNEL SLOPE = 0.0151  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 2996.75  
FLOW VELOCITY (FEET/SEC.) = 15.01 FLOW DEPTH (FEET) = 8.16  
TRAVEL TIME (MIN.) = 0.29 Tc (MIN.) = 16.86  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

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

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

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

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P508XX02.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.36	34.92	0.60 (0.59)	0.99	131.3	50800.00

TOTAL AREA (ACRES) = 131.3

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2986.39	13.19	1.032	0.60 (0.44)	0.73	1962.2	429.00
2	2994.42	15.01	0.930	0.60 (0.44)	0.73	2280.5	425.00
3	2994.94	15.21	0.923	0.60 (0.44)	0.73	2315.5	400.00
4	2996.75	16.86	0.868	0.60 (0.44)	0.73	2605.3	300.00
5	2992.50	24.76	0.666	0.60 (0.44)	0.73	3968.2	210.00
6	2989.49	25.60	0.652	0.60 (0.44)	0.73	4105.6	410.00
7	2981.57	27.73	0.621	0.60 (0.44)	0.73	4457.2	200.00
8	2955.42	29.31	0.597	0.60 (0.44)	0.73	4715.3	230.00
9	2939.86	30.51	0.583	0.60 (0.44)	0.73	4905.4	220.50
10	2936.60	33.14	0.561	0.60 (0.44)	0.74	5310.9	50600.00
11	2936.38	34.04	0.554	0.60 (0.44)	0.74	5473.6	200.00
12	2935.00	34.11	0.553	0.60 (0.44)	0.74	5490.5	50500.00
13	2853.63	38.44	0.518	0.60 (0.44)	0.74	6466.8	50700.00
14	2776.84	42.46	0.491	0.60 (0.44)	0.74	7348.8	110.00
15	2662.01	46.39	0.469	0.60 (0.45)	0.74	8211.6	100.00
16	2595.41	48.78	0.455	0.60 (0.45)	0.74	8730.0	100.00
17	2509.11	52.16	0.435	0.60 (0.45)	0.75	9456.6	100.00
18	2419.26	55.80	0.414	0.60 (0.45)	0.75	10156.1	130.00
19	1851.67	82.46	0.350	0.60 (0.48)	0.79	15343.1	10100.00
20	1835.99	83.19	0.348	0.60 (0.48)	0.79	15480.8	31100.00
21	1734.30	88.92	0.338	0.60 (0.48)	0.80	16625.9	20100.00
22	1599.88	96.28	0.324	0.60 (0.49)	0.81	17986.5	390.00
23	1595.63	101.01	0.315	0.60 (0.49)	0.82	18999.2	13600.00
24	1595.62	108.95	0.301	0.60 (0.50)	0.83	20692.4	13100.00
25	1572.41	131.08	0.270	0.60 (0.51)	0.85	24779.1	11831.00
26	1600.69	154.75	0.249	0.60 (0.52)	0.87	29338.5	11530.00
27	1628.98	174.36	0.231	0.60 (0.53)	0.89	33700.8	11000.00
28	1684.16	196.72	0.221	0.60 (0.54)	0.91	40742.7	10850.00
29	1566.93	215.03	0.215	0.60 (0.55)	0.91	44574.3	13510.00
30	1545.24	218.59	0.214	0.60 (0.55)	0.91	45292.6	11910.00
31	1512.03	224.35	0.212	0.60 (0.55)	0.92	46115.0	13500.00
32	1474.08	230.87	0.210	0.60 (0.55)	0.92	47019.0	12300.00
33	1323.28	265.04	0.200	0.60 (0.55)	0.92	52727.5	12410.00
34	1255.21	298.23	0.189	0.60 (0.56)	0.93	58813.4	12261.00
35	1231.35	311.10	0.185	0.60 (0.56)	0.93	60300.0	10410.00
36	1208.11	323.38	0.181	0.60 (0.56)	0.93	61401.9	12101.10
37	1155.66	351.05	0.173	0.60 (0.56)	0.94	63780.0	10200.00
38	1129.83	364.57	0.170	0.60 (0.56)	0.94	64718.2	12010.00
39	1072.89	393.93	0.166	0.60 (0.56)	0.94	65392.0	10210.00
40	998.24	443.47	0.161	0.60 (0.56)	0.94	65891.0	12000.00
41	938.09	513.36	0.154	0.60 (0.56)	0.94	66475.8	10100.00
LONGEST FLOWPATH FROM NODE		10100.00 TO NODE 13700.00 = 124551.97 FEET.					

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.36	34.92	0.547	0.60 (0.59)	0.99	131.3	50800.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2988.07	13.19	1.032	0.60 ( 0.44)	0.74	2011.8	429.00
2	2996.15	15.01	0.930	0.60 ( 0.44)	0.74	2337.0	425.00
3	2996.67	15.21	0.923	0.60 ( 0.44)	0.74	2372.7	400.00
4	2998.56	16.86	0.868	0.60 ( 0.44)	0.74	2668.7	300.00
5	2994.54	24.76	0.666	0.60 ( 0.44)	0.74	4061.3	210.00
6	2991.55	25.60	0.652	0.60 ( 0.44)	0.74	4201.8	410.00
7	2983.69	27.73	0.621	0.60 ( 0.44)	0.74	4561.4	200.00
8	2957.58	29.31	0.597	0.60 ( 0.44)	0.74	4825.5	230.00
9	2942.05	30.51	0.583	0.60 ( 0.44)	0.74	5020.2	220.50
10	2938.90	33.14	0.561	0.60 ( 0.44)	0.74	5435.5	50600.00
11	2938.71	34.04	0.554	0.60 ( 0.45)	0.74	5601.6	200.00
12	2937.33	34.11	0.553	0.60 ( 0.45)	0.74	5618.7	50500.00
13	2922.21	34.92	0.547	0.60 ( 0.45)	0.74	5803.5	50800.00
14	2855.87	38.44	0.518	0.60 ( 0.45)	0.74	6598.1	50700.00
15	2778.95	42.46	0.491	0.60 ( 0.45)	0.75	7480.1	110.00
16	2664.03	46.39	0.469	0.60 ( 0.45)	0.75	8342.9	100.00
17	2597.37	48.78	0.455	0.60 ( 0.45)	0.75	8861.3	100.00
18	2510.99	52.16	0.435	0.60 ( 0.45)	0.75	9587.9	100.00
19	2421.05	55.80	0.414	0.60 ( 0.45)	0.76	10287.4	130.00
20	1853.18	82.46	0.350	0.60 ( 0.48)	0.80	15474.4	10100.00
21	1837.49	83.19	0.348	0.60 ( 0.48)	0.80	15612.1	31100.00
22	1735.76	88.92	0.338	0.60 ( 0.48)	0.80	16757.2	20100.00
23	1601.28	96.28	0.324	0.60 ( 0.49)	0.81	18117.8	390.00
24	1596.99	101.01	0.315	0.60 ( 0.49)	0.82	19130.5	13600.00
25	1596.92	108.95	0.301	0.60 ( 0.50)	0.83	20823.7	13100.00
26	1573.58	131.08	0.270	0.60 ( 0.51)	0.85	24910.4	11831.00
27	1601.76	154.75	0.249	0.60 ( 0.52)	0.87	29469.8	11530.00
28	1629.98	174.36	0.231	0.60 ( 0.53)	0.89	33832.1	11000.00
29	1685.11	196.72	0.221	0.60 ( 0.54)	0.91	40874.0	10850.00
30	1567.85	215.03	0.215	0.60 ( 0.55)	0.91	44705.6	13510.00
31	1546.17	218.59	0.214	0.60 ( 0.55)	0.91	45423.9	11910.00
32	1512.94	224.35	0.212	0.60 ( 0.55)	0.92	46246.3	13500.00
33	1474.99	230.87	0.210	0.60 ( 0.55)	0.92	47150.3	12300.00
34	1324.14	265.04	0.200	0.60 ( 0.55)	0.92	52858.8	12410.00
35	1256.03	298.23	0.189	0.60 ( 0.56)	0.93	58944.7	12261.00
36	1232.15	311.10	0.185	0.60 ( 0.56)	0.93	60431.3	10410.00
37	1208.89	323.38	0.181	0.60 ( 0.56)	0.93	61533.2	12101.10
38	1156.40	351.05	0.173	0.60 ( 0.56)	0.94	63911.3	10200.00
39	1130.56	364.57	0.170	0.60 ( 0.56)	0.94	64849.5	12010.00
40	1073.61	393.93	0.166	0.60 ( 0.56)	0.94	65523.3	10210.00
41	998.93	443.47	0.161	0.60 ( 0.56)	0.94	66022.3	12000.00
42	938.75	513.36	0.154	0.60 ( 0.56)	0.94	66607.1	10100.00

TOTAL AREA (ACRES) = 66607.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 2998.56 Tc (MIN.) = 16.865  
EFFECTIVE AREA (ACRES) = 2668.72 AREA-AVERAGED Fm (INCH/HR) = 0.44  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.74  
TOTAL AREA (ACRES) = 66607.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 66607.1 TC (MIN.) = 16.86

EFFECTIVE AREA (ACRES) = 2668.72 AREA-AVERAGED Fm (INCH/HR) = 0.44

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.736

PEAK FLOW RATE (CFS) = 2998.56

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2988.07	13.19	1.032	0.60 ( 0.44)	0.74	2011.8	429.00
2	2996.15	15.01	0.930	0.60 ( 0.44)	0.74	2337.0	425.00
3	2996.67	15.21	0.923	0.60 ( 0.44)	0.74	2372.7	400.00
4	2998.56	16.86	0.868	0.60 ( 0.44)	0.74	2668.7	300.00
5	2994.54	24.76	0.666	0.60 ( 0.44)	0.74	4061.3	210.00
6	2991.55	25.60	0.652	0.60 ( 0.44)	0.74	4201.8	410.00
7	2983.69	27.73	0.621	0.60 ( 0.44)	0.74	4561.4	200.00
8	2957.58	29.31	0.597	0.60 ( 0.44)	0.74	4825.5	230.00
9	2942.05	30.51	0.583	0.60 ( 0.44)	0.74	5020.2	220.50
10	2938.90	33.14	0.561	0.60 ( 0.44)	0.74	5435.5	50600.00
11	2938.71	34.04	0.554	0.60 ( 0.45)	0.74	5601.6	200.00
12	2937.33	34.11	0.553	0.60 ( 0.45)	0.74	5618.7	50500.00
13	2922.21	34.92	0.547	0.60 ( 0.45)	0.74	5803.5	50800.00
14	2855.87	38.44	0.518	0.60 ( 0.45)	0.74	6598.1	50700.00
15	2778.95	42.46	0.491	0.60 ( 0.45)	0.75	7480.1	110.00
16	2664.03	46.39	0.469	0.60 ( 0.45)	0.75	8342.9	100.00
17	2597.37	48.78	0.455	0.60 ( 0.45)	0.75	8861.3	100.00
18	2510.99	52.16	0.435	0.60 ( 0.45)	0.75	9587.9	100.00
19	2421.05	55.80	0.414	0.60 ( 0.45)	0.76	10287.4	130.00
20	1853.18	82.46	0.350	0.60 ( 0.48)	0.80	15474.4	10100.00
21	1837.49	83.19	0.348	0.60 ( 0.48)	0.80	15612.1	31100.00
22	1735.76	88.92	0.338	0.60 ( 0.48)	0.80	16757.2	20100.00
23	1601.28	96.28	0.324	0.60 ( 0.49)	0.81	18117.8	390.00
24	1596.99	101.01	0.315	0.60 ( 0.49)	0.82	19130.5	13600.00
25	1596.92	108.95	0.301	0.60 ( 0.50)	0.83	20823.7	13100.00
26	1573.58	131.08	0.270	0.60 ( 0.51)	0.85	24910.4	11831.00
27	1601.76	154.75	0.249	0.60 ( 0.52)	0.87	29469.8	11530.00
28	1629.98	174.36	0.231	0.60 ( 0.53)	0.89	33832.1	11000.00
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30	1567.85	215.03	0.215	0.60 ( 0.55)	0.91	44705.6	13510.00
31	1546.17	218.59	0.214	0.60 ( 0.55)	0.91	45423.9	11910.00
32	1512.94	224.35	0.212	0.60 ( 0.55)	0.92	46246.3	13500.00
33	1474.99	230.87	0.210	0.60 ( 0.55)	0.92	47150.3	12300.00
34	1324.14	265.04	0.200	0.60 ( 0.55)	0.92	52858.8	12410.00
35	1256.03	298.23	0.189	0.60 ( 0.56)	0.93	58944.7	12261.00
36	1232.15	311.10	0.185	0.60 ( 0.56)	0.93	60431.3	10410.00
37	1208.89	323.38	0.181	0.60 ( 0.56)	0.93	61533.2	12101.10
38	1156.40	351.05	0.173	0.60 ( 0.56)	0.94	63911.3	10200.00
39	1130.56	364.57	0.170	0.60 ( 0.56)	0.94	64849.5	12010.00
40	1073.61	393.93	0.166	0.60 ( 0.56)	0.94	65523.3	10210.00
41	998.93	443.47	0.161	0.60 ( 0.56)	0.94	66022.3	12000.00
42	938.75	513.36	0.154	0.60 ( 0.56)	0.94	66607.1	10100.00

END OF RATIONAL METHOD ANALYSIS





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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S36 - FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV NOVEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV36.DAT  
TIME/DATE OF STUDY: 11:29 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.806
- 2) 10.00; 1.204
- 3) 15.00; 0.925
- 4) 20.00; 0.762
- 5) 25.00; 0.659
- 6) 30.00; 0.585
- 7) 40.00; 0.504
- 8) 50.00; 0.447
- 9) 60.00; 0.390
- 10) 90.00; 0.336
- 11) 120.00; 0.280
- 12) 180.00; 0.226
- 13) 360.00; 0.170
- 14) 1200.00; 0.080

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP HEIGHT (FT)	HIKE HEIGHT (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61  
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.148  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	-	3.39	0.60	1.000	0	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 1.67  
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 1.67

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32  
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.024  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.45	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.10  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.13  
AVERAGE FLOW DEPTH(FEET) = 0.58 TRAVEL TIME(MIN.) = 2.23  
Tc(MIN.) = 13.22  
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 2.84  
EFFECTIVE AREA(ACRES) = 10.84 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 10.8 PEAK FLOW RATE(CFS) = 4.14

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.64 FLOW VELOCITY(FEET/SEC.) = 3.33  
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13601.00 = 906.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13601.00 TO NODE 13602.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 707.32 DOWNSTREAM(FEET) = 657.12
CHANNEL LENGTH THRU SUBAREA(FEET) = 777.60 CHANNEL SLOPE = 0.0646
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.862

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various area and loss rate values.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.89
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.50
AVERAGE FLOW DEPTH(FEET) = 0.87 TRAVEL TIME(MIN.) = 3.70
Tc(MIN.) = 16.93
SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 7.31
EFFECTIVE AREA(ACRES) = 41.80 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 41.8 PEAK FLOW RATE(CFS) = 9.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.94 FLOW VELOCITY(FEET/SEC.) = 3.70
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13602.00 = 1684.51 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13602.00 TO NODE 13603.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 657.12 DOWNSTREAM(FEET) = 584.58
CHANNEL LENGTH THRU SUBAREA(FEET) = 1186.54 CHANNEL SLOPE = 0.0611
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.716

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various area and loss rate values.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.12
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.73
AVERAGE FLOW DEPTH(FEET) = 1.00 TRAVEL TIME(MIN.) = 5.30
Tc(MIN.) = 22.23
SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 2.44

EFFECTIVE AREA(ACRES) = 65.16 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 65.2 PEAK FLOW RATE(CFS) = 9.87
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.96 FLOW VELOCITY(FEET/SEC.) = 3.60
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13603.00 = 2871.05 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 584.58 DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 860.98 CHANNEL SLOPE = 0.0461
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.635

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various area and loss rate values.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.22
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.28
AVERAGE FLOW DEPTH(FEET) = 1.02 TRAVEL TIME(MIN.) = 4.38
Tc(MIN.) = 26.60

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 0.68
EFFECTIVE AREA(ACRES) = 86.40 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) = 9.87
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.00 FLOW VELOCITY(FEET/SEC.) = 3.26
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S35X02.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

```

STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS) (MIN.) (INCH/HR)      (ACRES)      NODE
1           18.94 124.94 0.60( 0.57) 0.95    1542.7 13510.00
2           19.25 134.44 0.60( 0.57) 0.94    1579.8 13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 14.0
-----
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
=====
MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS) (MIN.) (INCH/HR)      (ACRES)      NODE
1           18.94 124.94 0.60( 0.57) 0.95    1542.7 13510.00
2           19.25 134.44 0.60( 0.57) 0.94    1579.8 13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13620.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 632.19 DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 2062.96 CHANNEL SLOPE = 0.0423
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.261
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED      -      17.68      0.60      1.000      -
USER-DEFINED      -      2.36      0.60      1.000      -
USER-DEFINED      -      0.60      0.60      1.000      -
USER-DEFINED      -      0.22      0.60      1.000      -
USER-DEFINED      -      2.22      0.60      1.000      -
USER-DEFINED      -      3.42      0.60      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 19.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.06
AVERAGE FLOW DEPTH(FEET) = 1.13 TRAVEL TIME(MIN.) = 6.80
Tc(MIN.) = 141.24
SUBAREA AREA(ACRES) = 26.50 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1606.33 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 1606.3 PEAK FLOW RATE(CFS) = 20.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.16 FLOW VELOCITY(FEET/SEC.) = 5.13
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

```

```

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 141.24
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.261
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED      -      1.44      0.60      1.000      -
USER-DEFINED      -      0.01      0.60      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1607.78 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 20.58
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)      NODE
1           20.27 131.83 0.269 0.60( 0.57) 0.95    1570.7 13510.00
2           20.58 141.24 0.261 0.60( 0.57) 0.95    1607.8 13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)      NODE
1           9.87 26.60 0.635 0.60( 0.60) 1.00    86.4 13600.00
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS) (MIN.) (INCH/HR) (INCH/HR)      (ACRES)      NODE
1           29.08 26.60 0.635 0.60( 0.57) 0.96    403.4 13600.00
2           20.27 131.83 0.269 0.60( 0.57) 0.95    1657.1 13510.00
3           20.58 141.24 0.261 0.60( 0.57) 0.95    1694.2 13500.00
TOTAL AREA(ACRES) = 1694.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29.08 Tc(MIN.) = 26.603
EFFECTIVE AREA(ACRES) = 403.36 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1694.2
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

```

```

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13640.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 544.91 DOWNSTREAM(FEET) = 489.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1384.37 CHANNEL SLOPE = 0.0404
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.578
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 5.39 0.60 1.000 -
USER-DEFINED - 16.30 0.60 1.000 -
USER-DEFINED - 4.08 0.60 1.000 -
USER-DEFINED - 12.36 0.60 1.000 -
USER-DEFINED - 11.23 0.60 1.000 -
USER-DEFINED - 5.16 0.60 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29.08
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.48
AVERAGE FLOW DEPTH(FEET) = 1.33 TRAVEL TIME(MIN.) = 4.21
Tc(MIN.) = 30.82
SUBAREA AREA(ACRES) = 54.52 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 457.88 AREA-AVERAGED Fm(INCH/HR) = 0.58
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.96
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 1748.7 PEAK FLOW RATE(CFS) = 29.08
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.33 FLOW VELOCITY(FEET/SEC.) = 5.48
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

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*****
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 30.82
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.578
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 53.93 0.60 1.000 -
USER-DEFINED - 0.45 0.60 1.000 -
USER-DEFINED - 3.98 0.60 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 58.36 SUBAREA RUNOFF(CFS) = 0.00

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EFFECTIVE AREA(ACRES) = 516.24 AREA-AVERAGED Fm(INCH/HR) = 0.58
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 1807.1 PEAK FLOW RATE(CFS) = 29.08
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 3 <<<<
=====
PEAK FLOWRATE TABLE FILE NAME: P201XX02.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:
STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 19.79 22.40 0.60(0.51) 0.85 133.8 20100.00
TOTAL AREA(ACRES) = 133.8

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*****
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<
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** MAIN STREAM CONFLUENCE DATA **
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 29.08 30.82 0.578 0.60(0.58) 0.97 516.2 13600.00
2 20.27 136.44 0.265 0.60(0.57) 0.95 1770.0 13510.00
3 20.58 145.80 0.257 0.60(0.57) 0.95 1807.1 13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

```

```

** MEMORY BANK # 3 CONFLUENCE DATA **
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 19.79 22.40 0.713 0.60(0.51) 0.85 133.8 20100.00
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 13640.00 = 5247.00 FEET.

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** PEAK FLOW RATE TABLE **
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 48.87 22.40 0.713 0.60(0.56) 0.94 509.0 20100.00
2 37.41 30.82 0.578 0.60(0.57) 0.94 650.0 13600.00
3 24.09 136.44 0.265 0.60(0.57) 0.95 1903.8 13510.00
4 24.27 145.80 0.257 0.60(0.57) 0.94 1940.9 13500.00
TOTAL AREA(ACRES) = 1940.9

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 48.87 Tc(MIN.) = 22.397
EFFECTIVE AREA(ACRES) = 509.02 AREA-AVERAGED Fm(INCH/HR) = 0.56
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 1940.9
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

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*****
FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 489.00 DOWNSTREAM(FEET) = 436.89
CHANNEL LENGTH THRU SUBAREA(FEET) = 2994.52 CHANNEL SLOPE = 0.0174
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.558
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.96 0.60 1.000 -
USER-DEFINED - 0.01 0.60 1.000 -
USER-DEFINED - 1.56 0.60 1.000 -
USER-DEFINED - 10.45 0.60 1.000 -
USER-DEFINED - 44.94 0.60 1.000 -
USER-DEFINED - 9.66 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 48.87
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.56
AVERAGE FLOW DEPTH(FEET) = 1.89 TRAVEL TIME(MIN.) = 10.93
Tc(MIN.) = 33.33
SUBAREA AREA(ACRES) = 67.58 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 576.60 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 2008.4 PEAK FLOW RATE(CFS) = 48.87
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.89 FLOW VELOCITY(FEET/SEC.) = 4.56
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13641.00 = 25056.61 FEET.

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*****
FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc(MIN.) = 33.33
* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.558
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 16.49 0.60 1.000 -
USER-DEFINED - 20.39 0.60 1.000 -
USER-DEFINED - 7.02 0.60 1.000 -
USER-DEFINED - 12.58 0.60 1.000 -
USER-DEFINED - 42.49 0.60 1.000 -
USER-DEFINED - 5.73 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 104.70 SUBAREA RUNOFF(CFS) = 0.00

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EFFECTIVE AREA(ACRES) = 681.30 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 2113.1 PEAK FLOW RATE(CFS) = 48.87
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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```

*****
FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

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```

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====

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```

MAINLINE Tc(MIN.) = 33.33
* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.558
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 1.78 0.60 1.000 -
USER-DEFINED - 6.25 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 8.03 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 689.33 AREA-AVERAGED Fm(INCH/HR) = 0.57
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 2121.2 PEAK FLOW RATE(CFS) = 48.87
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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```

*****
FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 51

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====

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ELEVATION DATA: UPSTREAM(FEET) = 436.89 DOWNSTREAM(FEET) = 394.80
CHANNEL LENGTH THRU SUBAREA(FEET) = 2814.16 CHANNEL SLOPE = 0.0150
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.480
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.67 0.60 1.000 -
USER-DEFINED - 24.24 0.60 1.000 -
USER-DEFINED - 1.34 0.60 1.000 -
USER-DEFINED - 74.98 0.60 1.000 -
USER-DEFINED - 101.12 0.60 1.000 -
USER-DEFINED - 16.90 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 48.87
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.32
AVERAGE FLOW DEPTH(FEET) = 1.94 TRAVEL TIME(MIN.) = 10.87

```

Tc(MIN.) = 44.20  
 SUBAREA AREA(ACRES) = 219.25 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 908.58 AREA-AVERAGED Fm(INCH/HR) = 0.58  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 2340.4 PEAK FLOW RATE(CFS) = 48.87  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.94 FLOW VELOCITY(FEET/SEC.) = 4.32  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13642.00 = 27870.77 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 44.20  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.480  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	9.95	0.60	1.000	-
USER-DEFINED	-	10.02	0.60	1.000	-
USER-DEFINED	-	4.45	0.60	1.000	-
USER-DEFINED	-	179.37	0.60	1.000	-
USER-DEFINED	-	11.47	0.60	1.000	-
USER-DEFINED	-	0.17	0.60	0.850	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 215.43 SUBAREA RUNOFF(CFS) = 0.01  
 EFFECTIVE AREA(ACRES) = 1124.01 AREA-AVERAGED Fm(INCH/HR) = 0.58  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 2555.8 PEAK FLOW RATE(CFS) = 48.87  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 44.20  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.480  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.03	0.60	0.850	-
USER-DEFINED	-	5.14	0.60	1.000	-
USER-DEFINED	-	11.22	0.60	1.000	-
USER-DEFINED	-	0.33	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 16.72 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 1140.73 AREA-AVERAGED Fm(INCH/HR) = 0.58  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 2572.6 PEAK FLOW RATE(CFS) = 48.87  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM(FEET) = 394.80 DOWNSTREAM(FEET) = 342.39  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2913.57 CHANNEL SLOPE = 0.0180  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.420  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.60	1.000	-
USER-DEFINED	-	2.17	0.60	1.000	-
USER-DEFINED	-	9.19	0.60	1.000	-
USER-DEFINED	-	67.57	0.60	1.000	-
USER-DEFINED	-	35.19	0.60	1.000	-
USER-DEFINED	-	30.67	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 48.87  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.61  
 AVERAGE FLOW DEPTH(FEET) = 1.88 TRAVEL TIME(MIN.) = 10.53  
 Tc(MIN.) = 54.73  
 SUBAREA AREA(ACRES) = 145.01 SUBAREA RUNOFF(CFS) = 0.00  
 EFFECTIVE AREA(ACRES) = 1285.74 AREA-AVERAGED Fm(INCH/HR) = 0.59  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA(ACRES) = 2717.6 PEAK FLOW RATE(CFS) = 48.87  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.88 FLOW VELOCITY(FEET/SEC.) = 4.61  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 54.73  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.420  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.03	0.60	0.850	-
USER-DEFINED	-	5.14	0.60	1.000	-
USER-DEFINED	-	11.22	0.60	1.000	-
USER-DEFINED	-	0.33	0.60	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.89	0.60	1.000	-
USER-DEFINED	-	20.65	0.60	1.000	-
USER-DEFINED	-	2.69	0.60	1.000	-
USER-DEFINED	-	8.45	0.60	1.000	-
USER-DEFINED	-	96.93	0.60	1.000	-
USER-DEFINED	-	13.19	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
SUBAREA AREA(ACRES) = 142.80 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 1428.54 AREA-AVERAGED Fm(INCH/HR) = 0.59  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 2860.4 PEAK FLOW RATE(CFS) = 48.87  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 54.73

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.420

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	42.54	0.60	1.000	-
USER-DEFINED	-	16.96	0.60	1.000	-
USER-DEFINED	-	80.60	0.60	1.000	-
USER-DEFINED	-	1.56	0.60	1.000	-
USER-DEFINED	-	2.00	0.60	1.000	-
USER-DEFINED	-	3.11	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA(ACRES) = 146.77 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 1575.31 AREA-AVERAGED Fm(INCH/HR) = 0.59

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 3007.1 PEAK FLOW RATE(CFS) = 48.87

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.392

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.60	1.000	-
USER-DEFINED	-	23.73	0.60	1.000	-
USER-DEFINED	-	0.27	0.60	1.000	-
USER-DEFINED	-	19.87	0.60	1.000	-
USER-DEFINED	-	6.40	0.60	1.000	-
USER-DEFINED	-	3.14	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 48.87  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.35  
AVERAGE FLOW DEPTH(FEET) = 1.74 TRAVEL TIME(MIN.) = 4.95  
Tc(MIN.) = 59.68  
SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 0.00  
EFFECTIVE AREA(ACRES) = 1629.61 AREA-AVERAGED Fm(INCH/HR) = 0.59  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA(ACRES) = 3061.4 PEAK FLOW RATE(CFS) = 48.87  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.74 FLOW VELOCITY(FEET/SEC.) = 5.35

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 59.68

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.392

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.60	1.000	-
USER-DEFINED	-	9.52	0.60	1.000	-
USER-DEFINED	-	0.71	0.60	1.000	-
USER-DEFINED	-	0.22	0.60	1.000	-
USER-DEFINED	-	39.42	0.60	1.000	-
USER-DEFINED	-	0.62	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA(ACRES) = 51.16 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 1680.77 AREA-AVERAGED Fm(INCH/HR) = 0.59

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 3112.6 PEAK FLOW RATE(CFS) = 48.87

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*



FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 59.68

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.392

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.11	0.60	1.000	-
USER-DEFINED	-	0.77	0.60	1.000	-
USER-DEFINED	-	0.22	0.60	1.000	-
USER-DEFINED	-	2.69	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA(ACRES) = 3.79 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 1684.56 AREA-AVERAGED Fm(INCH/HR) = 0.59

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 3116.4 PEAK FLOW RATE(CFS) = 48.87

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<

PEAK FLOWRATE TABLE FILE NAME: 2P02EVAA.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	140.95	18.14	0.60( 0.21)	0.35	167.3	110.00
2	140.05	21.10	0.60( 0.22)	0.37	199.3	100.00
3	133.31	22.95	0.60( 0.22)	0.37	211.1	100.00
4	102.00	28.72	0.60( 0.24)	0.40	221.1	130.00
TOTAL AREA(ACRES) =						221.1

\*\*\*\*\*

FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM( FEET) = 338.00 DOWNSTREAM( FEET) = 300.00

FLOW LENGTH( FEET) = 881.07 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER( INCH) INCREASED TO 36.000

DEPTH OF FLOW IN 36.0 INCH PIPE IS 15.2 INCHES

PIPE-FLOW VELOCITY( FEET/SEC.) = 17.22

ESTIMATED PIPE DIAMETER( INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 48.87

PIPE TRAVEL TIME(MIN.) = 0.85 Tc(MIN.) = 60.53

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	48.87	60.53	0.389	0.60( 0.59)	0.98	1684.6	20100.00
2	37.41	71.62	0.369	0.60( 0.59)	0.98	1825.6	13600.00
3	24.09	182.03	0.225	0.60( 0.58)	0.97	3079.3	13510.00
4	24.27	191.30	0.222	0.60( 0.58)	0.97	3116.4	13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	140.95	18.14	0.823	0.60( 0.21)	0.35	167.3	110.00
2	140.05	21.10	0.739	0.60( 0.22)	0.37	199.3	100.00
3	133.31	22.95	0.701	0.60( 0.22)	0.37	211.1	100.00
4	102.00	28.72	0.604	0.60( 0.24)	0.40	221.1	130.00
LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	171.92	18.14	0.823	0.60( 0.49)	0.83	672.1	110.00
2	172.42	21.10	0.739	0.60( 0.49)	0.83	786.6	100.00
3	166.70	22.95	0.701	0.60( 0.50)	0.83	849.7	100.00
4	138.00	28.72	0.604	0.60( 0.51)	0.86	1020.3	130.00
5	114.28	60.53	0.389	0.60( 0.55)	0.91	1905.7	20100.00
6	99.46	71.62	0.369	0.60( 0.55)	0.92	2046.7	13600.00
7	61.98	182.03	0.225	0.60( 0.56)	0.93	3300.4	13510.00
8	61.68	191.30	0.222	0.60( 0.56)	0.93	3337.5	13500.00
TOTAL AREA(ACRES) =						3337.5	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 172.42 Tc(MIN.) = 21.104

EFFECTIVE AREA(ACRES) = 786.59 AREA-AVERAGED Fm(INCH/HR) = 0.49

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 3337.5

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 21.10

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.739

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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USER-DEFINED - 1.11 0.60 1.000 -  
 USER-DEFINED - 0.44 0.60 1.000 -  
 USER-DEFINED - 1.49 0.60 1.000 -  
 USER-DEFINED - 1.70 0.60 1.000 -  
 USER-DEFINED - 1.09 0.60 1.000 -  
 USER-DEFINED - 18.57 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 24.40 SUBAREA RUNOFF (CFS) = 3.06  
 EFFECTIVE AREA (ACRES) = 810.99 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 3361.9 PEAK FLOW RATE (CFS) = 176.02

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	203.08	18.14	0.823	0.60 (0.50)	0.83	696.5	110.00
2	176.02	21.10	0.739	0.60 (0.50)	0.83	811.0	100.00
3	166.70	22.95	0.701	0.60 (0.50)	0.83	874.1	100.00
4	138.00	28.72	0.604	0.60 (0.52)	0.86	1044.7	130.00
5	114.28	60.53	0.389	0.60 (0.55)	0.91	1930.1	20100.00
6	99.46	71.62	0.369	0.60 (0.55)	0.92	2071.1	13600.00
7	61.98	182.03	0.225	0.60 (0.56)	0.93	3324.8	13510.00
8	61.68	191.30	0.222	0.60 (0.56)	0.93	3361.9	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 203.08 Tc (MIN.) = 18.14  
 AREA-AVERAGED Fm (INCH/HR) = 0.50 AREA-AVERAGED Fp (INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA (ACRES) = 696.55

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 18.14

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.823

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.39	0.60	1.000	-
USER-DEFINED	-	2.30	0.60	1.000	-
USER-DEFINED	-	5.19	0.60	1.000	-
USER-DEFINED	-	28.71	0.60	1.000	-
USER-DEFINED	-	0.17	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 48.76 SUBAREA RUNOFF (CFS) = 9.78

EFFECTIVE AREA (ACRES) = 745.31 AREA-AVERAGED Fm (INCH/HR) = 0.51

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.84

TOTAL AREA (ACRES) = 3410.7 PEAK FLOW RATE (CFS) = 212.85

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 300.00 DOWNSTREAM (FEET) = 288.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 933.89 CHANNEL SLOPE = 0.0128  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.746

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.60	1.000	-
USER-DEFINED	-	9.23	0.60	1.000	-
USER-DEFINED	-	0.54	0.60	1.000	-
USER-DEFINED	-	5.66	0.60	1.000	-
USER-DEFINED	-	3.66	0.60	1.000	-
USER-DEFINED	-	0.67	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 214.17

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.88

AVERAGE FLOW DEPTH (FEET) = 3.48 TRAVEL TIME (MIN.) = 2.65

Tc (MIN.) = 20.79

SUBAREA AREA (ACRES) = 19.98 SUBAREA RUNOFF (CFS) = 2.62

EFFECTIVE AREA (ACRES) = 765.29 AREA-AVERAGED Fm (INCH/HR) = 0.51

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.85

TOTAL AREA (ACRES) = 3430.6 PEAK FLOW RATE (CFS) = 212.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.47 FLOW VELOCITY (FEET/SEC.) = 5.88

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 20.79

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.746

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.56	0.60	1.000	-
USER-DEFINED	-	9.40	0.60	1.000	-
USER-DEFINED	-	2.76	0.60	1.000	-
USER-DEFINED	-	17.38	0.60	1.000	-
USER-DEFINED	-	2.46	0.60	1.000	-
USER-DEFINED	-	5.56	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 39.12 SUBAREA RUNOFF (CFS) = 5.14

EFFECTIVE AREA (ACRES) = 804.41 AREA-AVERAGED Fm (INCH/HR) = 0.51

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.85

TOTAL AREA (ACRES) = 3469.8 PEAK FLOW RATE (CFS) = 212.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 20.79  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.746  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.65 0.60 1.000 -  
 USER-DEFINED - 1.70 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 2.35 SUBAREA RUNOFF(CFS) = 0.31  
 EFFECTIVE AREA(ACRES) = 806.76 AREA-AVERAGED Fm(INCH/HR) = 0.51  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 3472.1 PEAK FLOW RATE(CFS) = 212.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 3 <<<<<<  
 =====

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc(MIN.) = 20.79  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.746  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 5.29 0.60 1.000 -  
 USER-DEFINED - 31.25 0.60 1.000 -  
 USER-DEFINED - 0.22 0.60 1.000 -  
 USER-DEFINED - 6.26 0.60 1.000 -  
 USER-DEFINED - 0.07 0.60 1.000 -  
 USER-DEFINED - 0.22 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 43.31 SUBAREA RUNOFF(CFS) = 5.69  
 EFFECTIVE AREA(ACRES) = 850.07 AREA-AVERAGED Fm(INCH/HR) = 0.52  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.86  
 TOTAL AREA(ACRES) = 3515.4 PEAK FLOW RATE(CFS) = 212.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc(MIN.) = 20.79  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.746  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 2.47 0.60 0.850 -  
 USER-DEFINED - 3.06 0.60 0.850 -  
 USER-DEFINED - 17.76 0.60 0.500 -

USER-DEFINED - 7.31 0.60 0.500 -  
 USER-DEFINED - 0.34 0.60 1.000 -  
 USER-DEFINED - 8.22 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.659  
 SUBAREA AREA(ACRES) = 39.16 SUBAREA RUNOFF(CFS) = 12.36  
 EFFECTIVE AREA(ACRES) = 889.23 AREA-AVERAGED Fm(INCH/HR) = 0.51  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 3554.6 PEAK FLOW RATE(CFS) = 212.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc(MIN.) = 20.79  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.746  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.53 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 0.07  
 EFFECTIVE AREA(ACRES) = 889.76 AREA-AVERAGED Fm(INCH/HR) = 0.51  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 3555.1 PEAK FLOW RATE(CFS) = 212.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13680.00 TO NODE 13682.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
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>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 288.00 DOWNSTREAM(FEET) = 242.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.77 CHANNEL SLOPE = 0.0161  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.611  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.22 0.60 1.000 -  
 USER-DEFINED - 5.28 0.60 1.000 -  
 USER-DEFINED - 0.52 0.60 1.000 -  
 USER-DEFINED - 3.61 0.60 1.000 -  
 USER-DEFINED - 0.67 0.60 1.000 -  
 USER-DEFINED - 1.37 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 212.91  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.40  
 AVERAGE FLOW DEPTH(FEET) = 3.33 TRAVEL TIME(MIN.) = 7.46  
 Tc(MIN.) = 28.24  
 SUBAREA AREA(ACRES) = 11.67 SUBAREA RUNOFF(CFS) = 0.12  
 EFFECTIVE AREA(ACRES) = 901.43 AREA-AVERAGED Fm(INCH/HR) = 0.51

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.85  
TOTAL AREA (ACRES) = 3566.8 PEAK FLOW RATE (CFS) = 212.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 3.33 FLOW VELOCITY (FEET/SEC.) = 6.39  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.24  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.611  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	6.90	0.60	1.000	-
USER-DEFINED	-	23.04	0.60	1.000	-
USER-DEFINED	-	1.18	0.60	1.000	-
USER-DEFINED	-	1.56	0.60	1.000	-
USER-DEFINED	-	53.20	0.60	1.000	-
USER-DEFINED	-	2.08	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 87.96 SUBAREA RUNOFF (CFS) = 0.88  
EFFECTIVE AREA (ACRES) = 989.39 AREA-AVERAGED Fm (INCH/HR) = 0.52  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 3654.7 PEAK FLOW RATE (CFS) = 212.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.24  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.611  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.01	0.60	1.000	-
USER-DEFINED	-	0.18	0.60	1.000	-
USER-DEFINED	-	0.38	0.60	1.000	-
USER-DEFINED	-	0.22	0.60	1.000	-
USER-DEFINED	-	7.73	0.60	1.000	-
USER-DEFINED	-	4.37	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 12.89 SUBAREA RUNOFF (CFS) = 0.13  
EFFECTIVE AREA (ACRES) = 1002.28 AREA-AVERAGED Fm (INCH/HR) = 0.52  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 3667.6 PEAK FLOW RATE (CFS) = 212.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.24  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.611  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.57	0.60	1.000	-
USER-DEFINED	-	1.97	0.60	1.000	-
USER-DEFINED	-	1.00	0.60	1.000	-
USER-DEFINED	-	2.98	0.60	1.000	-
USER-DEFINED	-	2.39	0.60	1.000	-
USER-DEFINED	-	1.67	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 12.58 SUBAREA RUNOFF (CFS) = 0.13  
EFFECTIVE AREA (ACRES) = 1014.86 AREA-AVERAGED Fm (INCH/HR) = 0.52  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 3680.2 PEAK FLOW RATE (CFS) = 212.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.24  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.611  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.44	0.60	1.000	-
USER-DEFINED	-	2.65	0.60	0.850	-
USER-DEFINED	-	1.16	0.60	0.850	-
USER-DEFINED	-	0.47	0.60	0.500	-
USER-DEFINED	-	0.25	0.60	0.500	-
USER-DEFINED	-	20.24	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.963  
SUBAREA AREA (ACRES) = 25.21 SUBAREA RUNOFF (CFS) = 0.76  
EFFECTIVE AREA (ACRES) = 1040.07 AREA-AVERAGED Fm (INCH/HR) = 0.52  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 3705.4 PEAK FLOW RATE (CFS) = 212.85  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.24  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.611  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.08	0.60	1.000	-
USER-DEFINED	-	6.75	0.60	1.000	-

USER-DEFINED - 0.02 0.60 1.000 -  
 USER-DEFINED - 0.93 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 14.78 SUBAREA RUNOFF (CFS) = 0.15  
 EFFECTIVE AREA (ACRES) = 1054.85 AREA-AVERAGED Fm (INCH/HR) = 0.52  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA (ACRES) = 3720.2 PEAK FLOW RATE (CFS) = 212.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 242.00 DOWNSTREAM (FEET) = 208.53  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2526.22 CHANNEL SLOPE = 0.0132  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.542

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.60	1.000	-
USER-DEFINED	-	13.31	0.60	1.000	-
USER-DEFINED	-	0.87	0.60	1.000	-
USER-DEFINED	-	20.26	0.60	1.000	-
USER-DEFINED	-	1.21	0.60	1.000	-
USER-DEFINED	-	0.05	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 212.85

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.95

AVERAGE FLOW DEPTH (FEET) = 3.45 TRAVEL TIME (MIN.) = 7.08

Tc (MIN.) = 35.32

SUBAREA AREA (ACRES) = 44.19 SUBAREA RUNOFF (CFS) = 0.00

EFFECTIVE AREA (ACRES) = 1099.04 AREA-AVERAGED Fm (INCH/HR) = 0.53

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.88

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 3764.4 PEAK FLOW RATE (CFS) = 212.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.45 FLOW VELOCITY (FEET/SEC.) = 5.95

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 35.32

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.542

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.56	0.60	1.000	-
USER-DEFINED	-	0.81	0.60	1.000	-
USER-DEFINED	-	0.01	0.60	1.000	-
USER-DEFINED	-	1.11	0.60	1.000	-
USER-DEFINED	-	0.59	0.60	1.000	-
USER-DEFINED	-	3.04	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA (ACRES) = 18.12 SUBAREA RUNOFF (CFS) = 0.00

EFFECTIVE AREA (ACRES) = 1117.16 AREA-AVERAGED Fm (INCH/HR) = 0.53

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.88

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 3782.5 PEAK FLOW RATE (CFS) = 212.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 35.32

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.542

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.60	0.400	-
USER-DEFINED	-	1.30	0.60	0.850	-
USER-DEFINED	-	0.10	0.60	0.400	-
USER-DEFINED	-	1.70	0.60	0.850	-
USER-DEFINED	-	0.10	0.60	0.850	-
USER-DEFINED	-	2.90	0.60	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA (ACRES) = 6.20 SUBAREA RUNOFF (CFS) = 0.50

EFFECTIVE AREA (ACRES) = 1123.36 AREA-AVERAGED Fm (INCH/HR) = 0.53

AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.88

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 3788.7 PEAK FLOW RATE (CFS) = 212.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 35.32

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.542

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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USER-DEFINED      -      0.10      0.60      0.500      -
USER-DEFINED      -      0.10      0.60      0.350      -
USER-DEFINED      -      6.90      0.60      0.850      -
USER-DEFINED      -      0.40      0.60      0.850      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 7.50      SUBAREA RUNOFF(CFS) = 0.59
EFFECTIVE AREA(ACRES) = 1130.86      AREA-AVERAGED Fm(INCH/HR) = 0.53
AREA-AVERAGED Fp(INCH/HR) = 0.60      AREA-AVERAGED Ap = 0.88
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3796.2      PEAK FLOW RATE(CFS) = 212.85
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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MAINLINE Tc(MIN.) = 35.32
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.542
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      2.55      0.60      1.000      -
USER-DEFINED      -      0.01      0.60      1.000      -
USER-DEFINED      -      1.35      0.60      1.000      -
USER-DEFINED      -      0.44      0.60      1.000      -
USER-DEFINED      -      0.67      0.60      1.000      -
USER-DEFINED      -      1.06      0.60      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 6.08      SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1136.94      AREA-AVERAGED Fm(INCH/HR) = 0.53
AREA-AVERAGED Fp(INCH/HR) = 0.60      AREA-AVERAGED Ap = 0.88
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3802.3      PEAK FLOW RATE(CFS) = 212.85
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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MAINLINE Tc(MIN.) = 35.32
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.542

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SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      2.16      0.60      1.000      -
USER-DEFINED      -      2.45      0.60      1.000      -
USER-DEFINED      -      6.15      0.60      1.000      -
USER-DEFINED      -      1.34      0.60      1.000      -
USER-DEFINED      -      18.46      0.60      1.000      -
USER-DEFINED      -      4.13      0.60      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 34.69      SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1171.63      AREA-AVERAGED Fm(INCH/HR) = 0.53
AREA-AVERAGED Fp(INCH/HR) = 0.60      AREA-AVERAGED Ap = 0.89
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3837.0      PEAK FLOW RATE(CFS) = 212.85
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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MAINLINE Tc(MIN.) = 35.32
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.542
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      8.69      0.60      1.000      -
USER-DEFINED      -      0.73      0.60      1.000      -
USER-DEFINED      -      0.41      0.60      1.000      -
USER-DEFINED      -      1.37      0.60      1.000      -
USER-DEFINED      -      3.11      0.60      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
SUBAREA AREA(ACRES) = 14.31      SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 1185.94      AREA-AVERAGED Fm(INCH/HR) = 0.53
AREA-AVERAGED Fp(INCH/HR) = 0.60      AREA-AVERAGED Ap = 0.89
* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 3851.3      PEAK FLOW RATE(CFS) = 212.85
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13683.00 TO NODE 13685.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 208.53      DOWNSTREAM(FEET) = 194.24
CHANNEL LENGTH THRU SUBAREA( FEET) = 289.01      CHANNEL SLOPE = 0.0494
CHANNEL BASE( FEET) = 0.00      "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040      MAXIMUM DEPTH( FEET) = 20.00

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CHANNEL FLOW THRU SUBAREA(CFS) = 212.85  
 FLOW VELOCITY(FEET/SEC.) = 9.75 FLOW DEPTH(FEET) = 2.70  
 TRAVEL TIME(MIN.) = 0.49 Tc(MIN.) = 35.81  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13685.00 = 39866.53 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13685.00 TO NODE 13410.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.493

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.23	0.60	1.000	-
USER-DEFINED	-	1.52	0.60	1.000	-
USER-DEFINED	-	0.06	0.60	1.000	-
USER-DEFINED	-	0.13	0.60	1.000	-
USER-DEFINED	-	6.45	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 212.85

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.01

AVERAGE FLOW DEPTH(FEET) = 3.76 TRAVEL TIME(MIN.) = 6.14

Tc(MIN.) = 41.95

SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 0.00

EFFECTIVE AREA(ACRES) = 1194.33 AREA-AVERAGED Fm(INCH/HR) = 0.53

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.89

\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;

\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 212.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.76 FLOW VELOCITY(FEET/SEC.) = 5.01

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 41.95

EFFECTIVE AREA(ACRES) = 1194.33 AREA-AVERAGED Fm(INCH/HR) = 0.53

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.888

PEAK FLOW RATE(CFS) = 212.85

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	212.85	41.95	0.493	0.60( 0.53)	0.89	1194.3	110.00
2	182.13	45.87	0.471	0.60( 0.53)	0.88	1308.8	100.00
3	166.70	48.25	0.457	0.60( 0.53)	0.88	1371.9	100.00
4	138.00	55.27	0.417	0.60( 0.54)	0.89	1542.5	130.00
5	114.28	88.34	0.339	0.60( 0.56)	0.93	2427.8	20100.00

6	99.46	100.42	0.317	0.60( 0.56)	0.93	2568.9	13600.00
7	61.98	214.44	0.215	0.60( 0.56)	0.93	3822.6	13510.00
8	61.68	223.75	0.212	0.60( 0.56)	0.93	3859.7	13500.00

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 END OF RATIONAL METHOD ANALYSIS





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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S37- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV37.DAT  
TIME/DATE OF STUDY: 11:29 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.802
- 2) 10.00; 1.202
- 3) 15.00; 0.923
- 4) 20.00; 0.761
- 5) 25.00; 0.659
- 6) 30.00; 0.585
- 7) 40.00; 0.503
- 8) 50.00; 0.446
- 9) 60.00; 0.390
- 10) 90.00; 0.336
- 11) 120.00; 0.280
- 12) 180.00; 0.226
- 13) 360.00; 0.170
- 14) 1200.00; 0.080

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU02EV34.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2998.56	16.86	0.60 ( 0.44)	0.74	2668.7	300.00
2	2938.90	33.14	0.60 ( 0.44)	0.74	5435.5	50600.00
3	2510.99	52.16	0.60 ( 0.45)	0.75	9587.9	100.00
4	1853.18	82.46	0.60 ( 0.48)	0.80	15474.4	10100.00
5	1601.28	96.28	0.60 ( 0.49)	0.81	18117.8	390.00
6	1596.92	108.95	0.60 ( 0.50)	0.83	20823.7	13100.00
7	1573.58	131.08	0.60 ( 0.51)	0.85	24910.4	11831.00
8	1601.76	154.75	0.60 ( 0.52)	0.87	29469.8	11530.00
9	1629.98	174.36	0.60 ( 0.53)	0.89	33832.1	11000.00
10	1685.11	196.72	0.60 ( 0.54)	0.91	40874.0	10850.00
11	1567.85	215.03	0.60 ( 0.55)	0.91	44705.6	13510.00
12	1324.14	265.04	0.60 ( 0.55)	0.92	52858.8	12410.00
13	1256.03	298.23	0.60 ( 0.56)	0.93	58944.7	12261.00
14	1232.15	311.10	0.60 ( 0.56)	0.93	60431.3	10410.00
15	1208.89	323.38	0.60 ( 0.56)	0.93	61533.2	12101.10
16	1156.40	351.05	0.60 ( 0.56)	0.94	63911.3	10200.00
17	1130.56	364.57	0.60 ( 0.56)	0.94	64849.5	12010.00
18	1073.61	393.93	0.60 ( 0.56)	0.94	65523.3	10210.00
19	998.93	443.47	0.60 ( 0.56)	0.94	66022.3	12000.00
20	938.75	513.36	0.60 ( 0.56)	0.94	66607.1	10100.00
TOTAL AREA (ACRES) =						66607.1

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2998.56	16.86	0.60 ( 0.44)	0.74	2668.7	300.00
2	2938.90	33.14	0.60 ( 0.44)	0.74	5435.5	50600.00
3	2510.99	52.16	0.60 ( 0.45)	0.75	9587.9	100.00
4	1853.18	82.46	0.60 ( 0.48)	0.80	15474.4	10100.00
5	1601.28	96.28	0.60 ( 0.49)	0.81	18117.8	390.00
6	1596.92	108.95	0.60 ( 0.50)	0.83	20823.7	13100.00
7	1573.58	131.08	0.60 ( 0.51)	0.85	24910.4	11831.00
8	1601.76	154.75	0.60 ( 0.52)	0.87	29469.8	11530.00
9	1629.98	174.36	0.60 ( 0.53)	0.89	33832.1	11000.00
10	1685.11	196.72	0.60 ( 0.54)	0.91	40874.0	10850.00
11	1567.85	215.03	0.60 ( 0.55)	0.91	44705.6	13510.00
12	1324.14	265.04	0.60 ( 0.55)	0.92	52858.8	12410.00
13	1256.03	298.23	0.60 ( 0.56)	0.93	58944.7	12261.00

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14 1232.15 311.10 0.60( 0.56) 0.93 60431.3 10410.00
15 1208.89 323.38 0.60( 0.56) 0.93 61533.2 12101.10
16 1156.40 351.05 0.60( 0.56) 0.94 63911.3 10200.00
17 1130.56 364.57 0.60( 0.56) 0.94 64849.5 12010.00
18 1073.61 393.93 0.60( 0.56) 0.94 65523.3 10210.00
19 998.93 443.47 0.60( 0.56) 0.94 66022.3 12000.00
20 938.75 513.36 0.60( 0.56) 0.94 66607.1 10100.00
TOTAL AREA(ACRES) = 66607.1

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FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 170.00 DOWNSTREAM(FEET) = 165.51  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.83 CHANNEL SLOPE = 0.0024  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 2998.56  
FLOW VELOCITY(FEET/SEC.) = 7.50 FLOW DEPTH(FEET) = 11.55  
TRAVEL TIME(MIN.) = 4.21 Tc(MIN.) = 21.07  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

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FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506102G.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	23.78	20.85	0.60( 0.58)	0.96	198.9	10230.00
2	18.42	27.77	0.60( 0.57)	0.96	227.7	10250.00
3	15.17	31.87	0.60( 0.57)	0.95	240.4	10200.00
4	8.86	39.09	0.60( 0.57)	0.95	246.3	10220.00
TOTAL AREA(ACRES) =						246.3

\*\*\*\*\*

FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	2998.56	21.07	0.739	0.60( 0.44)	0.74	2668.7	300.00
2	2938.90	37.36	0.525	0.60( 0.44)	0.74	5435.5	50600.00
3	2510.99	56.55	0.409	0.60( 0.45)	0.75	9587.9	100.00
4	1853.18	87.20	0.341	0.60( 0.48)	0.80	15474.4	10100.00

5	1601.28	101.20	0.315	0.60( 0.49)	0.81	18117.8	390.00
6	1596.92	113.87	0.291	0.60( 0.50)	0.83	20823.7	13100.00
7	1573.58	136.02	0.266	0.60( 0.51)	0.85	24910.4	11831.00
8	1601.76	159.67	0.244	0.60( 0.52)	0.87	29469.8	11530.00
9	1629.98	179.26	0.227	0.60( 0.53)	0.89	33832.1	11000.00
10	1685.11	201.58	0.219	0.60( 0.54)	0.91	40874.0	10850.00
11	1567.85	219.98	0.214	0.60( 0.55)	0.91	44705.6	13510.00
12	1324.14	270.20	0.198	0.60( 0.55)	0.92	52858.8	12410.00
13	1256.03	303.46	0.188	0.60( 0.56)	0.93	58944.7	12261.00
14	1232.15	316.36	0.184	0.60( 0.56)	0.93	60431.3	10410.00
15	1208.89	328.65	0.180	0.60( 0.56)	0.93	61533.2	12101.10
16	1156.40	356.39	0.171	0.60( 0.56)	0.94	63911.3	10200.00
17	1130.56	369.93	0.169	0.60( 0.56)	0.94	64849.5	12010.00
18	1073.61	399.37	0.166	0.60( 0.56)	0.94	65523.3	10210.00
19	998.93	449.01	0.160	0.60( 0.56)	0.94	66022.3	12000.00
20	938.75	518.98	0.153	0.60( 0.56)	0.94	66607.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	23.78	20.85	0.744	0.60( 0.58)	0.96	198.9	10230.00
2	18.42	27.77	0.618	0.60( 0.57)	0.96	227.7	10250.00
3	15.17	31.87	0.570	0.60( 0.57)	0.95	240.4	10200.00
4	8.86	39.09	0.510	0.60( 0.57)	0.95	246.3	10220.00
LONGEST FLOWPATH FROM NODE							10200.00 TO NODE 13720.00 = 9099.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	3022.35	20.85	0.744	0.60( 0.45)	0.75	2839.2	10230.00
2	3022.17	21.07	0.739	0.60( 0.45)	0.75	2868.6	300.00
3	2992.46	27.77	0.618	0.60( 0.45)	0.75	4033.9	10250.00
4	2974.18	31.87	0.570	0.60( 0.45)	0.75	4743.1	10200.00
5	2949.27	37.36	0.525	0.60( 0.45)	0.75	5680.4	50600.00
6	2909.25	39.09	0.510	0.60( 0.45)	0.75	6055.4	10220.00
7	2518.09	56.55	0.409	0.60( 0.45)	0.76	9834.1	100.00
8	1859.10	87.20	0.341	0.60( 0.48)	0.80	15720.7	10100.00
9	1606.74	101.20	0.315	0.60( 0.49)	0.81	18364.0	390.00
10	1601.98	113.87	0.291	0.60( 0.50)	0.83	21070.0	13100.00
11	1578.18	136.02	0.266	0.60( 0.51)	0.86	25156.6	11831.00
12	1606.00	159.67	0.244	0.60( 0.52)	0.87	29716.0	11530.00
13	1633.91	179.26	0.227	0.60( 0.53)	0.89	34078.3	11000.00
14	1688.91	201.58	0.219	0.60( 0.54)	0.91	41120.2	10850.00
15	1571.56	219.98	0.214	0.60( 0.55)	0.91	44951.9	13510.00
16	1327.58	270.20	0.198	0.60( 0.55)	0.92	53105.0	12410.00
17	1259.28	303.46	0.188	0.60( 0.56)	0.93	59190.9	12261.00
18	1235.34	316.36	0.184	0.60( 0.56)	0.93	60677.5	10410.00
19	1212.01	328.65	0.180	0.60( 0.56)	0.93	61779.5	12101.10
20	1159.37	356.39	0.171	0.60( 0.56)	0.94	64157.6	10200.00
21	1133.49	369.93	0.169	0.60( 0.56)	0.94	65095.8	12010.00
22	1076.48	399.37	0.166	0.60( 0.56)	0.94	65769.5	10210.00
23	1001.72	449.01	0.160	0.60( 0.56)	0.94	66268.6	12000.00
24	941.40	518.98	0.153	0.60( 0.56)	0.94	66853.3	10100.00
TOTAL AREA(ACRES) =							66853.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3022.35 Tc(MIN.) = 20.846

EFFECTIVE AREA (ACRES) = 2839.19 AREA-AVERAGED Fm (INCH/HR) = 0.45  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA (ACRES) = 66853.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

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FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 165.51 DOWNSTREAM(FEET) = 161.03  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2067.54 CHANNEL SLOPE = 0.0022  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 3022.35  
 FLOW VELOCITY(FEET/SEC.) = 7.26 FLOW DEPTH(FEET) = 11.78  
 TRAVEL TIME(MIN.) = 4.75 Tc(MIN.) = 25.59  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

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FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

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FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506103G.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	100.02	24.05	0.60 ( 0.45)	0.75	396.7	10380.00
2	99.68	24.58	0.60 ( 0.45)	0.75	403.1	10300.00
3	86.78	29.19	0.60 ( 0.45)	0.76	440.4	10320.00
4	81.58	32.88	0.60 ( 0.46)	0.76	455.7	10340.00
5	76.28	36.17	0.60 ( 0.46)	0.76	460.8	10360.00
TOTAL AREA (ACRES) =						460.8

\*\*\*\*\*

FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3022.35	25.59	0.650	0.60 ( 0.45)	0.75	2839.2	10230.00
2	3022.17	25.82	0.647	0.60 ( 0.45)	0.75	2868.6	300.00
3	2992.46	32.53	0.564	0.60 ( 0.45)	0.75	4033.9	10250.00
4	2974.18	36.64	0.531	0.60 ( 0.45)	0.75	4743.1	10200.00
5	2949.27	42.14	0.491	0.60 ( 0.45)	0.75	5680.4	50600.00
6	2909.25	43.88	0.481	0.60 ( 0.45)	0.75	6055.4	10220.00
7	2518.09	61.52	0.387	0.60 ( 0.45)	0.76	9834.1	100.00

8	1859.10	92.56	0.331	0.60 ( 0.48)	0.80	15720.7	10100.00
9	1606.74	106.76	0.305	0.60 ( 0.49)	0.81	18364.0	390.00
10	1601.98	119.43	0.281	0.60 ( 0.50)	0.83	21070.0	13100.00
11	1578.18	141.61	0.261	0.60 ( 0.51)	0.86	25156.6	11831.00
12	1606.00	165.23	0.239	0.60 ( 0.52)	0.87	29716.0	11530.00
13	1633.91	184.79	0.225	0.60 ( 0.53)	0.89	34078.3	11000.00
14	1688.91	207.07	0.218	0.60 ( 0.54)	0.91	41120.2	10850.00
15	1571.56	225.57	0.212	0.60 ( 0.55)	0.91	44951.9	13510.00
16	1327.58	276.03	0.196	0.60 ( 0.55)	0.92	53105.0	12410.00
17	1259.28	309.36	0.186	0.60 ( 0.56)	0.93	59190.9	12261.00
18	1235.34	322.29	0.182	0.60 ( 0.56)	0.93	60677.5	10410.00
19	1212.01	334.62	0.178	0.60 ( 0.56)	0.93	61779.5	12101.10
20	1159.37	362.42	0.170	0.60 ( 0.56)	0.94	64157.6	10200.00
21	1133.49	375.99	0.168	0.60 ( 0.56)	0.94	65095.8	12010.00
22	1076.48	405.51	0.165	0.60 ( 0.56)	0.94	65769.5	10210.00
23	1001.72	455.26	0.160	0.60 ( 0.56)	0.94	66268.6	12000.00
24	941.40	525.34	0.152	0.60 ( 0.56)	0.94	66853.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	100.02	24.05	0.678	0.60 ( 0.45)	0.75	396.7	10380.00
2	99.68	24.58	0.668	0.60 ( 0.45)	0.75	403.1	10300.00
3	86.78	29.19	0.597	0.60 ( 0.45)	0.76	440.4	10320.00
4	81.58	32.88	0.561	0.60 ( 0.46)	0.76	455.7	10340.00
5	76.28	36.17	0.534	0.60 ( 0.46)	0.76	460.8	10360.00

LONGEST FLOWPATH FROM NODE 10320.00 TO NODE 13740.00 = 8457.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3122.37	24.05	0.678	0.60 ( 0.45)	0.75	3064.4	10380.00
2	3122.03	24.58	0.668	0.60 ( 0.45)	0.75	3129.5	10300.00
3	3119.19	25.59	0.650	0.60 ( 0.45)	0.75	3250.5	10230.00
4	3118.38	25.82	0.647	0.60 ( 0.45)	0.75	3281.7	300.00
5	3094.01	29.19	0.597	0.60 ( 0.45)	0.75	3895.2	10320.00
6	3074.53	32.53	0.564	0.60 ( 0.45)	0.75	4488.1	10250.00
7	3072.46	32.88	0.561	0.60 ( 0.45)	0.75	4550.8	10340.00
8	3052.51	36.17	0.534	0.60 ( 0.45)	0.75	5124.3	10360.00
9	3049.92	36.64	0.531	0.60 ( 0.45)	0.75	5203.9	10200.00
10	3019.33	42.14	0.491	0.60 ( 0.45)	0.75	6141.2	50600.00
11	2977.89	43.88	0.481	0.60 ( 0.45)	0.75	6516.2	10220.00
12	2573.37	61.52	0.387	0.60 ( 0.45)	0.76	10294.9	100.00
13	1906.38	92.56	0.331	0.60 ( 0.48)	0.80	16181.5	10100.00
14	1650.24	106.76	0.305	0.60 ( 0.49)	0.81	18824.8	390.00
15	1642.10	119.43	0.281	0.60 ( 0.50)	0.83	21530.8	13100.00
16	1615.38	141.61	0.261	0.60 ( 0.51)	0.85	25617.4	11831.00
17	1640.16	165.23	0.239	0.60 ( 0.52)	0.87	30176.8	11530.00
18	1665.96	184.79	0.225	0.60 ( 0.53)	0.89	34539.1	11000.00
19	1719.97	207.07	0.218	0.60 ( 0.54)	0.90	41581.0	10850.00
20	1601.80	225.57	0.212	0.60 ( 0.55)	0.91	45412.7	13510.00
21	1355.57	276.03	0.196	0.60 ( 0.55)	0.92	53565.8	12410.00
22	1285.80	309.36	0.186	0.60 ( 0.56)	0.93	59651.7	12261.00
23	1261.28	322.29	0.182	0.60 ( 0.56)	0.93	61138.3	10410.00
24	1237.40	334.62	0.178	0.60 ( 0.56)	0.93	62240.3	12101.10
25	1183.60	362.42	0.170	0.60 ( 0.56)	0.93	64618.4	10200.00
26	1157.52	375.99	0.168	0.60 ( 0.56)	0.94	65556.6	12010.00

27 1100.05 405.51 0.165 0.60( 0.56) 0.94 66230.3 10210.00  
 28 1024.53 455.26 0.160 0.60( 0.56) 0.94 66729.4 12000.00  
 29 963.14 525.34 0.152 0.60( 0.56) 0.94 67314.1 10100.00  
 TOTAL AREA(ACRES) = 67314.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3122.37 Tc(MIN.) = 24.048  
 EFFECTIVE AREA(ACRES) = 3064.35 AREA-AVERAGED Fm(INCH/HR) = 0.45  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 67314.1  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 161.03 DOWNSTREAM(FEET) = 141.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 364.08 CHANNEL SLOPE = 0.0550  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 3122.37  
 FLOW VELOCITY(FEET/SEC.) = 24.61 FLOW DEPTH(FEET) = 6.50  
 TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 24.29  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506104G.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.30	27.55	0.621	0.60( 0.48)	0.80	44.3	10400.00
TOTAL AREA(ACRES) =							44.3

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3122.37	24.29	0.673	0.60( 0.45)	0.75	3064.4	10380.00
2	3122.03	24.82	0.663	0.60( 0.45)	0.75	3129.5	10300.00
3	3119.19	25.84	0.647	0.60( 0.45)	0.75	3250.5	10230.00
4	3118.38	26.07	0.643	0.60( 0.45)	0.75	3281.7	300.00

5	3094.01	29.44	0.593	0.60( 0.45)	0.75	3895.2	10320.00
6	3074.53	32.78	0.562	0.60( 0.45)	0.75	4488.1	10250.00
7	3072.46	33.13	0.559	0.60( 0.45)	0.75	4550.8	10340.00
8	3052.51	36.42	0.532	0.60( 0.45)	0.75	5124.3	10360.00
9	3049.92	36.88	0.529	0.60( 0.45)	0.75	5203.9	10200.00
10	3019.33	42.39	0.489	0.60( 0.45)	0.75	6141.2	50600.00
11	2977.89	44.13	0.479	0.60( 0.45)	0.75	6516.2	10220.00
12	2573.37	61.78	0.387	0.60( 0.45)	0.76	10294.9	100.00
13	1906.38	92.84	0.331	0.60( 0.48)	0.80	16181.5	10100.00
14	1650.24	107.05	0.304	0.60( 0.49)	0.81	18824.8	390.00
15	1642.10	119.72	0.281	0.60( 0.50)	0.83	21530.8	13100.00
16	1615.38	141.90	0.260	0.60( 0.51)	0.85	25617.4	11831.00
17	1640.16	165.52	0.239	0.60( 0.52)	0.87	30176.8	11530.00
18	1665.96	185.08	0.224	0.60( 0.53)	0.89	34539.1	11000.00
19	1719.97	207.36	0.217	0.60( 0.54)	0.90	41581.0	10850.00
20	1601.80	225.86	0.212	0.60( 0.55)	0.91	45412.7	13510.00
21	1355.57	276.33	0.196	0.60( 0.55)	0.92	53565.8	12410.00
22	1285.80	309.67	0.186	0.60( 0.56)	0.93	59651.7	12261.00
23	1261.28	322.60	0.182	0.60( 0.56)	0.93	61138.3	10410.00
24	1237.40	334.93	0.178	0.60( 0.56)	0.93	62240.3	12101.10
25	1183.60	362.73	0.170	0.60( 0.56)	0.93	64618.4	10200.00
26	1157.52	376.31	0.168	0.60( 0.56)	0.94	65556.6	12010.00
27	1100.05	405.83	0.165	0.60( 0.56)	0.94	66230.3	10210.00
28	1024.53	455.59	0.160	0.60( 0.56)	0.94	66729.4	12000.00
29	963.14	525.67	0.152	0.60( 0.56)	0.94	67314.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7.30	27.55	0.621	0.60( 0.48)	0.80	44.3	10400.00
LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 =							6237.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3129.67	24.29	0.673	0.60( 0.45)	0.75	3103.4	10380.00
2	3129.33	24.82	0.663	0.60( 0.45)	0.75	3169.5	10300.00
3	3126.49	25.84	0.647	0.60( 0.45)	0.75	3292.1	10230.00
4	3125.69	26.07	0.643	0.60( 0.45)	0.75	3323.6	300.00
5	3114.97	27.55	0.621	0.60( 0.45)	0.75	3595.7	10400.00
6	3100.14	29.44	0.593	0.60( 0.45)	0.75	3939.5	10320.00
7	3080.35	32.78	0.562	0.60( 0.45)	0.75	4532.4	10250.00
8	3078.24	33.13	0.559	0.60( 0.45)	0.75	4595.1	10340.00
9	3058.02	36.42	0.532	0.60( 0.45)	0.75	5168.6	10360.00
10	3055.39	36.88	0.529	0.60( 0.45)	0.75	5248.2	10200.00
11	3024.39	42.39	0.489	0.60( 0.45)	0.75	6185.5	50600.00
12	2982.84	44.13	0.479	0.60( 0.45)	0.75	6560.5	10220.00
13	2577.37	61.78	0.387	0.60( 0.45)	0.76	10339.2	100.00
14	1909.80	92.84	0.331	0.60( 0.48)	0.80	16225.8	10100.00
15	1653.39	107.05	0.304	0.60( 0.49)	0.81	18869.1	390.00
16	1645.00	119.72	0.281	0.60( 0.50)	0.83	21575.1	13100.00
17	1618.07	141.90	0.260	0.60( 0.51)	0.85	25661.7	11831.00
18	1642.63	165.52	0.239	0.60( 0.52)	0.87	30221.1	11530.00
19	1668.28	185.08	0.224	0.60( 0.53)	0.89	34583.4	11000.00
20	1722.22	207.36	0.217	0.60( 0.54)	0.90	41625.3	10850.00
21	1603.99	225.86	0.212	0.60( 0.55)	0.91	45457.0	13510.00
22	1357.60	276.33	0.196	0.60( 0.55)	0.92	53610.1	12410.00

23	1287.72	309.67	0.186	0.60	(0.56)	0.93	59696.0	12261.00
24	1263.15	322.60	0.182	0.60	(0.56)	0.93	61182.6	10410.00
25	1239.24	334.93	0.178	0.60	(0.56)	0.93	62284.6	12101.10
26	1185.36	362.73	0.170	0.60	(0.56)	0.93	64662.7	10200.00
27	1159.26	376.31	0.168	0.60	(0.56)	0.94	65600.9	12010.00
28	1101.76	405.83	0.165	0.60	(0.56)	0.94	66274.6	10210.00
29	1026.18	455.59	0.160	0.60	(0.56)	0.94	66773.7	12000.00
30	964.72	525.67	0.152	0.60	(0.56)	0.94	67358.4	10100.00
TOTAL AREA (ACRES) = 67358.4								

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 3129.67 Tc (MIN.) = 24.294  
EFFECTIVE AREA (ACRES) = 3103.42 AREA-AVERAGED Fm (INCH/HR) = 0.45  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.75  
TOTAL AREA (ACRES) = 67358.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 141.00 DOWNSTREAM (FEET) = 135.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1533.41 CHANNEL SLOPE = 0.0039  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 3129.67  
FLOW VELOCITY (FEET/SEC.) = 9.14 FLOW DEPTH (FEET) = 10.68  
TRAVEL TIME (MIN.) = 2.80 Tc (MIN.) = 27.09  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506105N.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	32.00	17.46	0.60 (0.53)	0.88	140.9	10520.00
2	10.21	60.70	0.60 (0.56)	0.93	403.6	10500.00
TOTAL AREA (ACRES) =						403.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3129.67	27.09	0.628	0.60 (0.45)	0.75	3103.4	10380.00
2	3129.33	27.62	0.620	0.60 (0.45)	0.75	3169.5	10300.00
3	3126.49	28.64	0.605	0.60 (0.45)	0.75	3292.1	10230.00
4	3125.69	28.86	0.602	0.60 (0.45)	0.75	3323.6	300.00
5	3114.97	30.35	0.582	0.60 (0.45)	0.75	3595.7	10400.00
6	3100.14	32.24	0.567	0.60 (0.45)	0.75	3939.5	10320.00
7	3080.35	35.58	0.539	0.60 (0.45)	0.75	4532.4	10250.00
8	3078.24	35.94	0.536	0.60 (0.45)	0.75	4595.1	10340.00
9	3058.02	39.24	0.509	0.60 (0.45)	0.75	5168.6	10360.00
10	3055.39	39.70	0.505	0.60 (0.45)	0.75	5248.2	10200.00
11	3024.39	45.21	0.473	0.60 (0.45)	0.75	6185.5	50600.00
12	2982.84	46.96	0.463	0.60 (0.45)	0.75	6560.5	10220.00
13	2577.37	64.71	0.382	0.60 (0.45)	0.76	10339.2	100.00
14	1909.80	96.00	0.325	0.60 (0.48)	0.80	16225.8	10100.00
15	1653.39	110.33	0.298	0.60 (0.49)	0.81	18869.1	390.00
16	1645.00	123.01	0.277	0.60 (0.50)	0.83	21575.1	13100.00
17	1618.07	145.20	0.257	0.60 (0.51)	0.85	25661.7	11831.00
18	1642.63	168.81	0.236	0.60 (0.52)	0.87	30221.1	11530.00
19	1668.28	188.35	0.223	0.60 (0.53)	0.89	34583.4	11000.00
20	1722.22	210.60	0.216	0.60 (0.54)	0.90	41625.3	10850.00
21	1603.99	229.17	0.211	0.60 (0.55)	0.91	45457.0	13510.00
22	1357.60	279.78	0.195	0.60 (0.55)	0.92	53610.1	12410.00
23	1287.72	313.16	0.185	0.60 (0.56)	0.93	59696.0	12261.00
24	1263.15	326.11	0.181	0.60 (0.56)	0.93	61182.6	10410.00
25	1239.24	338.46	0.177	0.60 (0.56)	0.93	62284.6	12101.10
26	1185.36	366.29	0.169	0.60 (0.56)	0.93	64662.7	10200.00
27	1159.26	379.89	0.168	0.60 (0.56)	0.94	65600.9	12010.00
28	1101.76	409.46	0.165	0.60 (0.56)	0.94	66274.6	10210.00
29	1026.18	459.28	0.159	0.60 (0.56)	0.94	66773.7	12000.00
30	964.72	529.43	0.152	0.60 (0.56)	0.94	67358.4	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.							

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	32.00	17.46	0.843	0.60 (0.53)	0.88	140.9	10520.00
2	10.21	60.70	0.389	0.60 (0.56)	0.93	403.6	10500.00
LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3161.67	17.46	0.843	0.60 (0.46)	0.76	2141.6	10520.00
2	3156.82	27.09	0.628	0.60 (0.46)	0.76	3302.8	10380.00
3	3156.21	27.62	0.620	0.60 (0.46)	0.76	3372.0	10300.00
4	3152.86	28.64	0.605	0.60 (0.46)	0.76	3500.8	10230.00
5	3151.95	28.86	0.602	0.60 (0.46)	0.76	3533.8	300.00
6	3140.48	30.35	0.582	0.60 (0.46)	0.76	3814.9	10400.00
7	3124.70	32.24	0.567	0.60 (0.46)	0.76	4170.2	10320.00
8	3103.22	35.58	0.539	0.60 (0.46)	0.76	4783.4	10250.00
9	3100.93	35.94	0.536	0.60 (0.46)	0.76	4848.2	10340.00
10	3079.05	39.24	0.509	0.60 (0.46)	0.76	5441.8	10360.00
11	3076.19	39.70	0.505	0.60 (0.46)	0.76	5524.1	10200.00
12	3042.41	45.21	0.473	0.60 (0.46)	0.76	6494.9	50600.00
13	2999.98	46.96	0.463	0.60 (0.46)	0.76	6880.7	10220.00
14	2679.19	60.70	0.389	0.60 (0.46)	0.76	9889.2	10500.00

15	2587.39	64.71	0.382	0.60	(0.46)	0.76	10742.8	100.00
16	1918.33	96.00	0.325	0.60	(0.48)	0.80	16629.4	10100.00
17	1661.22	110.33	0.298	0.60	(0.49)	0.82	19272.7	390.00
18	1652.28	123.01	0.277	0.60	(0.50)	0.83	21978.7	13100.00
19	1624.83	145.20	0.257	0.60	(0.51)	0.85	26065.3	11831.00
20	1648.83	168.81	0.236	0.60	(0.52)	0.87	30624.7	11530.00
21	1674.15	188.35	0.223	0.60	(0.53)	0.89	34987.0	11000.00
22	1727.91	210.60	0.216	0.60	(0.54)	0.90	42028.9	10850.00
23	1609.52	229.17	0.211	0.60	(0.55)	0.91	45860.6	13510.00
24	1362.72	279.78	0.195	0.60	(0.55)	0.92	54013.7	12410.00
25	1292.57	313.16	0.185	0.60	(0.56)	0.93	60099.6	12261.00
26	1267.90	326.11	0.181	0.60	(0.56)	0.93	61586.2	10410.00
27	1243.89	338.46	0.177	0.60	(0.56)	0.93	62688.2	12101.10
28	1189.81	366.29	0.169	0.60	(0.56)	0.93	65066.3	10200.00
29	1163.67	379.89	0.168	0.60	(0.56)	0.94	66004.5	12010.00
30	1106.09	409.46	0.165	0.60	(0.56)	0.94	66678.2	10210.00
31	1030.37	459.28	0.159	0.60	(0.56)	0.94	67177.3	12000.00
32	968.71	529.43	0.152	0.60	(0.56)	0.94	67762.0	10100.00

TOTAL AREA (ACRES) = 67762.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 3161.67 Tc (MIN.) = 17.465  
EFFECTIVE AREA (ACRES) = 2141.58 AREA-AVERAGED Fm (INCH/HR) = 0.46  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 67762.0  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 135.00 DOWNSTREAM (FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 207.23 CHANNEL SLOPE = 0.0097  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 3161.67  
FLOW VELOCITY (FEET/SEC.) = 12.86 FLOW DEPTH (FEET) = 9.05  
TRAVEL TIME (MIN.) = 0.27 Tc (MIN.) = 17.73  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506106G.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.57	19.99	0.60 (0.40)	0.67	36.9	10600.00

TOTAL AREA (ACRES) = 36.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11  
-----

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

\*\*\*\*\* MAIN STREAM CONFLUENCE DATA \*\*\*\*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3161.67	17.73	0.834	0.60 (0.46)	0.76	2141.6	10520.00
2	3156.82	27.36	0.624	0.60 (0.46)	0.76	3302.8	10380.00
3	3156.21	27.89	0.616	0.60 (0.46)	0.76	3372.0	10300.00
4	3152.86	28.91	0.601	0.60 (0.46)	0.76	3500.8	10230.00
5	3151.95	29.13	0.598	0.60 (0.46)	0.76	3533.8	300.00
6	3140.48	30.62	0.580	0.60 (0.46)	0.76	3814.9	10400.00
7	3124.70	32.51	0.564	0.60 (0.46)	0.76	4170.2	10320.00
8	3103.22	35.85	0.537	0.60 (0.46)	0.76	4783.4	10250.00
9	3100.93	36.21	0.534	0.60 (0.46)	0.76	4848.2	10340.00
10	3079.05	39.51	0.507	0.60 (0.46)	0.76	5441.8	10360.00
11	3076.19	39.97	0.503	0.60 (0.46)	0.76	5524.1	10200.00
12	3042.41	45.48	0.472	0.60 (0.46)	0.76	6494.9	50600.00
13	2999.98	47.24	0.462	0.60 (0.46)	0.76	6880.7	10220.00
14	2679.19	60.98	0.388	0.60 (0.46)	0.76	9889.2	10500.00
15	2587.39	64.99	0.381	0.60 (0.46)	0.76	10742.8	100.00
16	1918.33	96.30	0.324	0.60 (0.48)	0.80	16629.4	10100.00
17	1661.22	110.64	0.297	0.60 (0.49)	0.82	19272.7	390.00
18	1652.28	123.32	0.277	0.60 (0.50)	0.83	21978.7	13100.00
19	1624.83	145.51	0.257	0.60 (0.51)	0.85	26065.3	11831.00
20	1648.83	169.12	0.236	0.60 (0.52)	0.87	30624.7	11530.00
21	1674.15	188.67	0.223	0.60 (0.53)	0.89	34987.0	11000.00
22	1727.91	210.92	0.216	0.60 (0.54)	0.90	42028.9	10850.00
23	1609.52	229.48	0.211	0.60 (0.55)	0.91	45860.6	13510.00
24	1362.72	280.11	0.195	0.60 (0.55)	0.92	54013.7	12410.00
25	1292.57	313.50	0.184	0.60 (0.56)	0.93	60099.6	12261.00
26	1267.90	326.44	0.180	0.60 (0.56)	0.93	61586.2	10410.00
27	1243.89	338.80	0.177	0.60 (0.56)	0.93	62688.2	12101.10
28	1189.81	366.64	0.169	0.60 (0.56)	0.93	65066.3	10200.00
29	1163.67	380.24	0.168	0.60 (0.56)	0.94	66004.5	12010.00
30	1106.09	409.81	0.165	0.60 (0.56)	0.94	66678.2	10210.00
31	1030.37	459.64	0.159	0.60 (0.56)	0.94	67177.3	12000.00
32	968.71	529.79	0.152	0.60 (0.56)	0.94	67762.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\*\*\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*\*\*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10.57	19.99	0.761	0.60 (0.40)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

\*\*\*\*\* PEAK FLOW RATE TABLE \*\*\*\*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3172.24	17.73	0.834	0.60 (0.46)	0.76	2174.3	10520.00
2	3171.10	19.99	0.761	0.60 (0.46)	0.76	2451.2	10600.00
3	3163.36	27.36	0.624	0.60 (0.46)	0.76	3339.7	10380.00
4	3162.52	27.89	0.616	0.60 (0.46)	0.76	3408.9	10300.00

5	3158.72	28.91	0.601	0.60	( 0.46)	0.76	3537.7	10230.00
6	3157.75	29.13	0.598	0.60	( 0.46)	0.76	3570.7	300.00
7	3146.11	30.62	0.580	0.60	( 0.46)	0.76	3851.8	10400.00
8	3130.18	32.51	0.564	0.60	( 0.46)	0.76	4207.1	10320.00
9	3108.43	35.85	0.537	0.60	( 0.46)	0.76	4820.3	10250.00
10	3106.12	36.21	0.534	0.60	( 0.46)	0.76	4885.1	10340.00
11	3083.97	39.51	0.507	0.60	( 0.46)	0.76	5478.7	10360.00
12	3081.07	39.97	0.503	0.60	( 0.46)	0.76	5561.0	10200.00
13	3046.99	45.48	0.472	0.60	( 0.46)	0.76	6531.8	50600.00
14	3004.46	47.24	0.462	0.60	( 0.46)	0.76	6917.6	10220.00
15	2682.95	60.98	0.388	0.60	( 0.46)	0.76	9926.1	10500.00
16	2591.09	64.99	0.381	0.60	( 0.46)	0.76	10779.7	100.00
17	1921.48	96.30	0.324	0.60	( 0.48)	0.80	16666.3	10100.00
18	1664.10	110.64	0.297	0.60	( 0.49)	0.81	19309.6	390.00
19	1654.97	123.32	0.277	0.60	( 0.50)	0.83	22015.6	13100.00
20	1627.32	145.51	0.257	0.60	( 0.51)	0.85	26102.2	11831.00
21	1651.12	169.12	0.236	0.60	( 0.52)	0.87	30661.6	11530.00
22	1676.32	188.67	0.223	0.60	( 0.53)	0.89	35023.9	11000.00
23	1730.01	210.92	0.216	0.60	( 0.54)	0.90	42065.8	10850.00
24	1611.57	229.48	0.211	0.60	( 0.55)	0.91	45897.5	13510.00
25	1364.61	280.11	0.195	0.60	( 0.55)	0.92	54050.6	12410.00
26	1294.36	313.50	0.184	0.60	( 0.56)	0.93	60136.5	12261.00
27	1269.65	326.44	0.180	0.60	( 0.56)	0.93	61623.1	10410.00
28	1245.60	338.80	0.177	0.60	( 0.56)	0.93	62725.1	12101.10
29	1191.45	366.64	0.169	0.60	( 0.56)	0.93	65103.2	10200.00
30	1165.30	380.24	0.168	0.60	( 0.56)	0.94	66041.4	12010.00
31	1107.69	409.81	0.165	0.60	( 0.56)	0.94	66715.1	10210.00
32	1031.91	459.64	0.159	0.60	( 0.56)	0.94	67214.2	12000.00
33	970.18	529.79	0.152	0.60	( 0.56)	0.94	67798.9	10100.00

TOTAL AREA (ACRES) = 67798.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 3172.24 Tc (MIN.) = 17.733  
EFFECTIVE AREA (ACRES) = 2174.31 AREA-AVERAGED Fm (INCH/HR) = 0.46  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
TOTAL AREA (ACRES) = 67798.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 67798.9 TC (MIN.) = 17.73  
EFFECTIVE AREA (ACRES) = 2174.31 AREA-AVERAGED Fm (INCH/HR) = 0.46  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.760  
PEAK FLOW RATE (CFS) = 3172.24

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3172.24	17.73	0.834	0.60 ( 0.46)	0.76	2174.3	10520.00
2	3171.10	19.99	0.761	0.60 ( 0.46)	0.76	2451.2	10600.00
3	3163.36	27.36	0.624	0.60 ( 0.46)	0.76	3339.7	10380.00
4	3162.52	27.89	0.616	0.60 ( 0.46)	0.76	3408.9	10300.00
5	3158.72	28.91	0.601	0.60 ( 0.46)	0.76	3537.7	10230.00
6	3157.75	29.13	0.598	0.60 ( 0.46)	0.76	3570.7	300.00
7	3146.11	30.62	0.580	0.60 ( 0.46)	0.76	3851.8	10400.00
8	3130.18	32.51	0.564	0.60 ( 0.46)	0.76	4207.1	10320.00
9	3108.43	35.85	0.537	0.60 ( 0.46)	0.76	4820.3	10250.00
10	3106.12	36.21	0.534	0.60 ( 0.46)	0.76	4885.1	10340.00
11	3083.97	39.51	0.507	0.60 ( 0.46)	0.76	5478.7	10360.00

12	3081.07	39.97	0.503	0.60	( 0.46)	0.76	5561.0	10200.00
13	3046.99	45.48	0.472	0.60	( 0.46)	0.76	6531.8	50600.00
14	3004.46	47.24	0.462	0.60	( 0.46)	0.76	6917.6	10220.00
15	2682.95	60.98	0.388	0.60	( 0.46)	0.76	9926.1	10500.00
16	2591.09	64.99	0.381	0.60	( 0.46)	0.76	10779.7	100.00
17	1921.48	96.30	0.324	0.60	( 0.48)	0.80	16666.3	10100.00
18	1664.10	110.64	0.297	0.60	( 0.49)	0.81	19309.6	390.00
19	1654.97	123.32	0.277	0.60	( 0.50)	0.83	22015.6	13100.00
20	1627.32	145.51	0.257	0.60	( 0.51)	0.85	26102.2	11831.00
21	1651.12	169.12	0.236	0.60	( 0.52)	0.87	30661.6	11530.00
22	1676.32	188.67	0.223	0.60	( 0.53)	0.89	35023.9	11000.00
23	1730.01	210.92	0.216	0.60	( 0.54)	0.90	42065.8	10850.00
24	1611.57	229.48	0.211	0.60	( 0.55)	0.91	45897.5	13510.00
25	1364.61	280.11	0.195	0.60	( 0.55)	0.92	54050.6	12410.00
26	1294.36	313.50	0.184	0.60	( 0.56)	0.93	60136.5	12261.00
27	1269.65	326.44	0.180	0.60	( 0.56)	0.93	61623.1	10410.00
28	1245.60	338.80	0.177	0.60	( 0.56)	0.93	62725.1	12101.10
29	1191.45	366.64	0.169	0.60	( 0.56)	0.93	65103.2	10200.00
30	1165.30	380.24	0.168	0.60	( 0.56)	0.94	66041.4	12010.00
31	1107.69	409.81	0.165	0.60	( 0.56)	0.94	66715.1	10210.00
32	1031.91	459.64	0.159	0.60	( 0.56)	0.94	67214.2	12000.00
33	970.18	529.79	0.152	0.60	( 0.56)	0.94	67798.9	10100.00

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S38- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV38.DAT  
TIME/DATE OF STUDY: 11:29 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.798
- 2) 10.00; 1.199
- 3) 15.00; 0.922
- 4) 20.00; 0.760
- 5) 25.00; 0.658
- 6) 30.00; 0.584
- 7) 40.00; 0.503
- 8) 50.00; 0.446
- 9) 60.00; 0.390
- 10) 90.00; 0.336
- 11) 120.00; 0.280
- 12) 180.00; 0.226
- 13) 360.00; 0.170
- 14) 1200.00; 0.080

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RU02EV37.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3172.24	17.73	0.60 ( 0.46)	0.76	2174.3	10520.00
2	3046.99	45.48	0.60 ( 0.46)	0.76	6531.8	50600.00
3	2682.95	60.98	0.60 ( 0.46)	0.76	9926.1	10500.00
4	1921.48	96.30	0.60 ( 0.48)	0.80	16666.3	10100.00
5	1664.10	110.64	0.60 ( 0.49)	0.81	19309.6	390.00
6	1654.97	123.32	0.60 ( 0.50)	0.83	22015.6	13100.00
7	1627.32	145.51	0.60 ( 0.51)	0.85	26102.2	11831.00
8	1651.12	169.12	0.60 ( 0.52)	0.87	30661.6	11530.00
9	1676.32	188.67	0.60 ( 0.53)	0.89	35023.9	11000.00
10	1730.01	210.92	0.60 ( 0.54)	0.90	42065.8	10850.00
11	1611.57	229.48	0.60 ( 0.55)	0.91	45897.5	13510.00
12	1364.61	280.11	0.60 ( 0.55)	0.92	54050.6	12410.00
13	1294.36	313.50	0.60 ( 0.56)	0.93	60136.5	12261.00
14	1269.65	326.44	0.60 ( 0.56)	0.93	61623.1	10410.00
15	1245.60	338.80	0.60 ( 0.56)	0.93	62725.1	12101.10
16	1191.45	366.64	0.60 ( 0.56)	0.93	65103.2	10200.00
17	1165.30	380.24	0.60 ( 0.56)	0.94	66041.4	12010.00
18	1107.69	409.81	0.60 ( 0.56)	0.94	66715.1	10210.00
19	1031.91	459.64	0.60 ( 0.56)	0.94	67214.2	12000.00
20	970.18	529.79	0.60 ( 0.56)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3172.24	17.73	0.60 ( 0.46)	0.76	2174.3	10520.00
2	3046.99	45.48	0.60 ( 0.46)	0.76	6531.8	50600.00
3	2682.95	60.98	0.60 ( 0.46)	0.76	9926.1	10500.00
4	1921.48	96.30	0.60 ( 0.48)	0.80	16666.3	10100.00
5	1664.10	110.64	0.60 ( 0.49)	0.81	19309.6	390.00
6	1654.97	123.32	0.60 ( 0.50)	0.83	22015.6	13100.00
7	1627.32	145.51	0.60 ( 0.51)	0.85	26102.2	11831.00
8	1651.12	169.12	0.60 ( 0.52)	0.87	30661.6	11530.00
9	1676.32	188.67	0.60 ( 0.53)	0.89	35023.9	11000.00
10	1730.01	210.92	0.60 ( 0.54)	0.90	42065.8	10850.00
11	1611.57	229.48	0.60 ( 0.55)	0.91	45897.5	13510.00
12	1364.61	280.11	0.60 ( 0.55)	0.92	54050.6	12410.00
13	1294.36	313.50	0.60 ( 0.56)	0.93	60136.5	12261.00

14	1269.65	326.44	0.60	( 0.56)	0.93	61623.1	10410.00
15	1245.60	338.80	0.60	( 0.56)	0.93	62725.1	12101.10
16	1191.45	366.64	0.60	( 0.56)	0.93	65103.2	10200.00
17	1165.30	380.24	0.60	( 0.56)	0.94	66041.4	12010.00
18	1107.69	409.81	0.60	( 0.56)	0.94	66715.1	10210.00
19	1031.91	459.64	0.60	( 0.56)	0.94	67214.2	12000.00
20	970.18	529.79	0.60	( 0.56)	0.94	67798.9	10100.00

TOTAL AREA (ACRES) = 67798.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 140.00 DOWNSTREAM (FEET) = 137.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 926.91 CHANNEL SLOPE = 0.0032  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.775

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.44	0.60	0.983	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.983  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3174.86  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.55  
AVERAGE FLOW DEPTH (FEET) = 11.13 TRAVEL TIME (MIN.) = 1.81  
Tc (MIN.) = 19.54  
SUBAREA AREA (ACRES) = 31.44 SUBAREA RUNOFF (CFS) = 5.24  
EFFECTIVE AREA (ACRES) = 2205.75 AREA-AVERAGED Fm (INCH/HR) = 0.46  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
TOTAL AREA (ACRES) = 67830.4 PEAK FLOW RATE (CFS) = 3172.24  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 11.13 FLOW VELOCITY (FEET/SEC.) = 8.54  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION (MIN.) = 19.54  
RAINFALL INTENSITY (INCH/HR) = 0.77  
AREA-AVERAGED Fm (INCH/HR) = 0.46  
AREA-AVERAGED Fp (INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.76  
EFFECTIVE STREAM AREA (ACRES) = 2205.75  
TOTAL STREAM AREA (ACRES) = 67830.38  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 3172.24

\*\*\*\*\*

FLOW PROCESS FROM NODE 13810.00 TO NODE 13811.00 IS CODE = 21

-----  
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 648.54  
ELEVATION DATA: UPSTREAM (FEET) = 756.46 DOWNSTREAM (FEET) = 586.02

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.293  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.072

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
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NATURAL FAIR COVER  
"CHAPARRAL, BROADLEAF" - 5.58 0.60 1.000 0 12.29  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF (CFS) = 2.37  
TOTAL AREA (ACRES) = 5.58 PEAK FLOW RATE (CFS) = 2.37

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 586.02 DOWNSTREAM (FEET) = 437.69  
CHANNEL LENGTH THRU SUBAREA (FEET) = 696.28 CHANNEL SLOPE = 0.2130  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.938

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.79	0.60	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 4.65  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.79  
AVERAGE FLOW DEPTH (FEET) = 0.57 TRAVEL TIME (MIN.) = 2.42  
Tc (MIN.) = 14.72  
SUBAREA AREA (ACRES) = 14.79 SUBAREA RUNOFF (CFS) = 4.50  
EFFECTIVE AREA (ACRES) = 20.37 AREA-AVERAGED Fm (INCH/HR) = 0.60  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 20.4 PEAK FLOW RATE (CFS) = 6.19

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.64 FLOW VELOCITY (FEET/SEC.) = 5.10  
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 437.69 DOWNSTREAM (FEET) = 402.36  
CHANNEL LENGTH THRU SUBAREA (FEET) = 681.04 CHANNEL SLOPE = 0.0519

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.817  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 18.41 0.60 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 8.02  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.22  
 AVERAGE FLOW DEPTH (FEET) = 0.91 TRAVEL TIME (MIN.) = 3.52  
 Tc (MIN.) = 18.24  
 SUBAREA AREA (ACRES) = 18.41 SUBAREA RUNOFF (CFS) = 3.60  
 EFFECTIVE AREA (ACRES) = 38.78 AREA-AVERAGED Fm (INCH/HR) = 0.60  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 38.8 PEAK FLOW RATE (CFS) = 7.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.89 FLOW VELOCITY (FEET/SEC.) = 3.19  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13812.00 = 2025.86 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 402.36 DOWNSTREAM (FEET) = 259.72  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1282.56 CHANNEL SLOPE = 0.1112  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.699  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 27.87 0.60 0.858 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.858  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 9.91  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.49  
 AVERAGE FLOW DEPTH (FEET) = 0.86 TRAVEL TIME (MIN.) = 4.76  
 Tc (MIN.) = 23.00  
 SUBAREA AREA (ACRES) = 27.87 SUBAREA RUNOFF (CFS) = 4.62  
 EFFECTIVE AREA (ACRES) = 66.65 AREA-AVERAGED Fm (INCH/HR) = 0.56  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA (ACRES) = 66.7 PEAK FLOW RATE (CFS) = 8.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.79 FLOW VELOCITY (FEET/SEC.) = 4.31  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 259.72 DOWNSTREAM (FEET) = 137.00  
 FLOW LENGTH (FEET) = 2412.88 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 5.8 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 10.92  
 ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 8.07  
 PIPE TRAVEL TIME (MIN.) = 3.68 Tc (MIN.) = 26.68  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 26.68  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.633  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 83.64 0.60 0.570 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570  
 SUBAREA AREA (ACRES) = 83.64 SUBAREA RUNOFF (CFS) = 21.92  
 EFFECTIVE AREA (ACRES) = 150.29 AREA-AVERAGED Fm (INCH/HR) = 0.44  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 150.3 PEAK FLOW RATE (CFS) = 26.05

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 26.68  
 RAINFALL INTENSITY (INCH/HR) = 0.63  
 AREA-AVERAGED Fm (INCH/HR) = 0.44  
 AREA-AVERAGED Fp (INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.73  
 EFFECTIVE STREAM AREA (ACRES) = 150.29  
 TOTAL STREAM AREA (ACRES) = 150.29  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 26.05

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3172.24	19.54	0.775	0.60 ( 0.46)	0.76	2205.7	10520.00
1	3046.99	47.30	0.461	0.60 ( 0.46)	0.76	6563.2	50600.00
1	2682.95	62.87	0.385	0.60 ( 0.46)	0.76	9957.5	10500.00
1	1921.48	98.35	0.320	0.60 ( 0.48)	0.80	16697.7	10100.00
1	1664.10	112.77	0.294	0.60 ( 0.49)	0.82	19341.1	390.00
1	1654.97	125.45	0.275	0.60 ( 0.50)	0.83	22047.0	13100.00
1	1627.32	147.65	0.255	0.60 ( 0.51)	0.85	26133.7	11831.00
1	1651.12	171.25	0.234	0.60 ( 0.52)	0.87	30693.1	11530.00
1	1676.32	190.79	0.223	0.60 ( 0.53)	0.89	35055.4	11000.00
1	1730.01	213.02	0.216	0.60 ( 0.54)	0.90	42097.3	10850.00

1	1611.57	231.63	0.210	0.60	( 0.55)	0.91	45928.9	13510.00
1	1364.61	282.34	0.194	0.60	( 0.55)	0.92	54082.1	12410.00
1	1294.36	315.76	0.184	0.60	( 0.56)	0.93	60168.0	12261.00
1	1269.65	328.72	0.180	0.60	( 0.56)	0.93	61654.6	10410.00
1	1245.60	341.08	0.176	0.60	( 0.56)	0.93	62756.5	12101.10
1	1191.45	368.95	0.169	0.60	( 0.56)	0.93	65134.6	10200.00
1	1165.30	382.56	0.168	0.60	( 0.56)	0.94	66072.8	12010.00
1	1107.69	412.16	0.164	0.60	( 0.56)	0.94	66746.5	10210.00
1	1031.91	462.03	0.159	0.60	( 0.56)	0.94	67245.6	12000.00
1	970.18	532.22	0.152	0.60	( 0.56)	0.94	67830.4	10100.00
2	26.05	26.68	0.633	0.60	( 0.44)	0.73	150.3	13810.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3198.29	19.54	0.775	0.60 ( 0.46)	0.76	2315.8	10520.00
2	3166.07	26.68	0.633	0.60 ( 0.46)	0.76	3476.8	13810.00
3	3063.57	47.30	0.461	0.60 ( 0.46)	0.76	6713.5	50600.00
4	2696.78	62.87	0.385	0.60 ( 0.46)	0.76	10107.8	10500.00
5	1932.99	98.35	0.320	0.60 ( 0.48)	0.80	16848.0	10100.00
6	1674.65	112.77	0.294	0.60 ( 0.49)	0.81	19491.3	390.00
7	1664.86	125.45	0.275	0.60 ( 0.50)	0.83	22197.3	13100.00
8	1636.49	147.65	0.255	0.60 ( 0.51)	0.85	26283.9	11831.00
9	1659.52	171.25	0.234	0.60 ( 0.52)	0.87	30843.3	11530.00
10	1684.31	190.79	0.223	0.60 ( 0.53)	0.89	35205.7	11000.00
11	1737.76	213.02	0.216	0.60 ( 0.54)	0.90	42247.6	10850.00
12	1619.11	231.63	0.210	0.60 ( 0.55)	0.91	46079.2	13510.00
13	1371.59	282.34	0.194	0.60 ( 0.55)	0.92	54232.4	12410.00
14	1300.96	315.76	0.184	0.60 ( 0.56)	0.93	60318.3	12261.00
15	1276.11	328.72	0.180	0.60 ( 0.56)	0.93	61804.9	10410.00
16	1251.92	341.08	0.176	0.60 ( 0.56)	0.93	62906.8	12101.10
17	1197.52	368.95	0.169	0.60 ( 0.56)	0.93	65284.9	10200.00
18	1171.32	382.56	0.168	0.60 ( 0.56)	0.93	66223.1	12010.00
19	1113.59	412.16	0.164	0.60 ( 0.56)	0.94	66896.8	10210.00
20	1037.63	462.03	0.159	0.60 ( 0.56)	0.94	67395.9	12000.00
21	975.62	532.22	0.152	0.60 ( 0.56)	0.94	67980.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3198.29 Tc (MIN.) = 19.54  
EFFECTIVE AREA(ACRES) = 2315.81 AREA-AVERAGED Fm(INCH/HR) = 0.46  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
TOTAL AREA(ACRES) = 67980.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.719

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.60	0.60	0.683	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.683  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3202.69  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.49  
AVERAGE FLOW DEPTH(FEET) = 11.21 TRAVEL TIME(MIN.) = 2.47  
Tc(MIN.) = 22.02  
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 8.79  
EFFECTIVE AREA(ACRES) = 2347.41 AREA-AVERAGED Fm(INCH/HR) = 0.46  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.76  
TOTAL AREA(ACRES) = 68012.3 PEAK FLOW RATE(CFS) = 3198.29  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 11.20 FLOW VELOCITY(FEET/SEC.) = 8.49  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 22.02  
RAINFALL INTENSITY(INCH/HR) = 0.72  
AREA-AVERAGED Fm(INCH/HR) = 0.46  
AREA-AVERAGED Fp(INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.76  
EFFECTIVE STREAM AREA(ACRES) = 2347.41  
TOTAL STREAM AREA(ACRES) = 68012.27  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3198.29

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 744.71  
ELEVATION DATA: UPSTREAM(FEET) = 1100.95 DOWNSTREAM(FEET) = 959.21

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.858  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.985

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	-	5.06	0.60	1.000	0	13.86

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 1.76  
TOTAL AREA(ACRES) = 5.06 PEAK FLOW RATE(CFS) = 1.76

\*\*\*\*\*

FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 959.21 DOWNSTREAM(FEET) = 832.83
CHANNEL LENGTH THRU SUBAREA(FEET) = 1076.71 CHANNEL SLOPE = 0.1174
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.809
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.57 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.03
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.86
AVERAGE FLOW DEPTH(FEET) = 0.66 TRAVEL TIME(MIN.) = 4.64
Tc(MIN.) = 18.50
SUBAREA AREA(ACRES) = 32.57 SUBAREA RUNOFF(CFS) = 6.12
EFFECTIVE AREA(ACRES) = 37.63 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 37.6 PEAK FLOW RATE(CFS) = 7.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 4.25
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 832.83 DOWNSTREAM(FEET) = 572.49
CHANNEL LENGTH THRU SUBAREA(FEET) = 1883.58 CHANNEL SLOPE = 0.1382
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.655
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.23 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.95
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.68
AVERAGE FLOW DEPTH(FEET) = 0.75 TRAVEL TIME(MIN.) = 6.71
Tc(MIN.) = 25.21
SUBAREA AREA(ACRES) = 32.23 SUBAREA RUNOFF(CFS) = 1.59
EFFECTIVE AREA(ACRES) = 69.86 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 69.9 PEAK FLOW RATE(CFS) = 7.07

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.72 FLOW VELOCITY(FEET/SEC.) = 4.52
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 572.49 DOWNSTREAM(FEET) = 471.65
CHANNEL LENGTH THRU SUBAREA(FEET) = 943.78 CHANNEL SLOPE = 0.1068
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.598
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 27.51 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.07
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.10
AVERAGE FLOW DEPTH(FEET) = 0.76 TRAVEL TIME(MIN.) = 3.83
Tc(MIN.) = 29.05
SUBAREA AREA(ACRES) = 27.51 SUBAREA RUNOFF(CFS) = 0.00
EFFECTIVE AREA(ACRES) = 97.37 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TOTAL AREA(ACRES) = 97.4 PEAK FLOW RATE(CFS) = 7.07

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.76 FLOW VELOCITY(FEET/SEC.) = 4.10
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 471.65 DOWNSTREAM(FEET) = 347.06
CHANNEL LENGTH THRU SUBAREA(FEET) = 1647.45 CHANNEL SLOPE = 0.0756
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.530
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 94.21 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.07

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.58  
AVERAGE FLOW DEPTH (FEET) = 0.81 TRAVEL TIME (MIN.) = 7.68  
Tc (MIN.) = 36.72  
SUBAREA AREA (ACRES) = 94.21 SUBAREA RUNOFF (CFS) = 0.00  
EFFECTIVE AREA (ACRES) = 191.58 AREA-AVERAGED Fm (INCH/HR) = 0.60  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 191.6 PEAK FLOW RATE (CFS) = 7.07  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.81 FLOW VELOCITY (FEET/SEC.) = 3.58  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 347.06 DOWNSTREAM (FEET) = 269.29  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1696.71 CHANNEL SLOPE = 0.0458  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.467  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	233.25	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 7.07  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 2.98  
AVERAGE FLOW DEPTH (FEET) = 0.89 TRAVEL TIME (MIN.) = 9.50  
Tc (MIN.) = 46.23  
SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 0.00  
EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.60  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 7.07  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.89 FLOW VELOCITY (FEET/SEC.) = 2.98  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.388  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.70	0.60	0.880	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 9.88  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 2.79  
AVERAGE FLOW DEPTH (FEET) = 1.09 TRAVEL TIME (MIN.) = 15.11  
Tc (MIN.) = 61.34

SUBAREA AREA (ACRES) = 134.70 SUBAREA RUNOFF (CFS) = 5.64  
EFFECTIVE AREA (ACRES) = 559.53 AREA-AVERAGED Fm (INCH/HR) = 0.58  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TOTAL AREA (ACRES) = 559.5 PEAK FLOW RATE (CFS) = 7.07  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.96 FLOW VELOCITY (FEET/SEC.) = 2.56  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13837.00 = 10522.15 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 31  
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 191.87 DOWNSTREAM (FEET) = 133.00  
FLOW LENGTH (FEET) = 1151.02 MANNING'S N = 0.013  
ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000  
DEPTH OF FLOW IN 36.0 INCH PIPE IS 5.4 INCHES  
PIPE-FLOW VELOCITY (FEET/SEC.) = 10.51  
ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
PIPE-FLOW (CFS) = 7.07  
PIPE TRAVEL TIME (MIN.) = 1.82 Tc (MIN.) = 63.16  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc (MIN.) = 63.16  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.384  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.97	0.60	0.622	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

SUBAREA AREA (ACRES) = 5.97 SUBAREA RUNOFF (CFS) = 0.78  
 EFFECTIVE AREA (ACRES) = 565.50 AREA-AVERAGED Fm (INCH/HR) = 0.58  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.97  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 565.5 PEAK FLOW RATE (CFS) = 7.07  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 63.16  
 RAINFALL INTENSITY (INCH/HR) = 0.38  
 AREA-AVERAGED Fm (INCH/HR) = 0.58  
 AREA-AVERAGED Fp (INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.97  
 EFFECTIVE STREAM AREA (ACRES) = 565.50  
 TOTAL STREAM AREA (ACRES) = 565.50  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 7.07

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3198.29	22.02	0.719	0.60 ( 0.46)	0.76	2347.4	10520.00
1	3166.07	29.16	0.596	0.60 ( 0.46)	0.76	3508.4	13810.00
1	3063.57	49.81	0.447	0.60 ( 0.46)	0.76	6745.1	50600.00
1	2696.78	65.45	0.380	0.60 ( 0.46)	0.76	10139.4	10500.00
1	1932.99	101.16	0.315	0.60 ( 0.48)	0.80	16879.6	10100.00
1	1674.65	115.68	0.288	0.60 ( 0.49)	0.81	19522.9	390.00
1	1664.86	128.36	0.272	0.60 ( 0.50)	0.83	22228.9	13100.00
1	1636.49	150.58	0.252	0.60 ( 0.51)	0.85	26315.5	11831.00
1	1659.52	174.17	0.231	0.60 ( 0.52)	0.87	30874.9	11530.00
1	1684.31	193.69	0.222	0.60 ( 0.53)	0.89	35237.3	11000.00
1	1737.76	215.90	0.215	0.60 ( 0.54)	0.90	42279.2	10850.00
1	1619.11	234.56	0.209	0.60 ( 0.55)	0.91	46110.8	13510.00
1	1371.59	285.40	0.193	0.60 ( 0.55)	0.92	54264.0	12410.00
1	1300.96	318.86	0.183	0.60 ( 0.56)	0.93	60349.9	12261.00
1	1276.11	331.83	0.179	0.60 ( 0.56)	0.93	61836.5	10410.00
1	1251.92	344.21	0.175	0.60 ( 0.56)	0.93	62938.4	12101.10
1	1197.52	372.11	0.169	0.60 ( 0.56)	0.93	65316.5	10200.00
1	1171.32	385.74	0.167	0.60 ( 0.56)	0.93	66254.7	12010.00
1	1113.59	415.38	0.164	0.60 ( 0.56)	0.94	66928.4	10210.00
1	1037.63	465.31	0.159	0.60 ( 0.56)	0.94	67427.5	12000.00
1	975.62	535.55	0.151	0.60 ( 0.56)	0.94	68012.3	10100.00
2	7.07	63.16	0.384	0.60 ( 0.58)	0.97	565.5	13830.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3205.36	22.02	0.719	0.60 ( 0.47)	0.78	2544.5	10520.00

2	3171.14	29.16	0.596	0.60 ( 0.46)	0.77	3769.5	13810.00
3	3070.05	49.81	0.447	0.60 ( 0.46)	0.77	7191.0	50600.00
4	2757.52	63.16	0.384	0.60 ( 0.46)	0.77	10208.2	13830.00
5	2703.77	65.45	0.380	0.60 ( 0.46)	0.77	10704.9	10500.00
6	1938.79	101.16	0.315	0.60 ( 0.48)	0.80	17445.1	10100.00
7	1679.95	115.68	0.288	0.60 ( 0.49)	0.82	20088.4	390.00
8	1669.87	128.36	0.272	0.60 ( 0.50)	0.83	22794.4	13100.00
9	1641.13	150.58	0.252	0.60 ( 0.51)	0.86	26881.0	11831.00
10	1663.77	174.17	0.231	0.60 ( 0.52)	0.87	31440.4	11530.00
11	1688.39	193.69	0.222	0.60 ( 0.53)	0.89	35802.8	11000.00
12	1741.71	215.90	0.215	0.60 ( 0.54)	0.90	42844.7	10850.00
13	1622.95	234.56	0.209	0.60 ( 0.55)	0.91	46676.3	13510.00
14	1375.14	285.40	0.193	0.60 ( 0.55)	0.92	54829.5	12410.00
15	1304.32	318.86	0.183	0.60 ( 0.56)	0.93	60915.4	12261.00
16	1279.40	331.83	0.179	0.60 ( 0.56)	0.93	62402.0	10410.00
17	1255.14	344.21	0.175	0.60 ( 0.56)	0.93	63503.9	12101.10
18	1200.62	372.11	0.169	0.60 ( 0.56)	0.93	65882.0	10200.00
19	1174.39	385.74	0.167	0.60 ( 0.56)	0.93	66820.2	12010.00
20	1116.61	415.38	0.164	0.60 ( 0.56)	0.94	67493.9	10210.00
21	1040.55	465.31	0.159	0.60 ( 0.56)	0.94	67993.0	12000.00
22	978.40	535.55	0.151	0.60 ( 0.56)	0.94	68577.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 3205.36 Tc (MIN.) = 22.02  
 EFFECTIVE AREA (ACRES) = 2544.53 AREA-AVERAGED Fm (INCH/HR) = 0.47  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78  
 TOTAL AREA (ACRES) = 68577.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 133.00 DOWNSTREAM (FEET) = 130.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 654.44 CHANNEL SLOPE = 0.0046  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.696

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	6.61	0.60	0.975	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3205.69  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.76  
 AVERAGE FLOW DEPTH (FEET) = 10.46 TRAVEL TIME (MIN.) = 1.12  
 Tc (MIN.) = 23.13  
 SUBAREA AREA (ACRES) = 6.61 SUBAREA RUNOFF (CFS) = 0.66  
 EFFECTIVE AREA (ACRES) = 2551.14 AREA-AVERAGED Fm (INCH/HR) = 0.47  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78  
 TOTAL AREA (ACRES) = 68584.4 PEAK FLOW RATE (CFS) = 3205.36  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 10.46 FLOW VELOCITY (FEET/SEC.) = 9.76

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 23.13
RAINFALL INTENSITY(INCH/HR) = 0.70
AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.60
AREA-AVERAGED Ap = 0.78
EFFECTIVE STREAM AREA(ACRES) = 2551.14
TOTAL STREAM AREA(ACRES) = 68584.38
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3205.36

\*\*\*\*\*

FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 617.57
ELEVATION DATA: UPSTREAM(FEET) = 646.95 DOWNSTREAM(FEET) = 490.10

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.137
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.081

SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" - 4.95 0.60 1.000 0 12.14
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 2.14
TOTAL AREA(ACRES) = 4.95 PEAK FLOW RATE(CFS) = 2.14

\*\*\*\*\*

FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 490.10 DOWNSTREAM(FEET) = 440.98
CHANNEL LENGTH THRU SUBAREA(FEET) = 351.14 CHANNEL SLOPE = 0.1399
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.990
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 4.02 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.85

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.60
AVERAGE FLOW DEPTH(FEET) = 0.51 TRAVEL TIME(MIN.) = 1.63
Tc(MIN.) = 13.76
SUBAREA AREA(ACRES) = 4.02 SUBAREA RUNOFF(CFS) = 1.41
EFFECTIVE AREA(ACRES) = 8.97 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 3.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.53 FLOW VELOCITY(FEET/SEC.) = 3.73
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 440.98 DOWNSTREAM(FEET) = 395.76
CHANNEL LENGTH THRU SUBAREA(FEET) = 512.91 CHANNEL SLOPE = 0.0882
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.879

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 7.17 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.06
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.32
AVERAGE FLOW DEPTH(FEET) = 0.64 TRAVEL TIME(MIN.) = 2.57
Tc(MIN.) = 16.34
SUBAREA AREA(ACRES) = 7.17 SUBAREA RUNOFF(CFS) = 1.80
EFFECTIVE AREA(ACRES) = 16.14 AREA-AVERAGED Fm(INCH/HR) = 0.60
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 16.1 PEAK FLOW RATE(CFS) = 4.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.64 FLOW VELOCITY(FEET/SEC.) = 3.32
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

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FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 395.76 DOWNSTREAM(FEET) = 354.94
CHANNEL LENGTH THRU SUBAREA(FEET) = 443.69 CHANNEL SLOPE = 0.0920
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.810
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 6.76 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60



SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.69  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.50  
 AVERAGE FLOW DEPTH(FEET) = 0.67 TRAVEL TIME(MIN.) = 2.11  
 Tc(MIN.) = 18.45  
 SUBAREA AREA(ACRES) = 6.76 SUBAREA RUNOFF(CFS) = 1.28  
 EFFECTIVE AREA(ACRES) = 22.90 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 22.9 PEAK FLOW RATE(CFS) = 4.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 3.41  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13853.00 = 1925.31 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13853.00 TO NODE 13854.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 354.94 DOWNSTREAM(FEET) = 263.57  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 962.09 CHANNEL SLOPE = 0.0950  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.701

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	18.16	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.20  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.62  
 AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 4.42  
 Tc(MIN.) = 22.88  
 SUBAREA AREA(ACRES) = 18.16 SUBAREA RUNOFF(CFS) = 1.66  
 EFFECTIVE AREA(ACRES) = 41.06 AREA-AVERAGED Fm(INCH/HR) = 0.60  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 41.1 PEAK FLOW RATE(CFS) = 4.34  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 3.47  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13854.00 = 2887.40 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13854.00 TO NODE 13855.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 263.57 DOWNSTREAM(FEET) = 188.74  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1228.77 CHANNEL SLOPE = 0.0609  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.592  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.41	0.60	0.707	-

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 38.75 0.60 0.879 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.879  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.59  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.12  
 AVERAGE FLOW DEPTH(FEET) = 0.77 TRAVEL TIME(MIN.) = 6.57  
 Tc(MIN.) = 29.45  
 SUBAREA AREA(ACRES) = 38.75 SUBAREA RUNOFF(CFS) = 2.50  
 EFFECTIVE AREA(ACRES) = 79.81 AREA-AVERAGED Fm(INCH/HR) = 0.56  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA(ACRES) = 79.8 PEAK FLOW RATE(CFS) = 4.34  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.70 FLOW VELOCITY(FEET/SEC.) = 2.96  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13855.00 = 4116.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 188.74 DOWNSTREAM(FEET) = 130.00  
 FLOW LENGTH(FEET) = 2092.67 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 5.0 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 7.36  
 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 4.34  
 PIPE TRAVEL TIME(MIN.) = 4.74 Tc(MIN.) = 34.19  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13860.00 = 6208.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 34.19  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.550  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.41	0.60	0.707	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA(ACRES) = 43.41 SUBAREA RUNOFF(CFS) = 6.30  
 EFFECTIVE AREA(ACRES) = 123.22 AREA-AVERAGED Fm(INCH/HR) = 0.52  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.86  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.

TOTAL AREA (ACRES) = 123.2 PEAK FLOW RATE (CFS) = 8.62

\*\*\*\*\*

FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION (MIN.) = 34.19
RAINFALL INTENSITY (INCH/HR) = 0.55
AREA-AVERAGED Fm (INCH/HR) = 0.52
AREA-AVERAGED Fp (INCH/HR) = 0.60
AREA-AVERAGED Ap = 0.86
EFFECTIVE STREAM AREA (ACRES) = 123.22
TOTAL STREAM AREA (ACRES) = 123.22
PEAK FLOW RATE (CFS) AT CONFLUENCE = 8.62

\*\* CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp (Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 20 rows of data for stream 1 and 2.

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

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp (Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 6 rows of data for streams 1 through 6.

Table with 10 columns: Node number, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp (Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 19 rows of data for nodes 7 through 23.

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 3213.98 Tc (MIN.) = 23.13
EFFECTIVE AREA (ACRES) = 2634.52 AREA-AVERAGED Fm (INCH/HR) = 0.47
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78
TOTAL AREA (ACRES) = 68707.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 130.00 DOWNSTREAM (FEET) = 120.57
CHANNEL LENGTH THRU SUBAREA (FEET) = 610.77 CHANNEL SLOPE = 0.0154
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.683
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 4.89 0.60 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3214.16
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.40
AVERAGE FLOW DEPTH (FEET) = 8.34 TRAVEL TIME (MIN.) = 0.66
Tc (MIN.) = 23.79
SUBAREA AREA (ACRES) = 4.89 SUBAREA RUNOFF (CFS) = 0.36
EFFECTIVE AREA (ACRES) = 2639.41 AREA-AVERAGED Fm (INCH/HR) = 0.47
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78
TOTAL AREA (ACRES) = 68712.5 PEAK FLOW RATE (CFS) = 3213.98
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 8.34 FLOW VELOCITY (FEET/SEC.) = 15.40
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 1

-----  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
-----

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 23.79  
RAINFALL INTENSITY(INCH/HR) = 0.68  
AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.78  
EFFECTIVE STREAM AREA(ACRES) = 2639.41  
TOTAL STREAM AREA(ACRES) = 68712.48  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3213.98

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13870.00 TO NODE 13871.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
-----

INITIAL SUBAREA FLOW-LENGTH(FEET) = 872.65  
ELEVATION DATA: UPSTREAM(FEET) = 558.52 DOWNSTREAM(FEET) = 436.47

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 15.704  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.899  
SUBAREA Tc AND LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
NATURAL FAIR COVER  
"GRASS" - 7.32 0.60 1.000 0 15.70  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 1.97  
TOTAL AREA(ACRES) = 7.32 PEAK FLOW RATE(CFS) = 1.97

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 436.47 DOWNSTREAM(FEET) = 337.62  
CHANNEL LENGTH THRU SUBAREA(FEET) = 827.95 CHANNEL SLOPE = 0.1194  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.770  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 13.01 0.60 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.00  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.45  
AVERAGE FLOW DEPTH(FEET) = 0.54 TRAVEL TIME(MIN.) = 4.00  
Tc(MIN.) = 19.70  
SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 1.99

EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 3.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.55 FLOW VELOCITY(FEET/SEC.) = 3.47  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.658  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 32.99 0.60 0.923 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.923  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.73  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.32  
AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 5.27  
Tc(MIN.) = 24.98  
SUBAREA AREA(ACRES) = 32.99 SUBAREA RUNOFF(CFS) = 3.11  
EFFECTIVE AREA(ACRES) = 53.32 AREA-AVERAGED Fm(INCH/HR) = 0.57  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 53.3 PEAK FLOW RATE(CFS) = 4.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.66 FLOW VELOCITY(FEET/SEC.) = 3.21  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 253.88 DOWNSTREAM(FEET) = 160.73  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1518.60 CHANNEL SLOPE = 0.0613  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.575  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 30.94 0.60 0.900 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900  
\* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
\* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.99

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.11  
 AVERAGE FLOW DEPTH (FEET) = 0.64 TRAVEL TIME (MIN.) = 6.16  
 Tc (MIN.) = 31.14  
 SUBAREA AREA (ACRES) = 30.94 SUBAREA RUNOFF (CFS) = 1.60  
 EFFECTIVE AREA (ACRES) = 84.26 AREA-AVERAGED Fm (INCH/HR) = 0.56  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.93  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 84.3 PEAK FLOW RATE (CFS) = 4.18  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.59 FLOW VELOCITY (FEET/SEC.) = 3.98  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM (FEET) = 160.73 DOWNSTREAM (FEET) = 158.14  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 582.74 CHANNEL SLOPE = 0.0044  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.525  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 73.67 0.60 0.930 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 5.41  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 1.57  
 AVERAGE FLOW DEPTH (FEET) = 1.07 TRAVEL TIME (MIN.) = 6.18  
 Tc (MIN.) = 37.32  
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 2.44  
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.56  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.93  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 5.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.05 FLOW VELOCITY (FEET/SEC.) = 1.55  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

-----  
 ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57  
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000

DEPTH OF FLOW IN 36.0 INCH PIPE IS 5.8 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 6.89  
 ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 5.10  
 PIPE TRAVEL TIME (MIN.) = 4.49 Tc (MIN.) = 41.81  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
 MAINLINE Tc (MIN.) = 41.81  
 \* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.493  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 34.90 0.60 0.743 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 SUBAREA AREA (ACRES) = 34.90 SUBAREA RUNOFF (CFS) = 3.98  
 EFFECTIVE AREA (ACRES) = 192.83 AREA-AVERAGED Fm (INCH/HR) = 0.54  
 AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.90  
 \* RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;  
 \* IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.  
 TOTAL AREA (ACRES) = 192.8 PEAK FLOW RATE (CFS) = 8.76

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 41.81  
 RAINFALL INTENSITY (INCH/HR) = 0.49  
 AREA-AVERAGED Fm (INCH/HR) = 0.54  
 AREA-AVERAGED Fp (INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.90  
 EFFECTIVE STREAM AREA (ACRES) = 192.83  
 TOTAL STREAM AREA (ACRES) = 192.83  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 8.76

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3213.98	23.79	0.683	0.60 ( 0.47)	0.78	2639.4	10520.00
1	3179.21	30.95	0.576	0.60 ( 0.47)	0.78	3890.2	13810.00
1	3160.65	34.85	0.545	0.60 ( 0.47)	0.78	4551.1	13850.00
1	3076.95	51.60	0.437	0.60 ( 0.46)	0.77	7325.8	50600.00
1	2763.51	65.01	0.381	0.60 ( 0.46)	0.77	10342.9	13830.00
1	2709.70	67.31	0.377	0.60 ( 0.46)	0.77	10839.6	10500.00
1	1943.69	103.18	0.311	0.60 ( 0.48)	0.81	17579.8	10100.00
1	1684.42	117.77	0.284	0.60 ( 0.49)	0.82	20223.2	390.00
1	1674.12	130.46	0.271	0.60 ( 0.50)	0.83	22929.1	13100.00

1	1645.07	152.68	0.251	0.60	(0.51)	0.86	27015.8	11831.00
1	1667.38	176.26	0.229	0.60	(0.52)	0.87	31575.2	11530.00
1	1691.86	195.78	0.221	0.60	(0.53)	0.89	35937.5	11000.00
1	1745.07	217.98	0.214	0.60	(0.54)	0.90	42979.4	10850.00
1	1626.22	236.67	0.208	0.60	(0.55)	0.91	46811.1	13510.00
1	1378.16	287.60	0.193	0.60	(0.55)	0.92	54964.2	12410.00
1	1307.18	321.08	0.182	0.60	(0.56)	0.93	61050.1	12261.00
1	1282.19	334.07	0.178	0.60	(0.56)	0.93	62536.7	10410.00
1	1257.87	346.46	0.174	0.60	(0.56)	0.93	63638.6	12101.10
1	1203.27	374.39	0.168	0.60	(0.56)	0.93	66016.7	10200.00
1	1177.01	388.03	0.167	0.60	(0.56)	0.93	66954.9	12010.00
1	1119.18	417.70	0.164	0.60	(0.56)	0.94	67628.7	10210.00
1	1043.03	467.67	0.158	0.60	(0.56)	0.94	68127.7	12000.00
1	980.77	537.94	0.151	0.60	(0.56)	0.94	68712.5	10100.00
2	8.76	41.81	0.493	0.60	(0.54)	0.90	192.8	13870.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3222.74	23.79	0.683	0.60 (0.47)	0.78	2749.1	10520.00
2	3186.80	30.95	0.576	0.60 (0.47)	0.78	4032.9	13810.00
3	3168.72	34.85	0.545	0.60 (0.47)	0.78	4711.8	13850.00
4	3134.63	41.81	0.493	0.60 (0.47)	0.78	5896.8	13870.00
5	3084.73	51.60	0.437	0.60 (0.47)	0.78	7518.6	50600.00
6	2770.28	65.01	0.381	0.60 (0.47)	0.78	10535.8	13830.00
7	2716.40	67.31	0.377	0.60 (0.47)	0.78	11032.4	10500.00
8	1949.23	103.18	0.311	0.60 (0.48)	0.81	17772.7	10100.00
9	1689.47	117.77	0.284	0.60 (0.49)	0.82	20416.0	390.00
10	1678.93	130.46	0.271	0.60 (0.50)	0.83	23121.9	13100.00
11	1649.53	152.68	0.251	0.60 (0.51)	0.86	27208.6	11831.00
12	1671.46	176.26	0.229	0.60 (0.52)	0.87	31768.0	11530.00
13	1695.79	195.78	0.221	0.60 (0.53)	0.89	36130.3	11000.00
14	1748.88	217.98	0.214	0.60 (0.54)	0.90	43172.2	10850.00
15	1629.93	236.67	0.208	0.60 (0.55)	0.91	47003.9	13510.00
16	1381.59	287.60	0.193	0.60 (0.55)	0.92	55157.0	12410.00
17	1310.42	321.08	0.182	0.60 (0.56)	0.93	61242.9	12261.00
18	1285.36	334.07	0.178	0.60 (0.56)	0.93	62729.5	10410.00
19	1260.97	346.46	0.174	0.60 (0.56)	0.93	63831.5	12101.10
20	1206.26	374.39	0.168	0.60 (0.56)	0.93	66209.5	10200.00
21	1179.98	388.03	0.167	0.60 (0.56)	0.93	67147.8	12010.00
22	1122.09	417.70	0.164	0.60 (0.56)	0.94	67821.5	10210.00
23	1045.85	467.67	0.158	0.60 (0.56)	0.94	68320.5	12000.00
24	983.45	537.94	0.151	0.60 (0.56)	0.94	68905.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3222.74 Tc (MIN.) = 23.79  
EFFECTIVE AREA(ACRES) = 2749.15 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78  
TOTAL AREA(ACRES) = 68905.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.616  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 117.69 0.60 0.724 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3232.38  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.91  
AVERAGE FLOW DEPTH(FEET) = 14.81 TRAVEL TIME(MIN.) = 4.04  
Tc(MIN.) = 27.83  
SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 19.25  
EFFECTIVE AREA(ACRES) = 2866.84 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78  
TOTAL AREA(ACRES) = 69023.0 PEAK FLOW RATE(CFS) = 3222.74  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 14.79 FLOW VELOCITY(FEET/SEC.) = 4.91  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 27.83  
RAINFALL INTENSITY(INCH/HR) = 0.62  
AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60  
AREA-AVERAGED Ap = 0.78  
EFFECTIVE STREAM AREA(ACRES) = 2866.84  
TOTAL STREAM AREA(ACRES) = 69023.00  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3222.74

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 447.89  
ELEVATION DATA: UPSTREAM(FEET) = 564.89 DOWNSTREAM(FEET) = 421.92

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 6.976  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561  
SUBAREA Tc AND LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)

PUBLIC PARK - 3.03 0.60 0.960 0 6.98  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960  
SUBAREA RUNOFF (CFS) = 2.69  
TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 2.69

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64  
CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.365  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.12	0.60	0.986	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.986  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 5.53  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.42  
AVERAGE FLOW DEPTH (FEET) = 0.65 TRAVEL TIME (MIN.) = 1.64  
Tc (MIN.) = 8.62  
SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 5.65  
EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 7.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.74 FLOW VELOCITY (FEET/SEC.) = 4.78  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 392.64 DOWNSTREAM (FEET) = 324.46  
CHANNEL LENGTH THRU SUBAREA (FEET) = 662.40 CHANNEL SLOPE = 0.1029  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.176  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.50	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 11.05  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.13  
AVERAGE FLOW DEPTH (FEET) = 0.78 TRAVEL TIME (MIN.) = 1.80  
Tc (MIN.) = 10.42  
SUBAREA AREA (ACRES) = 12.50 SUBAREA RUNOFF (CFS) = 6.48

EFFECTIVE AREA (ACRES) = 23.65 AREA-AVERAGED Fm (INCH/HR) = 0.59  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 23.6 PEAK FLOW RATE (CFS) = 12.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.81 FLOW VELOCITY (FEET/SEC.) = 6.27  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 324.46 DOWNSTREAM (FEET) = 240.82  
CHANNEL LENGTH THRU SUBAREA (FEET) = 980.03 CHANNEL SLOPE = 0.0853  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 1.030  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	15.87	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 15.47  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.22  
AVERAGE FLOW DEPTH (FEET) = 0.91 TRAVEL TIME (MIN.) = 2.63  
Tc (MIN.) = 13.05  
SUBAREA AREA (ACRES) = 15.87 SUBAREA RUNOFF (CFS) = 6.15  
EFFECTIVE AREA (ACRES) = 39.52 AREA-AVERAGED Fm (INCH/HR) = 0.60  
AREA-AVERAGED Fp (INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 39.5 PEAK FLOW RATE (CFS) = 15.44

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.91 FLOW VELOCITY (FEET/SEC.) = 6.20  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 240.82 DOWNSTREAM (FEET) = 163.04  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1144.35 CHANNEL SLOPE = 0.0680  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY (INCH/HR) = 0.882  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	28.41	0.60	0.985	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 19.20  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.00  
AVERAGE FLOW DEPTH (FEET) = 1.03 TRAVEL TIME (MIN.) = 3.18

Tc(MIN.) = 16.23  
 SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 7.45  
 EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.59  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 17.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.00 FLOW VELOCITY(FEET/SEC.) = 5.92  
 LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPE SIZE (NON-PRESSURE FLOW)<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70  
 FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 10.5 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 10.32  
 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 17.62  
 PIPE TRAVEL TIME(MIN.) = 3.07 Tc(MIN.) = 19.29  
 LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc(MIN.) = 19.29  
 \* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.783

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	11.69	0.60	0.634	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.634  
 SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 4.24  
 EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.56  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 17.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<  
 =====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 19.29  
 RAINFALL INTENSITY(INCH/HR) = 0.78  
 AREA-AVERAGED Fm(INCH/HR) = 0.56  
 AREA-AVERAGED Fp(INCH/HR) = 0.60  
 AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 79.62  
 TOTAL STREAM AREA(ACRES) = 79.62  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 17.62

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3222.74	27.83	0.616	0.60( 0.47)	0.78	2866.8	10520.00
1	3186.80	35.00	0.544	0.60( 0.47)	0.78	4150.6	13810.00
1	3168.72	38.91	0.512	0.60( 0.47)	0.78	4829.5	13850.00
1	3134.63	45.88	0.469	0.60( 0.47)	0.78	6014.5	13870.00
1	3084.73	55.69	0.414	0.60( 0.47)	0.78	7636.3	50600.00
1	2770.28	69.20	0.373	0.60( 0.47)	0.78	10653.5	13830.00
1	2716.40	71.52	0.369	0.60( 0.47)	0.78	11150.1	10500.00
1	1949.23	107.76	0.303	0.60( 0.48)	0.81	17890.4	10100.00
1	1689.47	122.51	0.278	0.60( 0.49)	0.82	20533.7	390.00
1	1678.93	135.21	0.266	0.60( 0.50)	0.83	23239.6	13100.00
1	1649.53	157.46	0.246	0.60( 0.51)	0.86	27326.3	11831.00
1	1671.46	181.02	0.226	0.60( 0.52)	0.87	31885.7	11530.00
1	1695.79	200.53	0.220	0.60( 0.53)	0.89	36248.0	11000.00
1	1748.88	222.68	0.213	0.60( 0.54)	0.90	43289.9	10850.00
1	1629.93	241.46	0.207	0.60( 0.55)	0.91	47121.6	13510.00
1	1381.59	292.59	0.191	0.60( 0.55)	0.92	55274.7	12410.00
1	1310.42	326.14	0.181	0.60( 0.56)	0.93	61360.6	12261.00
1	1285.36	339.15	0.176	0.60( 0.56)	0.93	62847.2	10410.00
1	1260.97	351.57	0.173	0.60( 0.56)	0.93	63949.1	12101.10
1	1206.26	379.55	0.168	0.60( 0.56)	0.93	66327.2	10200.00
1	1179.98	393.22	0.166	0.60( 0.56)	0.93	67265.5	12010.00
1	1122.09	422.96	0.163	0.60( 0.56)	0.93	67939.2	10210.00
1	1045.85	473.02	0.158	0.60( 0.56)	0.94	68438.2	12000.00
1	983.45	543.37	0.150	0.60( 0.56)	0.94	69023.0	10100.00
2	17.62	19.29	0.783	0.60( 0.56)	0.94	79.6	13889.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3240.36	19.29	0.783	0.60( 0.47)	0.79	2066.7	13889.00
2	3227.01	27.83	0.616	0.60( 0.47)	0.79	2946.5	10520.00
3	3189.49	35.00	0.544	0.60( 0.47)	0.78	4230.2	13810.00
4	3171.26	38.91	0.512	0.60( 0.47)	0.78	4909.1	13850.00
5	3136.96	45.88	0.469	0.60( 0.47)	0.78	6094.1	13870.00
6	3086.78	55.69	0.414	0.60( 0.47)	0.78	7715.9	50600.00
7	2772.14	69.20	0.373	0.60( 0.47)	0.78	10733.1	13830.00
8	2718.23	71.52	0.369	0.60( 0.47)	0.78	11229.8	10500.00
9	1950.73	107.76	0.303	0.60( 0.48)	0.81	17970.0	10100.00
10	1690.85	122.51	0.278	0.60( 0.49)	0.82	20613.3	390.00
11	1680.25	135.21	0.266	0.60( 0.50)	0.83	23319.3	13100.00
12	1650.75	157.46	0.246	0.60( 0.51)	0.86	27405.9	11831.00
13	1672.58	181.02	0.226	0.60( 0.52)	0.87	31965.3	11530.00
14	1696.88	200.53	0.220	0.60( 0.53)	0.89	36327.6	11000.00
15	1749.93	222.68	0.213	0.60( 0.54)	0.90	43369.5	10850.00
16	1630.95	241.46	0.207	0.60( 0.55)	0.91	47201.2	13510.00
17	1382.53	292.59	0.191	0.60( 0.55)	0.92	55354.3	12410.00
18	1311.31	326.14	0.181	0.60( 0.56)	0.93	61440.2	12261.00
19	1286.23	339.15	0.176	0.60( 0.56)	0.93	62926.8	10410.00

20	1261.82	351.57	0.173	0.60	( 0.56)	0.93	64028.8	12101.10
21	1207.09	379.55	0.168	0.60	( 0.56)	0.93	66406.8	10200.00
22	1180.81	393.22	0.166	0.60	( 0.56)	0.93	67345.1	12010.00
23	1122.90	422.96	0.163	0.60	( 0.56)	0.93	68018.8	10210.00
24	1046.63	473.02	0.158	0.60	( 0.56)	0.94	68517.9	12000.00
25	984.20	543.37	0.150	0.60	( 0.56)	0.94	69102.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3240.36 Tc(MIN.) = 19.29  
EFFECTIVE AREA(ACRES) = 2066.70 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.79  
TOTAL AREA(ACRES) = 69102.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69102.6 TC(MIN.) = 19.29  
EFFECTIVE AREA(ACRES) = 2066.70 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.788  
PEAK FLOW RATE(CFS) = 3240.36

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3240.36	19.29	0.783	0.60 ( 0.47)	0.79	2066.7	13889.00
2	3227.01	27.83	0.616	0.60 ( 0.47)	0.79	2946.5	10520.00
3	3189.49	35.00	0.544	0.60 ( 0.47)	0.78	4230.2	13810.00
4	3171.26	38.91	0.512	0.60 ( 0.47)	0.78	4909.1	13850.00
5	3136.96	45.88	0.469	0.60 ( 0.47)	0.78	6094.1	13870.00
6	3086.78	55.69	0.414	0.60 ( 0.47)	0.78	7715.9	50600.00
7	2772.14	69.20	0.373	0.60 ( 0.47)	0.78	10733.1	13830.00
8	2718.23	71.52	0.369	0.60 ( 0.47)	0.78	11229.8	10500.00
9	1950.73	107.76	0.303	0.60 ( 0.48)	0.81	17970.0	10100.00
10	1690.85	122.51	0.278	0.60 ( 0.49)	0.82	20613.3	390.00
11	1680.25	135.21	0.266	0.60 ( 0.50)	0.83	23319.3	13100.00
12	1650.75	157.46	0.246	0.60 ( 0.51)	0.86	27405.9	11831.00
13	1672.58	181.02	0.226	0.60 ( 0.52)	0.87	31965.3	11530.00
14	1696.88	200.53	0.220	0.60 ( 0.53)	0.89	36327.6	11000.00
15	1749.93	222.68	0.213	0.60 ( 0.54)	0.90	43369.5	10850.00
16	1630.95	241.46	0.207	0.60 ( 0.55)	0.91	47201.2	13510.00
17	1382.53	292.59	0.191	0.60 ( 0.55)	0.92	55354.3	12410.00
18	1311.31	326.14	0.181	0.60 ( 0.56)	0.93	61440.2	12261.00
19	1286.23	339.15	0.176	0.60 ( 0.56)	0.93	62926.8	10410.00
20	1261.82	351.57	0.173	0.60 ( 0.56)	0.93	64028.8	12101.10
21	1207.09	379.55	0.168	0.60 ( 0.56)	0.93	66406.8	10200.00
22	1180.81	393.22	0.166	0.60 ( 0.56)	0.93	67345.1	12010.00
23	1122.90	422.96	0.163	0.60 ( 0.56)	0.93	68018.8	10210.00
24	1046.63	473.02	0.158	0.60 ( 0.56)	0.94	68517.9	12000.00
25	984.20	543.37	0.150	0.60 ( 0.56)	0.94	69102.6	10100.00

=====  
END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S39- FREE DRAINING - ULTIMATE CONDITION \*  
\* 2-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU02EV39.DAT  
TIME/DATE OF STUDY: 11:29 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 1.797
- 2) 10.00; 1.198
- 3) 15.00; 0.921
- 4) 20.00; 0.760
- 5) 25.00; 0.658
- 6) 30.00; 0.584
- 7) 40.00; 0.503
- 8) 50.00; 0.446
- 9) 60.00; 0.390
- 10) 90.00; 0.336
- 11) 120.00; 0.280
- 12) 180.00; 0.226
- 13) 360.00; 0.166
- 14) 1200.00; 0.080

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13900.00 TO NODE 13901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65  
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.150  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
AGRICULTURAL POOR COVER "FALLOW"	-	4.00	0.60	1.000	0	10.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 1.98  
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 1.98

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 385.16 DOWNSTREAM(FEET) = 288.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.42 CHANNEL SLOPE = 0.1497  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.039  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.47	0.60	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.66  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.35  
AVERAGE FLOW DEPTH(FEET) = 0.48 TRAVEL TIME(MIN.) = 2.02  
Tc(MIN.) = 12.88  
SUBAREA AREA(ACRES) = 8.47 SUBAREA RUNOFF(CFS) = 3.35  
EFFECTIVE AREA(ACRES) = 12.47 AREA-AVERAGED Fm(INCH/HR) = 0.60  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) = 4.92

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.54 FLOW VELOCITY(FEET/SEC.) = 5.69  
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13902.00 = 1248.07 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13902.00 TO NODE 13903.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.21 DOWNSTREAM(FEET) = 184.89
CHANNEL LENGTH THRU SUBAREA(FEET) = 669.27 CHANNEL SLOPE = 0.1544
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.947
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 23.85 0.60 0.982 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.982
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.74
AVERAGE FLOW DEPTH(FEET) = 0.66 TRAVEL TIME(MIN.) = 1.65
Tc(MIN.) = 14.53
SUBAREA AREA(ACRES) = 23.85 SUBAREA RUNOFF(CFS) = 7.68
EFFECTIVE AREA(ACRES) = 36.32 AREA-AVERAGED Fm(INCH/HR) = 0.59
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 36.3 PEAK FLOW RATE(CFS) = 11.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.73 FLOW VELOCITY(FEET/SEC.) = 7.25
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13903.00 = 1917.34 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 184.89 DOWNSTREAM(FEET) = 155.08
FLOW LENGTH(FEET) = 876.66 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 7.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.53
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 11.58
PIPE TRAVEL TIME(MIN.) = 1.39 Tc(MIN.) = 15.92
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13904.00 = 2794.00 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 15.92
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.891
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 21.29 0.60 0.996 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996

SUBAREA AREA(ACRES) = 21.29 SUBAREA RUNOFF(CFS) = 5.63
EFFECTIVE AREA(ACRES) = 57.61 AREA-AVERAGED Fm(INCH/HR) = 0.59
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 57.6 PEAK FLOW RATE(CFS) = 15.40

\*\*\*\*\*
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 155.08 DOWNSTREAM(FEET) = 118.00
FLOW LENGTH(FEET) = 1961.38 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 10.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 9.28
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 15.40
PIPE TRAVEL TIME(MIN.) = 3.52 Tc(MIN.) = 19.44
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 19.44
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.778
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 43.53 0.60 0.649 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.649
SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 15.23
EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.51
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 24.74

\*\*\*\*\*
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU02EV38.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (ACRES) NODE
1 3240.36 19.29 0.60( 0.47) 0.79 2066.7 13889.00
2 3136.96 45.88 0.60( 0.47) 0.78 6094.1 13870.00
3 2772.14 69.20 0.60( 0.47) 0.78 10733.1 13830.00
4 1950.73 107.76 0.60( 0.48) 0.81 17970.0 10100.00

5	1690.85	122.51	0.60	( 0.49)	0.82	20613.3	390.00
6	1680.25	135.21	0.60	( 0.50)	0.83	23319.3	13100.00
7	1650.75	157.46	0.60	( 0.51)	0.86	27405.9	11831.00
8	1672.58	181.02	0.60	( 0.52)	0.87	31965.3	11530.00
9	1696.88	200.53	0.60	( 0.53)	0.89	36327.6	11000.00
10	1749.93	222.68	0.60	( 0.54)	0.90	43369.5	10850.00
11	1630.95	241.46	0.60	( 0.55)	0.91	47201.2	13510.00
12	1382.53	292.59	0.60	( 0.55)	0.92	55354.3	12410.00
13	1311.31	326.14	0.60	( 0.56)	0.93	61440.2	12261.00
14	1286.23	339.15	0.60	( 0.56)	0.93	62926.8	10410.00
15	1261.82	351.57	0.60	( 0.56)	0.93	64028.8	12101.10
16	1207.09	379.55	0.60	( 0.56)	0.93	66406.8	10200.00
17	1180.81	393.22	0.60	( 0.56)	0.93	67345.1	12010.00
18	1122.90	422.96	0.60	( 0.56)	0.93	68018.8	10210.00
19	1046.63	473.02	0.60	( 0.56)	0.94	68517.9	12000.00
20	984.20	543.37	0.60	( 0.56)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =							69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<  
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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3240.36	19.29	0.60 ( 0.47)	0.79	2066.7	13889.00
2	3136.96	45.88	0.60 ( 0.47)	0.78	6094.1	13870.00
3	2772.14	69.20	0.60 ( 0.47)	0.78	10733.1	13830.00
4	1950.73	107.76	0.60 ( 0.48)	0.81	17970.0	10100.00
5	1690.85	122.51	0.60 ( 0.49)	0.82	20613.3	390.00
6	1680.25	135.21	0.60 ( 0.50)	0.83	23319.3	13100.00
7	1650.75	157.46	0.60 ( 0.51)	0.86	27405.9	11831.00
8	1672.58	181.02	0.60 ( 0.52)	0.87	31965.3	11530.00
9	1696.88	200.53	0.60 ( 0.53)	0.89	36327.6	11000.00
10	1749.93	222.68	0.60 ( 0.54)	0.90	43369.5	10850.00
11	1630.95	241.46	0.60 ( 0.55)	0.91	47201.2	13510.00
12	1382.53	292.59	0.60 ( 0.55)	0.92	55354.3	12410.00
13	1311.31	326.14	0.60 ( 0.56)	0.93	61440.2	12261.00
14	1286.23	339.15	0.60 ( 0.56)	0.93	62926.8	10410.00
15	1261.82	351.57	0.60 ( 0.56)	0.93	64028.8	12101.10
16	1207.09	379.55	0.60 ( 0.56)	0.93	66406.8	10200.00
17	1180.81	393.22	0.60 ( 0.56)	0.93	67345.1	12010.00
18	1122.90	422.96	0.60 ( 0.56)	0.93	68018.8	10210.00
19	1046.63	473.02	0.60 ( 0.56)	0.94	68517.9	12000.00
20	984.20	543.37	0.60 ( 0.56)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
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ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.696  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 96.09 0.60 0.535 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3256.61  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.99  
AVERAGE FLOW DEPTH(FEET) = 13.46 TRAVEL TIME(MIN.) = 3.83  
Tc(MIN.) = 23.12  
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 32.47  
EFFECTIVE AREA(ACRES) = 2162.79 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.78  
TOTAL AREA(ACRES) = 69198.7 PEAK FLOW RATE(CFS) = 3240.36  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 13.43 FLOW VELOCITY(FEET/SEC.) = 5.99  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<  
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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3240.36	23.12	0.696	0.60 ( 0.47)	0.78	2162.8	13889.00
2	3136.96	49.74	0.447	0.60 ( 0.47)	0.78	6190.2	13870.00
3	2772.14	73.19	0.366	0.60 ( 0.47)	0.78	10829.2	13830.00
4	1950.73	112.11	0.295	0.60 ( 0.48)	0.80	18066.1	10100.00
5	1690.85	127.02	0.274	0.60 ( 0.49)	0.82	20709.4	390.00
6	1680.25	139.72	0.262	0.60 ( 0.50)	0.83	23415.3	13100.00
7	1650.75	161.99	0.242	0.60 ( 0.51)	0.85	27502.0	11831.00
8	1672.58	185.54	0.224	0.60 ( 0.52)	0.87	32061.4	11530.00
9	1696.88	205.03	0.218	0.60 ( 0.53)	0.89	36423.7	11000.00
10	1749.93	227.15	0.210	0.60 ( 0.54)	0.90	43465.6	10850.00
11	1630.95	246.01	0.204	0.60 ( 0.55)	0.91	47297.3	13510.00
12	1382.53	297.33	0.187	0.60 ( 0.55)	0.92	55450.4	12410.00
13	1311.31	330.94	0.176	0.60 ( 0.56)	0.93	61536.3	12261.00
14	1286.23	343.98	0.171	0.60 ( 0.56)	0.93	63022.9	10410.00
15	1261.82	356.42	0.167	0.60 ( 0.56)	0.93	64124.9	12101.10
16	1207.09	384.46	0.163	0.60 ( 0.56)	0.93	66502.9	10200.00
17	1180.81	398.15	0.162	0.60 ( 0.56)	0.93	67441.2	12010.00
18	1122.90	427.95	0.159	0.60 ( 0.56)	0.93	68114.9	10210.00
19	1046.63	478.09	0.154	0.60 ( 0.56)	0.93	68613.9	12000.00
20	984.20	548.53	0.147	0.60 ( 0.56)	0.94	69198.7	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24.74	19.44	0.778	0.60 ( 0.51)	0.84	101.1	13900.00
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3265.11	19.44	0.778	0.60 ( 0.47)	0.78	1919.6	13900.00
2	3257.67	23.12	0.696	0.60 ( 0.47)	0.78	2263.9	13889.00
3	3143.33	49.74	0.447	0.60 ( 0.47)	0.78	6291.3	13870.00
4	2777.34	73.19	0.366	0.60 ( 0.47)	0.78	10930.3	13830.00
5	1954.92	112.11	0.295	0.60 ( 0.48)	0.81	18167.2	10100.00
6	1694.74	127.02	0.274	0.60 ( 0.49)	0.82	20810.5	390.00
7	1683.98	139.72	0.262	0.60 ( 0.50)	0.83	23516.5	13100.00
8	1654.19	161.99	0.242	0.60 ( 0.51)	0.85	27603.1	11831.00
9	1675.76	185.54	0.224	0.60 ( 0.52)	0.87	32162.5	11530.00
10	1699.98	205.03	0.218	0.60 ( 0.53)	0.88	36524.9	11000.00
11	1752.92	227.15	0.210	0.60 ( 0.54)	0.90	43566.8	10850.00
12	1633.85	246.01	0.204	0.60 ( 0.55)	0.91	47398.4	13510.00
13	1385.19	297.33	0.187	0.60 ( 0.55)	0.92	55551.5	12410.00
14	1313.81	330.94	0.176	0.60 ( 0.56)	0.93	61637.4	12261.00
15	1288.67	343.98	0.171	0.60 ( 0.56)	0.93	63124.0	10410.00
16	1264.20	356.42	0.167	0.60 ( 0.56)	0.93	64226.0	12101.10
17	1209.42	384.46	0.163	0.60 ( 0.56)	0.93	66604.1	10200.00
18	1183.11	398.15	0.162	0.60 ( 0.56)	0.93	67542.3	12010.00
19	1125.16	427.95	0.159	0.60 ( 0.56)	0.93	68216.0	10210.00
20	1048.82	478.09	0.154	0.60 ( 0.56)	0.93	68715.1	12000.00
21	986.29	548.53	0.147	0.60 ( 0.56)	0.94	69299.9	10100.00
TOTAL AREA (ACRES) = 69299.9							

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3265.11 Tc(MIN.) = 19.4440  
 EFFECTIVE AREA(ACRES) = 1919.58 AREA-AVERAGED Fm(INCH/HR) = 0.47  
 AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA(ACRES) = 69299.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

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FLOW PROCESS FROM NODE 13920.00 TO NODE 13921.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 118.00 DOWNSTREAM(FEET) = 115.28  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 335.44 CHANNEL SLOPE = 0.0081  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.763

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.30	0.60	0.658	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.658

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3287.38

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.16

AVERAGE FLOW DEPTH(FEET) = 9.49 TRAVEL TIME(MIN.) = 0.46

Tc(MIN.) = 19.90

SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 44.54

EFFECTIVE AREA(ACRES) = 2053.88 AREA-AVERAGED Fm(INCH/HR) = 0.46

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.77

TOTAL AREA(ACRES) = 69434.1 PEAK FLOW RATE(CFS) = 3265.11

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.47 FLOW VELOCITY(FEET/SEC.) = 12.15

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13921.00 = 136971.41 FEET.

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FLOW PROCESS FROM NODE 13921.00 TO NODE 14010.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 115.28 DOWNSTREAM(FEET) = 100.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1396.08 CHANNEL SLOPE = 0.0109

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

\* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.727

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.27	0.60	0.723	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.60

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.723

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3277.83

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.60

AVERAGE FLOW DEPTH(FEET) = 8.96 TRAVEL TIME(MIN.) = 1.71

Tc(MIN.) = 21.61

SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 25.43

EFFECTIVE AREA(ACRES) = 2150.15 AREA-AVERAGED Fm(INCH/HR) = 0.46

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.77

TOTAL AREA(ACRES) = 69530.4 PEAK FLOW RATE(CFS) = 3265.11

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.95 FLOW VELOCITY(FEET/SEC.) = 13.58

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69530.4 TC(MIN.) = 21.61

EFFECTIVE AREA(ACRES) = 2150.15 AREA-AVERAGED Fm(INCH/HR) = 0.46

AREA-AVERAGED Fp(INCH/HR) = 0.60 AREA-AVERAGED Ap = 0.770

PEAK FLOW RATE(CFS) = 3265.11

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3265.11	21.61	0.727	0.60 ( 0.46)	0.77	2150.2	13900.00
2	3257.67	25.29	0.654	0.60 ( 0.46)	0.77	2494.5	13889.00
3	3143.33	51.93	0.435	0.60 ( 0.46)	0.77	6521.9	13870.00
4	2777.34	75.45	0.362	0.60 ( 0.46)	0.77	11160.9	13830.00
5	1954.92	114.57	0.290	0.60 ( 0.48)	0.80	18397.8	10100.00
6	1694.74	129.58	0.271	0.60 ( 0.49)	0.82	21041.1	390.00
7	1683.98	142.29	0.260	0.60 ( 0.50)	0.83	23747.1	13100.00
8	1654.19	164.56	0.240	0.60 ( 0.51)	0.85	27833.7	11831.00
9	1675.76	188.11	0.223	0.60 ( 0.52)	0.87	32393.1	11530.00
10	1699.98	207.58	0.217	0.60 ( 0.53)	0.88	36755.4	11000.00
11	1752.92	229.69	0.209	0.60 ( 0.54)	0.90	43797.3	10850.00

12	1633.85	248.59	0.203	0.60	( 0.55)	0.91	47629.0	13510.00
13	1385.19	300.02	0.186	0.60	( 0.55)	0.92	55782.1	12410.00
14	1313.81	333.67	0.175	0.60	( 0.56)	0.93	61868.0	12261.00
15	1288.67	346.72	0.170	0.60	( 0.56)	0.93	63354.6	10410.00
16	1264.20	359.17	0.166	0.60	( 0.56)	0.93	64456.6	12101.10
17	1209.42	387.24	0.163	0.60	( 0.56)	0.93	66834.6	10200.00
18	1183.11	400.95	0.162	0.60	( 0.56)	0.93	67772.9	12010.00
19	1125.16	430.79	0.159	0.60	( 0.56)	0.93	68446.6	10210.00
20	1048.82	480.98	0.154	0.60	( 0.56)	0.93	68945.7	12000.00
21	986.29	551.46	0.146	0.60	( 0.56)	0.93	69530.4	10100.00

=====  
=====  
END OF RATIONAL METHOD ANALYSIS

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S19- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV19.DAT  
TIME/DATE OF STUDY: 11:31 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.749
- 2) 10.00; 1.821
- 3) 15.00; 1.328
- 4) 20.00; 1.137
- 5) 25.00; 0.990
- 6) 30.00; 0.887
- 7) 40.00; 0.760
- 8) 50.00; 0.677
- 9) 60.00; 0.617
- 10) 90.00; 0.514
- 11) 120.00; 0.457
- 12) 180.00; 0.384
- 13) 360.00; 0.286
- 14) 1200.00; 0.126

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	MANNING LIP (FT)	HIKE FACTOR (FT)	MANNING (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 295.79  
ELEVATION DATA: UPSTREAM(FEET) = 2369.48 DOWNSTREAM(FEET) = 2332.92

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.203  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 2.340  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL ".4 DWELLING/ACRE"	-	1.62	0.50	0.999	0	7.20

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
SUBAREA RUNOFF(CFS) = 2.68  
TOTAL AREA(ACRES) = 1.62 PEAK FLOW RATE(CFS) = 2.68

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11901.00 TO NODE 11902.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2332.92 DOWNSTREAM(FEET) = 2297.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 664.26 CHANNEL SLOPE = 0.0530  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.758  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.35	0.50	0.906	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.65  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.22  
AVERAGE FLOW DEPTH(FEET) = 0.89 TRAVEL TIME(MIN.) = 3.44  
Tc(MIN.) = 10.64  
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 9.80  
EFFECTIVE AREA(ACRES) = 9.97 AREA-AVERAGED Fm(INCH/HR) = 0.46  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 11.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.04 FLOW VELOCITY(FEET/SEC.) = 3.57  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.00 = 960.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.00 TO NODE 11902.50 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2297.70 DOWNSTREAM(FEET) = 2263.40
CHANNEL LENGTH THRU SUBAREA(FEET) = 928.77 CHANNEL SLOPE = 0.0369
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.357
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 34.48 0.50 0.904 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 25.97
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.81
AVERAGE FLOW DEPTH(FEET) = 1.51 TRAVEL TIME(MIN.) = 4.07
Tc(MIN.) = 14.71
SUBAREA AREA(ACRES) = 34.48 SUBAREA RUNOFF(CFS) = 28.08
EFFECTIVE AREA(ACRES) = 44.45 AREA-AVERAGED Fm(INCH/HR) = 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.91
TOTAL AREA(ACRES) = 44.5 PEAK FLOW RATE(CFS) = 36.12

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.71 FLOW VELOCITY(FEET/SEC.) = 4.14
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.50 = 1888.82 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11902.50 TO NODE 11903.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2263.40 DOWNSTREAM(FEET) = 2252.14
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.50 CHANNEL SLOPE = 0.0126
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.142
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 23.65 0.50 0.958 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.958
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 43.19
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.89
AVERAGE FLOW DEPTH(FEET) = 2.23 TRAVEL TIME(MIN.) = 5.17
Tc(MIN.) = 19.87
SUBAREA AREA(ACRES) = 23.65 SUBAREA RUNOFF(CFS) = 14.10
EFFECTIVE AREA(ACRES) = 68.10 AREA-AVERAGED Fm(INCH/HR) = 0.46
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 68.1 PEAK FLOW RATE(CFS) = 41.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.20 FLOW VELOCITY(FEET/SEC.) = 2.86
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11903.00 = 2784.32 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11903.00 TO NODE 11904.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2252.14 DOWNSTREAM(FEET) = 2186.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1924.35 CHANNEL SLOPE = 0.0343
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.948
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 68.53 0.50 0.961 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 56.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.49
AVERAGE FLOW DEPTH(FEET) = 2.04 TRAVEL TIME(MIN.) = 7.14
Tc(MIN.) = 27.01
SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 28.85
EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 58.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.07 FLOW VELOCITY(FEET/SEC.) = 4.55
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34
CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 63.15 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 69.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.53
AVERAGE FLOW DEPTH(FEET) = 1.75 TRAVEL TIME(MIN.) = 4.27
Tc(MIN.) = 31.28
SUBAREA AREA(ACRES) = 63.15 SUBAREA RUNOFF(CFS) = 21.06
EFFECTIVE AREA(ACRES) = 199.78 AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 199.8 PEAK FLOW RATE(CFS) = 70.12

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.76 FLOW VELOCITY(FEET/SEC.) = 7.57  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1957.34 DOWNSTREAM(FEET) = 1244.16  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2498.96 CHANNEL SLOPE = 0.2854  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.822

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	84.87	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 82.43

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.95

AVERAGE FLOW DEPTH(FEET) = 1.58 TRAVEL TIME(MIN.) = 3.80

Tc(MIN.) = 35.08

SUBAREA AREA(ACRES) = 84.87 SUBAREA RUNOFF(CFS) = 24.61

EFFECTIVE AREA(ACRES) = 284.65 AREA-AVERAGED Fm(INCH/HR) = 0.49

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 284.6 PEAK FLOW RATE(CFS) = 86.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.61 FLOW VELOCITY(FEET/SEC.) = 11.03

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1244.16 DOWNSTREAM(FEET) = 873.95  
CHANNEL LENGTH THRU SUBAREA(FEET) = 3370.75 CHANNEL SLOPE = 0.1098  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.744

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	199.43	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 108.00

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.20

AVERAGE FLOW DEPTH(FEET) = 2.10 TRAVEL TIME(MIN.) = 6.85

Tc(MIN.) = 41.93

SUBAREA AREA(ACRES) = 199.43 SUBAREA RUNOFF(CFS) = 43.75

EFFECTIVE AREA(ACRES) = 484.08 AREA-AVERAGED Fm(INCH/HR) = 0.49

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.98

TOTAL AREA(ACRES) = 484.1 PEAK FLOW RATE(CFS) = 109.69

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.11 FLOW VELOCITY(FEET/SEC.) = 8.21

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1

-----  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 41.93

RAINFALL INTENSITY(INCH/HR) = 0.74

AREA-AVERAGED Fm(INCH/HR) = 0.49

AREA-AVERAGED Fp(INCH/HR) = 0.50

AREA-AVERAGED Ap = 0.98

EFFECTIVE STREAM AREA(ACRES) = 484.08

TOTAL STREAM AREA(ACRES) = 484.08

PEAK FLOW RATE(CFS) AT CONFLUENCE = 109.69

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21

-----  
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 517.62

ELEVATION DATA: UPSTREAM(FEET) = 2531.88 DOWNSTREAM(FEET) = 2441.33

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.185

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.606

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	-	3.46	0.50	1.000	0	12.19

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF(CFS) = 3.44

TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 3.44

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2441.33 DOWNSTREAM(FEET) = 2382.20  
CHANNEL LENGTH THRU SUBAREA(FEET) = 397.30 CHANNEL SLOPE = 0.1488  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.458

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.79	0.50	1.000	-

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.98

TOTAL AREA(ACRES) = 5.79 PEAK FLOW RATE(CFS) = 109.69



SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.94  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.43  
AVERAGE FLOW DEPTH(FEET) = 0.67 TRAVEL TIME(MIN.) = 1.49  
Tc(MIN.) = 13.68  
SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 4.99  
EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 7.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 4.79  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2382.20 DOWNSTREAM(FEET) = 2263.77  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.47 CHANNEL SLOPE = 0.0626  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.117

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 54.30 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.41  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.51  
AVERAGE FLOW DEPTH(FEET) = 1.32 TRAVEL TIME(MIN.) = 6.99  
Tc(MIN.) = 20.66  
SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 30.17  
EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 35.30

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.53 FLOW VELOCITY(FEET/SEC.) = 5.02  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2263.77 DOWNSTREAM(FEET) = 1845.23  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1957.31 CHANNEL SLOPE = 0.2138  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.007

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 65.14 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 50.20  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.64  
AVERAGE FLOW DEPTH(FEET) = 1.39 TRAVEL TIME(MIN.) = 3.77  
Tc(MIN.) = 24.44  
SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 29.68  
EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 58.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.47 FLOW VELOCITY(FEET/SEC.) = 9.05  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.936

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 78.52 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 74.05  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.79  
AVERAGE FLOW DEPTH(FEET) = 1.68 TRAVEL TIME(MIN.) = 3.20  
Tc(MIN.) = 27.64  
SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 30.77  
EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 81.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.73 FLOW VELOCITY(FEET/SEC.) = 9.00  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.859

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 70.48 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 92.62  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.99  
 AVERAGE FLOW DEPTH(FEET) = 2.10 TRAVEL TIME(MIN.) = 4.55  
 Tc(MIN.) = 32.19  
 SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 22.77  
 EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 89.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.07 FLOW VELOCITY(FEET/SEC.) = 6.96  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.817  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 232.20 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 122.92  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.85  
 AVERAGE FLOW DEPTH(FEET) = 2.04 TRAVEL TIME(MIN.) = 3.29  
 Tc(MIN.) = 35.48  
 SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 66.29  
 EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 145.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.17 FLOW VELOCITY(FEET/SEC.) = 10.29  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.753  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 110.82 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 158.20  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.01  
 AVERAGE FLOW DEPTH(FEET) = 2.57 TRAVEL TIME(MIN.) = 5.34  
 Tc(MIN.) = 40.82  
 SUBAREA AREA(ACRES) = 110.82 SUBAREA RUNOFF(CFS) = 25.24  
 EFFECTIVE AREA(ACRES) = 620.71 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 620.7 PEAK FLOW RATE(CFS) = 145.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.49 FLOW VELOCITY(FEET/SEC.) = 7.83  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 40.82  
 RAINFALL INTENSITY(INCH/HR) = 0.75  
 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50  
 AREA-AVERAGED Ap = 1.00  
 EFFECTIVE STREAM AREA(ACRES) = 620.71  
 TOTAL STREAM AREA(ACRES) = 620.71  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 145.56

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	109.69	41.93	0.744	0.50( 0.49)	0.98	484.1	11900.00
2	145.56	40.82	0.753	0.50( 0.50)	1.00	620.7	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	255.25	40.82	0.753	0.50( 0.50)	0.99	1091.9	11910.00
2	249.92	41.93	0.744	0.50( 0.50)	0.99	1104.8	11900.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 255.25 Tc(MIN.) = 40.82  
 EFFECTIVE AREA(ACRES) = 1091.90 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 1104.8  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11920.00 TO NODE 11921.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 873.95 DOWNSTREAM (FEET) = 827.94  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1417.25 CHANNEL SLOPE = 0.0325  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.723  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	107.47	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 266.03  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.49  
AVERAGE FLOW DEPTH (FEET) = 3.70 TRAVEL TIME (MIN.) = 3.64  
Tc (MIN.) = 44.46  
SUBAREA AREA (ACRES) = 107.47 SUBAREA RUNOFF (CFS) = 21.55  
EFFECTIVE AREA (ACRES) = 1199.37 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 1212.3 PEAK FLOW RATE (CFS) = 255.25  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.64 FLOW VELOCITY (FEET/SEC.) = 6.41  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 827.94 DOWNSTREAM (FEET) = 753.55  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1886.43 CHANNEL SLOPE = 0.0394  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.686  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	344.27	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 284.11  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.10  
AVERAGE FLOW DEPTH (FEET) = 3.65 TRAVEL TIME (MIN.) = 4.43  
Tc (MIN.) = 48.89  
SUBAREA AREA (ACRES) = 344.27 SUBAREA RUNOFF (CFS) = 57.64  
EFFECTIVE AREA (ACRES) = 1543.64 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 1556.5 PEAK FLOW RATE (CFS) = 261.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.54 FLOW VELOCITY (FEET/SEC.) = 6.95  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 753.55 DOWNSTREAM (FEET) = 641.58  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2860.88 CHANNEL SLOPE = 0.0391  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.643  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 272.48  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.99  
AVERAGE FLOW DEPTH (FEET) = 3.60 TRAVEL TIME (MIN.) = 6.82  
Tc (MIN.) = 55.70  
SUBAREA AREA (ACRES) = 165.18 SUBAREA RUNOFF (CFS) = 21.19  
EFFECTIVE AREA (ACRES) = 1708.82 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 1721.7 PEAK FLOW RATE (CFS) = 261.87  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.55 FLOW VELOCITY (FEET/SEC.) = 6.92  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11923.00 = 19034.16 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11923.00 TO NODE 11924.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 641.58 DOWNSTREAM (FEET) = 579.89  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1844.02 CHANNEL SLOPE = 0.0335  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.616  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	433.73	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 284.49  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.67  
AVERAGE FLOW DEPTH (FEET) = 3.77 TRAVEL TIME (MIN.) = 4.61  
Tc (MIN.) = 60.31

SUBAREA AREA (ACRES) = 433.73 SUBAREA RUNOFF (CFS) = 45.17  
EFFECTIVE AREA (ACRES) = 2142.55 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 2155.4 PEAK FLOW RATE (CFS) = 261.87  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 3.65 FLOW VELOCITY (FEET/SEC.) = 6.55  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11924.00 = 20878.18 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11924.00 TO NODE 11925.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 579.89 DOWNSTREAM (FEET) = 494.12  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2756.15 CHANNEL SLOPE = 0.0311  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.591

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	265.42	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 272.77

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.44

AVERAGE FLOW DEPTH (FEET) = 3.76 TRAVEL TIME (MIN.) = 7.14

Tc (MIN.) = 67.45

SUBAREA AREA (ACRES) = 265.42 SUBAREA RUNOFF (CFS) = 21.79

EFFECTIVE AREA (ACRES) = 2407.97 AREA-AVERAGED Fm (INCH/HR) = 0.50

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 2420.9 PEAK FLOW RATE (CFS) = 261.87

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 3.71 FLOW VELOCITY (FEET/SEC.) = 6.36  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11925.00 = 23634.33 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11925.00 TO NODE 11926.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 494.12 DOWNSTREAM (FEET) = 458.40  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1922.70 CHANNEL SLOPE = 0.0186  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.570

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	97.46	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 264.95  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.25  
AVERAGE FLOW DEPTH (FEET) = 4.10 TRAVEL TIME (MIN.) = 6.10  
Tc (MIN.) = 73.55

SUBAREA AREA (ACRES) = 97.46 SUBAREA RUNOFF (CFS) = 6.16  
EFFECTIVE AREA (ACRES) = 2505.43 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 2518.3 PEAK FLOW RATE (CFS) = 261.87  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 4.08 FLOW VELOCITY (FEET/SEC.) = 5.25  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11926.00 = 25557.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 458.40 DOWNSTREAM (FEET) = 399.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2710.13 CHANNEL SLOPE = 0.0219  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.543

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.83	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 262.90

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.58

AVERAGE FLOW DEPTH (FEET) = 3.96 TRAVEL TIME (MIN.) = 8.09

Tc (MIN.) = 81.64

SUBAREA AREA (ACRES) = 53.83 SUBAREA RUNOFF (CFS) = 2.06

EFFECTIVE AREA (ACRES) = 2559.26 AREA-AVERAGED Fm (INCH/HR) = 0.50

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 2572.1 PEAK FLOW RATE (CFS) = 261.87

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 3.95 FLOW VELOCITY (FEET/SEC.) = 5.58  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 28267.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 10  
-----

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<

=====

PEAK FLOWRATE TABLE FILE NAME: P401XX05.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	197.11	35.87	0.50 ( 0.50)	1.00	624.4	40130.00
2	188.26	38.23	0.50 ( 0.50)	1.00	654.2	40100.00
TOTAL AREA (ACRES) =		654.2				

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	261.87	81.64	0.543	0.50 ( 0.50)	1.00	2559.3	11910.00
2	250.73	83.14	0.538	0.50 ( 0.50)	1.00	2572.1	11900.00
LONGEST FLOWPATH FROM NODE		11910.00 TO NODE 11927.00 = 28267.16 FEET.					

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	197.11	35.87	0.812	0.50 ( 0.50)	1.00	624.4	40130.00
2	188.26	38.23	0.783	0.50 ( 0.50)	1.00	654.2	40100.00
LONGEST FLOWPATH FROM NODE		40100.00 TO NODE 11927.00 = 11231.26 FEET.					

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	458.97	35.87	0.812	0.50 ( 0.50)	1.00	1748.9	40130.00
2	450.13	38.23	0.783	0.50 ( 0.50)	1.00	1852.5	40100.00
3	290.20	81.64	0.543	0.50 ( 0.50)	1.00	3213.5	11910.00
4	275.63	83.14	0.538	0.50 ( 0.50)	1.00	3226.4	11900.00
TOTAL AREA (ACRES) =		3226.4					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 458.97 Tc (MIN.) = 35.875  
 EFFECTIVE AREA (ACRES) = 1748.93 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3226.4  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 28267.16 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.50 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 399.00 DOWNSTREAM (FEET) = 384.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 986.26 CHANNEL SLOPE = 0.0152  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

CHANNEL FLOW THRU SUBAREA (CFS) = 458.97  
 FLOW VELOCITY (FEET/SEC.) = 5.60 FLOW DEPTH (FEET) = 5.23  
 TRAVEL TIME (MIN.) = 2.94 Tc (MIN.) = 38.81  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.50 = 29253.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 38.81  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.775  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 2.40 0.50 1.000 -  
 USER-DEFINED - 1.70 0.50 1.000 -  
 USER-DEFINED - 1.50 0.50 1.000 -  
 USER-DEFINED - 1.30 0.50 1.000 -  
 USER-DEFINED - 0.90 0.50 1.000 -  
 USER-DEFINED - 0.60 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 8.40 SUBAREA RUNOFF (CFS) = 2.08  
 EFFECTIVE AREA (ACRES) = 1757.33 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3234.8 PEAK FLOW RATE (CFS) = 458.97  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 38.81  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.775  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.30 0.50 1.000 -  
 USER-DEFINED - 0.10 0.50 1.000 -  
 USER-DEFINED - 0.10 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 0.50 SUBAREA RUNOFF (CFS) = 0.12  
 EFFECTIVE AREA (ACRES) = 1757.83 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3235.2 PEAK FLOW RATE (CFS) = 458.97  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 38.81  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.775  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	0.70	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 2.00 SUBAREA RUNOFF(CFS) = 0.49  
EFFECTIVE AREA(ACRES) = 1759.83 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3237.2 PEAK FLOW RATE(CFS) = 458.97  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11928.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 384.00 DOWNSTREAM(FEET) = 359.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.19 CHANNEL SLOPE = 0.0386  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.759  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 78.01 0.50 0.984 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.984  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 468.33  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.98  
AVERAGE FLOW DEPTH(FEET) = 4.42 TRAVEL TIME(MIN.) = 1.35  
Tc(MIN.) = 40.16  
SUBAREA AREA(ACRES) = 78.01 SUBAREA RUNOFF(CFS) = 18.71  
EFFECTIVE AREA(ACRES) = 1837.84 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3315.3 PEAK FLOW RATE(CFS) = 458.97  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 4.39 FLOW VELOCITY(FEET/SEC.) = 7.94  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29900.61 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11928.00 TO NODE 11928.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc(MIN.) = 40.16  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.759  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 1.10 0.50 1.000 -  
USER-DEFINED - 0.60 0.50 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 0.40  
EFFECTIVE AREA(ACRES) = 1839.54 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3317.0 PEAK FLOW RATE(CFS) = 458.97  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 359.00 DOWNSTREAM(FEET) = 341.63  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1322.66 CHANNEL SLOPE = 0.0131  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.724  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 8.18 0.50 0.890 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 460.00  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.29  
AVERAGE FLOW DEPTH(FEET) = 5.38 TRAVEL TIME(MIN.) = 4.16  
Tc(MIN.) = 44.33  
SUBAREA AREA(ACRES) = 8.18 SUBAREA RUNOFF(CFS) = 2.05  
EFFECTIVE AREA(ACRES) = 1847.72 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3325.1 PEAK FLOW RATE(CFS) = 458.97  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.37 FLOW VELOCITY(FEET/SEC.) = 5.30  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 31223.27 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc(MIN.) = 44.33  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.724  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 1.90 0.50 1.000 -  
USER-DEFINED - 0.60 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 2.50 SUBAREA RUNOFF(CFS) = 0.50  
EFFECTIVE AREA(ACRES) = 1850.22 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3327.6 PEAK FLOW RATE(CFS) = 458.97  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X05.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6871.23	43.27	0.50 ( 0.50)	0.99	7177.4	11801.00
2	6868.03	46.61	0.50 ( 0.50)	0.99	7821.6	11831.00
3	6831.35	54.45	0.50 ( 0.50)	0.99	9253.7	11500.00
4	6778.10	60.05	0.50 ( 0.50)	0.99	10627.1	11701.00
5	6681.76	66.19	0.50 ( 0.50)	1.00	12121.5	11000.00
6	6475.61	83.04	0.50 ( 0.50)	1.00	17603.2	11330.00
7	6342.06	88.36	0.50 ( 0.50)	1.00	19494.9	10900.00
8	6230.68	91.62	0.50 ( 0.50)	1.00	20592.4	10830.00
9	5983.87	96.58	0.50 ( 0.50)	1.00	21984.5	11130.00
10	5363.28	107.52	0.50 ( 0.50)	1.00	24463.0	11620.00
11	5080.72	112.52	0.50 ( 0.50)	1.00	25521.2	10600.00
12	4959.28	115.06	0.50 ( 0.50)	1.00	26061.4	11600.00
13	4208.11	125.27	0.50 ( 0.50)	1.00	27870.7	10500.00
14	3686.50	134.23	0.50 ( 0.50)	1.00	29001.0	10710.00
15	3079.50	146.58	0.50 ( 0.50)	1.00	30024.8	10700.00
16	2649.64	155.94	0.50 ( 0.50)	1.00	30698.5	10400.00
17	2296.99	164.19	0.50 ( 0.50)	1.00	31188.4	10200.00
18	1901.26	178.29	0.50 ( 0.50)	1.00	31917.9	10300.00
19	1742.48	184.66	0.50 ( 0.50)	1.00	32047.5	10210.00
20	608.82	267.18	0.50 ( 0.50)	1.00	32916.6	10100.00

TOTAL AREA (ACRES) = 32916.6

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X05.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1893.24	82.32	0.50 ( 0.49)	0.99	5730.4	12500.00
2	1840.67	101.00	0.50 ( 0.49)	0.99	7460.2	12300.00
3	1831.66	103.75	0.50 ( 0.49)	0.99	7807.7	12330.00
4	1786.92	113.52	0.50 ( 0.49)	0.98	8941.0	12410.00
5	1724.88	122.39	0.50 ( 0.49)	0.98	9874.6	12400.00
6	1697.93	124.27	0.50 ( 0.49)	0.98	10031.7	12211.00
7	1549.17	132.90	0.50 ( 0.49)	0.98	10707.0	12201.00
8	1383.71	141.46	0.50 ( 0.49)	0.98	11230.3	12111.00
9	1282.12	147.13	0.50 ( 0.49)	0.98	11586.3	12231.00
10	1154.55	155.77	0.50 ( 0.49)	0.98	12067.3	12261.00
11	1138.83	156.90	0.50 ( 0.49)	0.98	12113.1	12101.10

12 821.51 184.54 0.50 ( 0.49) 0.98 13109.5 12010.00  
 13 621.28 203.48 0.50 ( 0.49) 0.98 13237.1 12000.00  
 TOTAL AREA (ACRES) = 13237.1

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1893.24	82.32	0.50 ( 0.49)	0.99	5730.4	12500.00
2	1840.67	101.00	0.50 ( 0.49)	0.99	7460.2	12300.00
3	1831.66	103.75	0.50 ( 0.49)	0.99	7807.7	12330.00
4	1786.92	113.52	0.50 ( 0.49)	0.98	8941.0	12410.00
5	1724.88	122.39	0.50 ( 0.49)	0.98	9874.6	12400.00
6	1697.93	124.27	0.50 ( 0.49)	0.98	10031.7	12211.00
7	1549.17	132.90	0.50 ( 0.49)	0.98	10707.0	12201.00
8	1383.71	141.46	0.50 ( 0.49)	0.98	11230.3	12111.00
9	1282.12	147.13	0.50 ( 0.49)	0.98	11586.3	12231.00
10	1154.55	155.77	0.50 ( 0.49)	0.98	12067.3	12261.00
11	1138.83	156.90	0.50 ( 0.49)	0.98	12113.1	12101.10
12	821.51	184.54	0.50 ( 0.49)	0.98	13109.5	12010.00
13	621.28	203.48	0.50 ( 0.49)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1893.24	82.32	0.540	0.50 ( 0.49)	0.99	5730.4	12500.00
2	1840.67	101.00	0.493	0.50 ( 0.49)	0.99	7460.2	12300.00
3	1831.66	103.75	0.488	0.50 ( 0.49)	0.99	7807.7	12330.00
4	1786.92	113.52	0.469	0.50 ( 0.49)	0.98	8941.0	12410.00
5	1724.88	122.39	0.454	0.50 ( 0.49)	0.98	9874.6	12400.00
6	1697.93	124.27	0.452	0.50 ( 0.49)	0.98	10031.7	12211.00
7	1549.17	132.90	0.441	0.50 ( 0.49)	0.98	10707.0	12201.00
8	1383.71	141.46	0.431	0.50 ( 0.49)	0.98	11230.3	12111.00
9	1282.12	147.13	0.424	0.50 ( 0.49)	0.98	11586.3	12231.00
10	1154.55	155.77	0.413	0.50 ( 0.49)	0.98	12067.3	12261.00
11	1138.83	156.90	0.412	0.50 ( 0.49)	0.98	12113.1	12101.10
12	821.51	184.54	0.382	0.50 ( 0.49)	0.98	13109.5	12010.00
13	621.28	203.48	0.371	0.50 ( 0.49)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6871.23	43.27	0.733	0.50 ( 0.50)	0.99	7177.4	11801.00
2	6868.03	46.61	0.705	0.50 ( 0.50)	0.99	7821.6	11831.00
3	6831.35	54.45	0.650	0.50 ( 0.50)	0.99	9253.7	11500.00

4	6778.10	60.05	0.617	0.50	(0.50)	0.99	10627.1	11701.00
5	6681.76	66.19	0.596	0.50	(0.50)	1.00	12121.5	11000.00
6	6475.61	83.04	0.538	0.50	(0.50)	1.00	17603.2	11330.00
7	6342.06	88.36	0.520	0.50	(0.50)	1.00	19494.9	10900.00
8	6230.68	91.62	0.511	0.50	(0.50)	1.00	20592.4	10830.00
9	5983.87	96.58	0.502	0.50	(0.50)	1.00	21984.5	11130.00
10	5363.28	107.52	0.481	0.50	(0.50)	1.00	24463.0	11620.00
11	5080.72	112.52	0.471	0.50	(0.50)	1.00	25521.2	10600.00
12	4959.28	115.06	0.466	0.50	(0.50)	1.00	26061.4	11600.00
13	4208.11	125.27	0.451	0.50	(0.50)	1.00	27870.7	10500.00
14	3686.50	134.23	0.440	0.50	(0.50)	1.00	29001.0	10710.00
15	3079.50	146.58	0.425	0.50	(0.50)	1.00	30024.8	10700.00
16	2649.64	155.94	0.413	0.50	(0.50)	1.00	30698.5	10400.00
17	2296.99	164.19	0.403	0.50	(0.50)	1.00	31188.4	10200.00
18	1901.26	178.29	0.386	0.50	(0.50)	1.00	31917.9	10300.00
19	1742.48	184.66	0.381	0.50	(0.50)	1.00	32047.5	10210.00
20	608.82	267.18	0.337	0.50	(0.50)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	8764.47	43.27	0.733	0.50 (0.50)	0.99	10189.2	11801.00
2	8761.27	46.61	0.705	0.50 (0.50)	0.99	11066.1	11831.00
3	8724.59	54.45	0.650	0.50 (0.50)	0.99	13043.9	11500.00
4	8671.34	60.05	0.617	0.50 (0.50)	0.99	14807.3	11701.00
5	8575.00	66.19	0.596	0.50 (0.50)	0.99	16728.7	11000.00
6	8377.64	82.32	0.540	0.50 (0.50)	0.99	23099.8	12500.00
7	8366.83	83.04	0.538	0.50 (0.50)	0.99	23400.2	11330.00
8	8218.32	88.36	0.520	0.50 (0.50)	0.99	25784.2	10900.00
9	8097.74	91.62	0.511	0.50 (0.50)	0.99	27184.1	10830.00
10	7836.98	96.58	0.502	0.50 (0.50)	0.99	29035.2	11130.00
11	7573.80	101.00	0.493	0.50 (0.50)	0.99	30446.1	12300.00
12	7408.63	103.75	0.488	0.50 (0.50)	0.99	31417.3	12330.00
13	7177.69	107.52	0.481	0.50 (0.50)	0.99	32707.8	11620.00
14	6872.25	112.52	0.471	0.50 (0.50)	0.99	34345.6	10600.00
15	6819.67	113.52	0.469	0.50 (0.50)	0.99	34675.6	12410.00
16	6735.43	115.06	0.466	0.50 (0.50)	0.99	35164.5	11600.00
17	6145.43	122.39	0.454	0.50 (0.50)	0.99	37233.5	12400.00
18	5980.02	124.27	0.452	0.50 (0.50)	0.99	37724.2	12211.00
19	5888.70	125.27	0.451	0.50 (0.50)	0.99	37981.1	10500.00
20	5313.35	132.90	0.441	0.50 (0.50)	0.99	39539.7	12201.00
21	5209.88	134.23	0.440	0.50 (0.50)	0.99	39789.6	10710.00
22	4715.07	141.46	0.431	0.50 (0.50)	0.99	40830.3	12111.00
23	4371.41	146.58	0.425	0.50 (0.50)	0.99	41576.8	10700.00
24	4336.52	147.13	0.424	0.50 (0.50)	0.99	41650.4	12231.00
25	3812.19	155.77	0.413	0.50 (0.50)	0.99	42753.2	12261.00
26	3801.75	155.94	0.413	0.50 (0.50)	0.99	42772.9	10400.00
27	3747.77	156.90	0.412	0.50 (0.50)	0.99	42868.1	12101.10
28	3352.08	164.19	0.403	0.50 (0.50)	0.99	43564.4	10200.00
29	2794.46	178.29	0.386	0.50 (0.50)	0.99	44802.3	10300.00
30	2567.05	184.54	0.382	0.50 (0.50)	0.99	45154.5	12010.00
31	2562.70	184.66	0.381	0.50 (0.50)	0.99	45157.8	10210.00
32	2105.15	203.48	0.371	0.50 (0.50)	0.99	45482.9	12000.00
33	1172.06	267.18	0.337	0.50 (0.50)	0.99	46153.7	10100.00

TOTAL AREA (ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 8764.47 Tc (MIN.) = 43.268  
EFFECTIVE AREA (ACRES) = 10189.25 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 46153.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 51  
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>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>> TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
=====

ELEVATION DATA: UPSTREAM (FEET) = 347.47 DOWNSTREAM (FEET) = 341.63  
CHANNEL LENGTH THRU SUBAREA (FEET) = 532.38 CHANNEL SLOPE = 0.0110  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.728

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.50	0.987	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 8765.98  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.03  
AVERAGE FLOW DEPTH (FEET) = 14.43 TRAVEL TIME (MIN.) = 0.63  
Tc (MIN.) = 43.90  
SUBAREA AREA (ACRES) = 14.37 SUBAREA RUNOFF (CFS) = 3.03  
EFFECTIVE AREA (ACRES) = 10203.62 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 46168.0 PEAK FLOW RATE (CFS) = 8764.47  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 14.43 FLOW VELOCITY (FEET/SEC.) = 14.03  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11  
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>>>> CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<  
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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	8764.47	43.90	0.728	0.50 (0.50)	0.99	10203.6	11801.00
2	8761.27	47.24	0.700	0.50 (0.50)	0.99	11080.5	11831.00
3	8724.59	55.08	0.646	0.50 (0.50)	0.99	13058.3	11500.00
4	8671.34	60.69	0.615	0.50 (0.50)	0.99	14821.7	11701.00
5	8575.00	66.82	0.594	0.50 (0.50)	0.99	16743.1	11000.00
6	8377.64	82.96	0.538	0.50 (0.50)	0.99	23114.1	12500.00
7	8366.83	83.68	0.536	0.50 (0.50)	0.99	23414.6	11330.00
8	8218.32	89.00	0.517	0.50 (0.50)	0.99	25798.5	10900.00
9	8097.74	92.27	0.510	0.50 (0.50)	0.99	27198.5	10830.00
10	7836.98	97.23	0.500	0.50 (0.50)	0.99	29049.6	11130.00
11	7573.80	101.65	0.492	0.50 (0.50)	0.99	30460.5	12300.00
12	7408.63	104.41	0.487	0.50 (0.50)	0.99	31431.6	12330.00



13	7177.69	108.18	0.479	0.50 ( 0.50)	0.99	32722.1	11620.00
14	6872.25	113.19	0.470	0.50 ( 0.50)	0.99	34359.9	10600.00
15	6819.67	114.19	0.468	0.50 ( 0.50)	0.99	34690.0	12410.00
16	6735.43	115.74	0.465	0.50 ( 0.50)	0.99	35178.9	11600.00
17	6145.43	123.08	0.453	0.50 ( 0.50)	0.99	37247.9	12400.00
18	5980.02	124.96	0.451	0.50 ( 0.50)	0.99	37738.5	12211.00
19	5888.70	125.97	0.450	0.50 ( 0.50)	0.99	37995.4	10500.00
20	5313.35	133.62	0.440	0.50 ( 0.50)	0.99	39554.1	12201.00
21	5209.88	134.95	0.439	0.50 ( 0.50)	0.99	39804.0	10710.00
22	4715.07	142.20	0.430	0.50 ( 0.50)	0.99	40844.7	12111.00
23	4371.41	147.34	0.424	0.50 ( 0.50)	0.99	41591.2	10700.00
24	4336.52	147.88	0.423	0.50 ( 0.50)	0.99	41664.8	12231.00
25	3812.19	156.55	0.413	0.50 ( 0.50)	0.99	42767.6	12261.00
26	3801.75	156.72	0.412	0.50 ( 0.50)	0.99	42787.3	10400.00
27	3747.77	157.68	0.411	0.50 ( 0.50)	0.99	42882.5	12101.10
28	3352.08	164.99	0.402	0.50 ( 0.50)	0.99	43578.7	10200.00
29	2794.46	179.13	0.385	0.50 ( 0.50)	0.99	44816.7	10300.00
30	2567.05	185.40	0.381	0.50 ( 0.50)	0.99	45168.9	12010.00
31	2562.70	185.52	0.381	0.50 ( 0.50)	0.99	45172.2	10210.00
32	2105.15	204.39	0.371	0.50 ( 0.50)	0.99	45497.3	12000.00
33	1172.06	268.23	0.336	0.50 ( 0.50)	0.99	46168.0	10100.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	458.97	44.33	0.724	0.50 ( 0.50)	1.00	1850.2	40130.00
2	450.13	46.71	0.704	0.50 ( 0.50)	1.00	1953.8	40100.00
3	290.20	91.13	0.512	0.50 ( 0.50)	1.00	3314.7	11910.00
4	275.63	92.76	0.509	0.50 ( 0.50)	1.00	3327.6	11900.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 31223.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9223.45	43.90	0.728	0.50 ( 0.50)	0.99	12036.0	11801.00
2	9223.04	44.33	0.724	0.50 ( 0.50)	0.99	12165.8	40130.00
3	9211.91	46.71	0.704	0.50 ( 0.50)	0.99	12895.3	40100.00
4	9209.49	47.24	0.700	0.50 ( 0.50)	0.99	13050.5	11831.00
5	9144.58	55.08	0.646	0.50 ( 0.50)	0.99	15268.5	11500.00
6	9071.16	60.69	0.615	0.50 ( 0.50)	0.99	17203.6	11701.00
7	8952.72	66.82	0.594	0.50 ( 0.50)	0.99	19313.0	11000.00
8	8697.25	82.96	0.538	0.50 ( 0.50)	0.99	26178.6	12500.00
9	8683.84	83.68	0.536	0.50 ( 0.50)	0.99	26501.1	11330.00
10	8516.19	89.00	0.517	0.50 ( 0.50)	0.99	29048.0	10900.00
11	8429.94	91.13	0.512	0.50 ( 0.50)	0.99	30025.6	11910.00
12	8377.76	92.27	0.510	0.50 ( 0.50)	0.99	30522.2	10830.00
13	8347.65	92.76	0.509	0.50 ( 0.50)	0.99	30708.7	11900.00
14	7879.54	97.23	0.500	0.50 ( 0.50)	0.99	32377.3	11130.00
15	7613.95	101.65	0.492	0.50 ( 0.50)	0.99	33788.1	12300.00
16	7448.35	104.41	0.487	0.50 ( 0.50)	0.99	34759.3	12330.00
17	7216.82	108.18	0.479	0.50 ( 0.50)	0.99	36049.8	11620.00
18	6910.61	113.19	0.470	0.50 ( 0.50)	0.99	37687.6	10600.00
19	6857.87	114.19	0.468	0.50 ( 0.50)	0.99	38017.6	12410.00
20	6773.39	115.74	0.465	0.50 ( 0.50)	0.99	38506.5	11600.00
21	6182.43	123.08	0.453	0.50 ( 0.50)	0.99	40575.5	12400.00
22	6016.83	124.96	0.451	0.50 ( 0.50)	0.99	41066.2	12211.00
23	5925.41	125.97	0.450	0.50 ( 0.50)	0.99	41323.1	10500.00

24	5349.30	133.62	0.440	0.50 ( 0.50)	0.99	42881.7	12201.00
25	5245.70	134.95	0.439	0.50 ( 0.50)	0.99	43131.6	10710.00
26	4750.17	142.20	0.430	0.50 ( 0.50)	0.99	44172.4	12111.00
27	4406.00	147.34	0.424	0.50 ( 0.50)	0.99	44918.8	10700.00
28	4371.05	147.88	0.423	0.50 ( 0.50)	0.99	44992.4	12231.00
29	3845.87	156.55	0.413	0.50 ( 0.50)	0.99	46095.3	12261.00
30	3835.41	156.72	0.412	0.50 ( 0.50)	0.99	46114.9	10400.00
31	3781.33	157.68	0.411	0.50 ( 0.50)	0.99	46210.1	12101.10
32	3384.92	164.99	0.402	0.50 ( 0.50)	0.99	46906.4	10200.00
33	2825.89	179.13	0.385	0.50 ( 0.50)	0.99	48144.3	10300.00
34	2598.15	185.40	0.381	0.50 ( 0.50)	0.99	48496.5	12010.00
35	2593.79	185.52	0.381	0.50 ( 0.50)	0.99	48499.8	10210.00
36	2135.41	204.39	0.371	0.50 ( 0.50)	0.99	48824.9	12000.00
37	1199.48	268.23	0.336	0.50 ( 0.50)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 9223.45 Tc (MIN.) = 43.901  
EFFECTIVE AREA (ACRES) = 12036.02 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49495.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 49495.7 TC (MIN.) = 43.90  
EFFECTIVE AREA (ACRES) = 12036.02 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.993  
PEAK FLOW RATE (CFS) = 9223.45

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9223.45	43.90	0.728	0.50 ( 0.50)	0.99	12036.0	11801.00
2	9223.04	44.33	0.724	0.50 ( 0.50)	0.99	12165.8	40130.00
3	9211.91	46.71	0.704	0.50 ( 0.50)	0.99	12895.3	40100.00
4	9209.49	47.24	0.700	0.50 ( 0.50)	0.99	13050.5	11831.00
5	9144.58	55.08	0.646	0.50 ( 0.50)	0.99	15268.5	11500.00
6	9071.16	60.69	0.615	0.50 ( 0.50)	0.99	17203.6	11701.00
7	8952.72	66.82	0.594	0.50 ( 0.50)	0.99	19313.0	11000.00
8	8697.25	82.96	0.538	0.50 ( 0.50)	0.99	26178.6	12500.00
9	8683.84	83.68	0.536	0.50 ( 0.50)	0.99	26501.1	11330.00
10	8516.19	89.00	0.517	0.50 ( 0.50)	0.99	29048.0	10900.00
11	8429.94	91.13	0.512	0.50 ( 0.50)	0.99	30025.6	11910.00
12	8377.76	92.27	0.510	0.50 ( 0.50)	0.99	30522.2	10830.00
13	8347.65	92.76	0.509	0.50 ( 0.50)	0.99	30708.7	11900.00
14	7879.54	97.23	0.500	0.50 ( 0.50)	0.99	32377.3	11130.00
15	7613.95	101.65	0.492	0.50 ( 0.50)	0.99	33788.1	12300.00
16	7448.35	104.41	0.487	0.50 ( 0.50)	0.99	34759.3	12330.00
17	7216.82	108.18	0.479	0.50 ( 0.50)	0.99	36049.8	11620.00
18	6910.61	113.19	0.470	0.50 ( 0.50)	0.99	37687.6	10600.00
19	6857.87	114.19	0.468	0.50 ( 0.50)	0.99	38017.6	12410.00
20	6773.39	115.74	0.465	0.50 ( 0.50)	0.99	38506.5	11600.00
21	6182.43	123.08	0.453	0.50 ( 0.50)	0.99	40575.5	12400.00
22	6016.83	124.96	0.451	0.50 ( 0.50)	0.99	41066.2	12211.00
23	5925.41	125.97	0.450	0.50 ( 0.50)	0.99	41323.1	10500.00
24	5349.30	133.62	0.440	0.50 ( 0.50)	0.99	42881.7	12201.00
25	5245.70	134.95	0.439	0.50 ( 0.50)	0.99	43131.6	10710.00
26	4750.17	142.20	0.430	0.50 ( 0.50)	0.99	44172.4	12111.00

27	4406.00	147.34	0.424	0.50	( 0.50)	0.99	44918.8	10700.00
28	4371.05	147.88	0.423	0.50	( 0.50)	0.99	44992.4	12231.00
29	3845.87	156.55	0.413	0.50	( 0.50)	0.99	46095.3	12261.00
30	3835.41	156.72	0.412	0.50	( 0.50)	0.99	46114.9	10400.00
31	3781.33	157.68	0.411	0.50	( 0.50)	0.99	46210.1	12101.10
32	3384.92	164.99	0.402	0.50	( 0.50)	0.99	46906.4	10200.00
33	2825.89	179.13	0.385	0.50	( 0.50)	0.99	48144.3	10300.00
34	2598.15	185.40	0.381	0.50	( 0.50)	0.99	48496.5	12010.00
35	2593.79	185.52	0.381	0.50	( 0.50)	0.99	48499.8	10210.00
36	2135.41	204.39	0.371	0.50	( 0.50)	0.99	48824.9	12000.00
37	1199.48	268.23	0.336	0.50	( 0.50)	0.99	49495.7	10100.00

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END OF RATIONAL METHOD ANALYSIS

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S26- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV26.DAT  
TIME/DATE OF STUDY: 11:32 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.739
- 2) 10.00; 1.815
- 3) 15.00; 1.325
- 4) 20.00; 1.135
- 5) 25.00; 0.989
- 6) 30.00; 0.885
- 7) 40.00; 0.759
- 8) 50.00; 0.676
- 9) 60.00; 0.615
- 10) 90.00; 0.513
- 11) 120.00; 0.455
- 12) 180.00; 0.383
- 13) 360.00; 0.284
- 14) 1200.00; 0.125

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

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FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU05EV19.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9223.45	43.90	0.50 ( 0.50)	0.99	12036.0	11801.00
2	9144.58	55.08	0.50 ( 0.50)	0.99	15268.5	11500.00
3	9071.16	60.69	0.50 ( 0.50)	0.99	17203.6	11701.00
4	8952.72	66.82	0.50 ( 0.50)	0.99	19313.0	11000.00
5	8697.25	82.96	0.50 ( 0.50)	0.99	26178.6	12500.00
6	8516.19	89.00	0.50 ( 0.50)	0.99	29048.0	10900.00
7	7879.54	97.23	0.50 ( 0.50)	0.99	32377.3	11130.00
8	7613.95	101.65	0.50 ( 0.50)	0.99	33788.1	12300.00
9	7216.82	108.18	0.50 ( 0.50)	0.99	36049.8	11620.00
10	6910.61	113.19	0.50 ( 0.50)	0.99	37687.6	10600.00
11	6182.43	123.08	0.50 ( 0.50)	0.99	40575.5	12400.00
12	5349.30	133.62	0.50 ( 0.50)	0.99	42881.7	12201.00
13	4750.17	142.20	0.50 ( 0.50)	0.99	44172.4	12111.00
14	4406.00	147.34	0.50 ( 0.50)	0.99	44918.8	10700.00
15	3845.87	156.55	0.50 ( 0.50)	0.99	46095.3	12261.00
16	3384.92	164.99	0.50 ( 0.50)	0.99	46906.4	10200.00
17	2825.89	179.13	0.50 ( 0.50)	0.99	48144.3	10300.00
18	2598.15	185.40	0.50 ( 0.50)	0.99	48496.5	12010.00
19	2135.41	204.39	0.50 ( 0.50)	0.99	48824.9	12000.00
20	1199.48	268.23	0.50 ( 0.50)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9223.45	43.90	0.50 ( 0.50)	0.99	12036.0	11801.00
2	9144.58	55.08	0.50 ( 0.50)	0.99	15268.5	11500.00
3	9071.16	60.69	0.50 ( 0.50)	0.99	17203.6	11701.00
4	8952.72	66.82	0.50 ( 0.50)	0.99	19313.0	11000.00
5	8697.25	82.96	0.50 ( 0.50)	0.99	26178.6	12500.00
6	8516.19	89.00	0.50 ( 0.50)	0.99	29048.0	10900.00
7	7879.54	97.23	0.50 ( 0.50)	0.99	32377.3	11130.00
8	7613.95	101.65	0.50 ( 0.50)	0.99	33788.1	12300.00
9	7216.82	108.18	0.50 ( 0.50)	0.99	36049.8	11620.00
10	6910.61	113.19	0.50 ( 0.50)	0.99	37687.6	10600.00
11	6182.43	123.08	0.50 ( 0.50)	0.99	40575.5	12400.00
12	5349.30	133.62	0.50 ( 0.50)	0.99	42881.7	12201.00
13	4750.17	142.20	0.50 ( 0.50)	0.99	44172.4	12111.00

14	4406.00	147.34	0.50	( 0.50)	0.99	44918.8	10700.00
15	3845.87	156.55	0.50	( 0.50)	0.99	46095.3	12261.00
16	3384.92	164.99	0.50	( 0.50)	0.99	46906.4	10200.00
17	2825.89	179.13	0.50	( 0.50)	0.99	48144.3	10300.00
18	2598.15	185.40	0.50	( 0.50)	0.99	48496.5	12010.00
19	2135.41	204.39	0.50	( 0.50)	0.99	48824.9	12000.00
20	1199.48	268.23	0.50	( 0.50)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =							49495.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 341.63 DOWNSTREAM (FEET) = 325.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1467.93 CHANNEL SLOPE = 0.0113  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.715

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.11	0.50	0.700	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 9225.76

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 17.85

AVERAGE FLOW DEPTH (FEET) = 13.13 TRAVEL TIME (MIN.) = 1.37

Tc (MIN.) = 45.27

SUBAREA AREA (ACRES) = 14.11 SUBAREA RUNOFF (CFS) = 4.64

EFFECTIVE AREA (ACRES) = 12050.13 AREA-AVERAGED Fm (INCH/HR) = 0.50

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 49509.8 PEAK FLOW RATE (CFS) = 9223.45

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 13.13 FLOW VELOCITY (FEET/SEC.) = 17.85

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

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FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3005EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30.35	18.54	0.50 ( 0.49)	0.99	48.4	600.00
TOTAL AREA (ACRES) = 48.4						

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FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9223.45	45.27	0.715	0.50 ( 0.50)	0.99	12050.1	11801.00
2	9144.58	56.46	0.637	0.50 ( 0.50)	0.99	15282.7	11500.00
3	9071.16	62.06	0.608	0.50 ( 0.50)	0.99	17217.7	11701.00
4	8952.72	68.21	0.587	0.50 ( 0.50)	0.99	19327.2	11000.00
5	8697.25	84.36	0.532	0.50 ( 0.50)	0.99	26192.7	12500.00
6	8516.19	90.40	0.512	0.50 ( 0.50)	0.99	29062.1	10900.00
7	7879.54	98.65	0.496	0.50 ( 0.50)	0.99	32391.4	11130.00
8	7613.95	103.09	0.488	0.50 ( 0.50)	0.99	33802.2	12300.00
9	7216.82	109.64	0.475	0.50 ( 0.50)	0.99	36063.9	11620.00
10	6910.61	114.66	0.465	0.50 ( 0.50)	0.99	37701.7	10600.00
11	6182.43	124.59	0.449	0.50 ( 0.50)	0.99	40589.6	12400.00
12	5349.30	135.19	0.437	0.50 ( 0.50)	0.99	42895.8	12201.00
13	4750.17	143.82	0.426	0.50 ( 0.50)	0.99	44186.5	12111.00
14	4406.00	148.99	0.420	0.50 ( 0.50)	0.99	44932.9	10700.00
15	3845.87	158.25	0.409	0.50 ( 0.50)	0.99	46109.4	12261.00
16	3384.92	166.76	0.399	0.50 ( 0.50)	0.99	46920.5	10200.00
17	2825.89	180.98	0.382	0.50 ( 0.50)	0.99	48158.4	10300.00
18	2598.15	187.28	0.379	0.50 ( 0.50)	0.99	48510.6	12010.00
19	2135.41	206.36	0.368	0.50 ( 0.50)	0.99	48839.0	12000.00
20	1199.48	270.51	0.333	0.50 ( 0.50)	0.99	49509.8	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.							

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30.35	18.54	1.190	0.50 ( 0.49)	0.99	48.4	600.00
LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9253.79	18.54	1.190	0.50 ( 0.50)	0.99	4984.4	600.00
2	9233.10	45.27	0.715	0.50 ( 0.50)	0.99	12098.5	11801.00
3	9150.81	56.46	0.637	0.50 ( 0.50)	0.99	15331.1	11500.00
4	9076.14	62.06	0.608	0.50 ( 0.50)	0.99	17266.1	11701.00
5	8956.79	68.21	0.587	0.50 ( 0.50)	0.99	19375.6	11000.00
6	8698.93	84.36	0.532	0.50 ( 0.50)	0.99	26241.1	12500.00
7	8517.00	90.40	0.512	0.50 ( 0.50)	0.99	29110.5	10900.00
8	7879.82	98.65	0.496	0.50 ( 0.50)	0.99	32439.8	11130.00
9	7614.23	103.09	0.488	0.50 ( 0.50)	0.99	33850.6	12300.00
10	7217.09	109.64	0.475	0.50 ( 0.50)	0.99	36112.3	11620.00
11	6910.88	114.66	0.465	0.50 ( 0.50)	0.99	37750.1	10600.00
12	6182.69	124.59	0.449	0.50 ( 0.50)	0.99	40638.0	12400.00
13	5349.55	135.19	0.437	0.50 ( 0.50)	0.99	42944.2	12201.00
14	4750.41	143.82	0.426	0.50 ( 0.50)	0.99	44234.9	12111.00
15	4406.24	148.99	0.420	0.50 ( 0.50)	0.99	44981.3	10700.00
16	3846.10	158.25	0.409	0.50 ( 0.50)	0.99	46157.8	12261.00
17	3385.15	166.76	0.399	0.50 ( 0.50)	0.99	46968.9	10200.00
18	2826.11	180.98	0.382	0.50 ( 0.50)	0.99	48206.8	10300.00
19	2598.37	187.28	0.379	0.50 ( 0.50)	0.99	48559.0	12010.00
20	2135.62	206.36	0.368	0.50 ( 0.50)	0.99	48887.4	12000.00
21	1199.68	270.51	0.333	0.50 ( 0.50)	0.99	49558.2	10100.00
TOTAL AREA (ACRES) =							49558.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 9253.79 Tc(MIN.) = 18.544  
 EFFECTIVE AREA(ACRES) = 4984.39 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49558.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 325.00 DOWNSTREAM(FEET) = 313.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1377.46 CHANNEL SLOPE = 0.0087  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 9253.79  
 FLOW VELOCITY(FEET/SEC.) = 16.18 FLOW DEPTH(FEET) = 13.81  
 TRAVEL TIME(MIN.) = 1.42 Tc(MIN.) = 19.96  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12602.00 = 101245.91 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 313.00 DOWNSTREAM(FEET) = 310.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 312.40 CHANNEL SLOPE = 0.0096  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 9253.79  
 FLOW VELOCITY(FEET/SEC.) = 16.79 FLOW DEPTH(FEET) = 13.55  
 TRAVEL TIME(MIN.) = 0.31 Tc(MIN.) = 20.27  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4E05EVRL.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	211.45	10.04	0.50( 0.26)	0.52	148.5	800.00
2	178.48	13.84	0.50( 0.29)	0.57	167.9	818.00
3	161.90	15.20	0.50( 0.29)	0.58	171.0	810.00
TOTAL AREA(ACRES) =						171.0

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9253.79	20.27	1.127	0.50( 0.50)	0.99	4984.4	600.00
2	9233.10	47.00	0.701	0.50( 0.50)	0.99	12098.5	11801.00
3	9150.81	58.19	0.626	0.50( 0.50)	0.99	15331.1	11500.00
4	9076.14	63.80	0.602	0.50( 0.50)	0.99	17266.1	11701.00
5	8956.79	69.95	0.581	0.50( 0.50)	0.99	19375.6	11000.00
6	8698.93	86.11	0.526	0.50( 0.50)	0.99	26241.1	12500.00
7	8517.00	92.16	0.509	0.50( 0.50)	0.99	29110.5	10900.00
8	7879.82	100.45	0.493	0.50( 0.50)	0.99	32439.8	11130.00
9	7614.23	104.91	0.484	0.50( 0.50)	0.99	33850.6	12300.00
10	7217.09	111.48	0.471	0.50( 0.50)	0.99	36112.3	11620.00
11	6910.88	116.52	0.462	0.50( 0.50)	0.99	37750.1	10600.00
12	6182.69	126.50	0.447	0.50( 0.50)	0.99	40638.0	12400.00
13	5349.55	137.17	0.434	0.50( 0.50)	0.99	42944.2	12201.00
14	4750.41	145.86	0.424	0.50( 0.50)	0.99	44234.9	12111.00
15	4406.24	151.07	0.418	0.50( 0.50)	0.99	44981.3	10700.00
16	3846.10	160.41	0.407	0.50( 0.50)	0.99	46157.8	12261.00
17	3385.15	168.98	0.396	0.50( 0.50)	0.99	46968.9	10200.00
18	2826.11	183.30	0.381	0.50( 0.50)	0.99	48206.8	10300.00
19	2598.37	189.65	0.378	0.50( 0.50)	0.99	48559.0	12010.00
20	2135.62	208.86	0.367	0.50( 0.50)	0.99	48887.4	12000.00
21	1199.68	273.39	0.332	0.50( 0.50)	0.99	49558.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 =						101558.30 FEET.	

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	211.45	10.04	1.811	0.50( 0.26)	0.52	148.5	800.00
2	178.48	13.84	1.439	0.50( 0.29)	0.57	167.9	818.00
3	161.90	15.20	1.317	0.50( 0.29)	0.58	171.0	810.00
LONGEST FLOWPATH FROM NODE 810.00 TO NODE 12603.00 =						3814.00 FEET.	

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9465.24	10.04	1.811	0.50( 0.48)	0.97	2616.6	800.00
2	9432.28	13.84	1.439	0.50( 0.49)	0.97	3569.7	818.00
3	9195.12	15.20	1.317	0.50( 0.49)	0.97	3907.5	810.00
4	9385.68	20.27	1.127	0.50( 0.49)	0.98	5155.4	600.00
5	9297.83	47.00	0.701	0.50( 0.49)	0.99	12269.5	11801.00
6	9203.74	58.19	0.626	0.50( 0.49)	0.99	15502.1	11500.00
7	9125.30	63.80	0.602	0.50( 0.49)	0.99	17437.1	11701.00
8	9002.66	69.95	0.581	0.50( 0.50)	0.99	19546.6	11000.00
9	8736.14	86.11	0.526	0.50( 0.50)	0.99	26412.1	12500.00
10	8551.47	92.16	0.509	0.50( 0.50)	0.99	29281.5	10900.00
11	7912.44	100.45	0.493	0.50( 0.50)	0.99	32610.8	11130.00
12	7646.28	104.91	0.484	0.50( 0.50)	0.99	34021.6	12300.00
13	7248.30	111.48	0.471	0.50( 0.50)	0.99	36283.3	11620.00
14	6941.44	116.52	0.462	0.50( 0.50)	0.99	37921.1	10600.00
15	6212.29	126.50	0.447	0.50( 0.50)	0.99	40809.0	12400.00
16	5378.31	137.17	0.434	0.50( 0.50)	0.99	43115.2	12201.00
17	4778.48	145.86	0.424	0.50( 0.50)	0.99	44405.9	12111.00

18 4433.89 151.07 0.418 0.50( 0.50) 0.99 45152.3 10700.00  
 19 3873.01 160.41 0.407 0.50( 0.50) 0.99 46328.8 12261.00  
 20 3411.37 168.98 0.396 0.50( 0.50) 0.99 47139.9 10200.00  
 21 2851.34 183.30 0.381 0.50( 0.50) 0.99 48377.8 10300.00  
 22 2623.37 189.65 0.378 0.50( 0.50) 0.99 48730.0 12010.00  
 23 2159.92 208.86 0.367 0.50( 0.50) 0.99 49058.4 12000.00  
 24 1221.63 273.39 0.332 0.50( 0.50) 0.99 49729.2 10100.00  
 TOTAL AREA(ACRES) = 49729.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 9465.24 Tc(MIN.) = 10.039  
 EFFECTIVE AREA(ACRES) = 2616.61 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49729.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 10.04  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.811  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.30	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	12.00	0.50	1.000	-
USER-DEFINED	-	1.40	0.50	1.000	-
USER-DEFINED	-	26.90	0.50	1.000	-
USER-DEFINED	-	1.60	0.50	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
 SUBAREA AREA(ACRES) = 43.40 SUBAREA RUNOFF(CFS) = 51.28  
 EFFECTIVE AREA(ACRES) = 2660.01 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 49772.6 PEAK FLOW RATE(CFS) = 9465.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 10.04  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.811  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.90	0.50	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
 SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 1.12  
 EFFECTIVE AREA(ACRES) = 2660.91 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 49773.5 PEAK FLOW RATE(CFS) = 9465.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 10.04  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.811  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.50	0.200	-
USER-DEFINED	-	1.40	0.50	0.900	-
USER-DEFINED	-	1.00	0.50	0.900	-
USER-DEFINED	-	0.60	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	9.00	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.974  
 SUBAREA AREA(ACRES) = 12.20 SUBAREA RUNOFF(CFS) = 14.54  
 EFFECTIVE AREA(ACRES) = 2673.11 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 49785.7 PEAK FLOW RATE(CFS) = 9465.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 10.04  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.811  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	5.60	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	2.90	0.50	1.000	-
USER-DEFINED	-	0.70	0.50	1.000	-
USER-DEFINED	-	1.20	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 12.74  
 EFFECTIVE AREA(ACRES) = 2683.91 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 49796.5 PEAK FLOW RATE(CFS) = 9465.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 10.04  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.811  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.90	0.50	0.850	-

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LAND USE      GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED  -       2.10     0.50      1.000     -
USER-DEFINED  -       1.00     0.50      1.000     -
USER-DEFINED  -       0.80     0.50      1.000     -
USER-DEFINED  -       0.20     0.50      1.000     -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 4.10     SUBAREA RUNOFF(CFS) = 4.84
EFFECTIVE AREA(ACRES) = 2688.01  AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 49800.6     PEAK FLOW RATE(CFS) = 9465.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12603.00 TO NODE 12604.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 310.00  DOWNSTREAM(FEET) = 307.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 459.69  CHANNEL SLOPE = 0.0065
CHANNEL BASE(FEET) = 0.00  "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 9465.24
FLOW VELOCITY(FEET/SEC.) = 14.60  FLOW DEPTH(FEET) = 14.70
TRAVEL TIME(MIN.) = 0.52  Tc(MIN.) = 10.56
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12604.00 = 102017.99 FEET.

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FLOW PROCESS FROM NODE 12604.00 TO NODE 12604.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 10.56
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.760
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/  SCS SOIL  AREA  Fp  Ap  SCS
LAND USE          GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED      -       0.20     0.50      1.000     -
USER-DEFINED      -       0.10     0.50      0.850     -
USER-DEFINED      -       0.90     0.50      1.000     -
USER-DEFINED      -       0.40     0.50      1.000     -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.991
SUBAREA AREA(ACRES) = 1.60     SUBAREA RUNOFF(CFS) = 1.82
EFFECTIVE AREA(ACRES) = 2689.61  AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 49802.2     PEAK FLOW RATE(CFS) = 9465.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 12604.00 TO NODE 12605.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 307.00  DOWNSTREAM(FEET) = 305.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 427.54  CHANNEL SLOPE = 0.0047

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CHANNEL BASE(FEET) = 0.00  "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 9465.24
FLOW VELOCITY(FEET/SEC.) = 12.89  FLOW DEPTH(FEET) = 15.65
TRAVEL TIME(MIN.) = 0.55  Tc(MIN.) = 11.12
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12605.00 = 102445.53 FEET.

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FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 11.12
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.706
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/  SCS SOIL  AREA  Fp  Ap  SCS
LAND USE          GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED      -       0.10     0.50      0.900     -
USER-DEFINED      -       1.30     0.50      0.900     -
USER-DEFINED      -       1.90     0.50      1.000     -
USER-DEFINED      -       0.50     0.50      1.000     -
USER-DEFINED      -       6.60     0.50      0.850     -
USER-DEFINED      -       0.20     0.50      0.850     -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.891
SUBAREA AREA(ACRES) = 10.60     SUBAREA RUNOFF(CFS) = 12.02
EFFECTIVE AREA(ACRES) = 2700.21  AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 49812.8     PEAK FLOW RATE(CFS) = 9465.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 11.12
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.706
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/  SCS SOIL  AREA  Fp  Ap  SCS
LAND USE          GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED      -       3.10     0.50      1.000     -
USER-DEFINED      -       0.30     0.50      0.500     -
USER-DEFINED      -       1.40     0.50      1.000     -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.969
SUBAREA AREA(ACRES) = 4.80     SUBAREA RUNOFF(CFS) = 5.27
EFFECTIVE AREA(ACRES) = 2705.01  AREA-AVERAGED Fm(INCH/HR) = 0.48
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 49817.6     PEAK FLOW RATE(CFS) = 9465.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 9465.24  
 FLOW VELOCITY(FEET/SEC.) = 16.33 FLOW DEPTH(FEET) = 13.90  
 TRAVEL TIME(MIN.) = 2.20 Tc(MIN.) = 13.32  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F05EVRL.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	444.42	10.57	0.50 ( 0.39)	0.78	360.1	940.00
2	444.43	10.76	0.50 ( 0.39)	0.78	365.5	930.00
3	402.75	14.22	0.50 ( 0.41)	0.81	450.0	910.00
4	371.69	18.99	0.50 ( 0.42)	0.85	551.4	920.00
5	368.10	19.23	0.50 ( 0.42)	0.85	552.9	900.00
6	365.93	19.37	0.50 ( 0.42)	0.85	553.8	950.00
TOTAL AREA (ACRES) =					553.8	

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9465.24	13.32	1.490	0.50 ( 0.48)	0.97	2705.0	800.00
2	9432.28	17.12	1.244	0.50 ( 0.49)	0.97	3658.1	818.00
3	9195.12	18.50	1.192	0.50 ( 0.49)	0.98	3995.9	810.00
4	9385.68	23.56	1.031	0.50 ( 0.49)	0.98	5243.8	600.00
5	9297.83	50.30	0.674	0.50 ( 0.49)	0.99	12357.9	11801.00
6	9203.74	61.50	0.610	0.50 ( 0.49)	0.99	15590.5	11500.00
7	9125.30	67.11	0.591	0.50 ( 0.49)	0.99	17525.5	11701.00
8	9002.66	73.27	0.570	0.50 ( 0.50)	0.99	19635.0	11000.00
9	8736.14	89.46	0.515	0.50 ( 0.50)	0.99	26500.5	12500.00
10	8551.47	95.53	0.502	0.50 ( 0.50)	0.99	29369.9	10900.00
11	7912.44	103.89	0.486	0.50 ( 0.50)	0.99	32699.2	11130.00
12	7646.28	108.37	0.477	0.50 ( 0.50)	0.99	34110.0	12300.00
13	7248.30	114.99	0.465	0.50 ( 0.50)	0.99	36371.7	11620.00
14	6941.44	120.07	0.455	0.50 ( 0.50)	0.99	38009.5	10600.00
15	6212.29	130.15	0.443	0.50 ( 0.50)	0.99	40897.4	12400.00
16	5378.31	140.95	0.430	0.50 ( 0.50)	0.99	43203.6	12201.00
17	4778.48	149.75	0.419	0.50 ( 0.50)	0.99	44494.3	12111.00
18	4433.89	155.03	0.413	0.50 ( 0.50)	0.99	45240.7	10700.00
19	3873.01	164.51	0.402	0.50 ( 0.50)	0.99	46417.2	12261.00
20	3411.37	173.21	0.391	0.50 ( 0.50)	0.99	47228.3	10200.00
21	2851.34	187.73	0.379	0.50 ( 0.50)	0.99	48466.2	10300.00
22	2623.37	194.17	0.375	0.50 ( 0.50)	0.99	48818.4	12010.00
23	2159.92	213.61	0.365	0.50 ( 0.50)	0.99	49146.8	12000.00

24 1221.63 278.86 0.329 0.50 ( 0.50) 0.99 49817.6 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	444.42	10.57	1.759	0.50 ( 0.39)	0.78	360.1	940.00
2	444.43	10.76	1.740	0.50 ( 0.39)	0.78	365.5	930.00
3	402.75	14.22	1.402	0.50 ( 0.41)	0.81	450.0	910.00
4	371.69	18.99	1.173	0.50 ( 0.42)	0.85	551.4	920.00
5	368.10	19.23	1.164	0.50 ( 0.42)	0.85	552.9	900.00
6	365.93	19.37	1.159	0.50 ( 0.42)	0.85	553.8	950.00
LONGEST FLOWPATH FROM NODE					920.00 TO NODE 12606.00 =	6933.00 FEET.	

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9909.66	10.57	1.759	0.50 ( 0.47)	0.94	2506.3	940.00
2	9909.67	10.76	1.740	0.50 ( 0.47)	0.94	2551.7	930.00
3	9878.83	13.32	1.490	0.50 ( 0.47)	0.94	3133.0	800.00
4	9860.21	14.22	1.402	0.50 ( 0.47)	0.95	3380.1	910.00
5	9816.14	17.12	1.244	0.50 ( 0.48)	0.96	4169.7	818.00
6	9570.00	18.50	1.192	0.50 ( 0.48)	0.96	4536.9	810.00
7	9585.28	18.99	1.173	0.50 ( 0.48)	0.96	4668.3	920.00
8	9590.64	19.23	1.164	0.50 ( 0.48)	0.96	4728.4	900.00
9	9593.85	19.37	1.159	0.50 ( 0.48)	0.96	4764.5	950.00
10	9687.90	23.56	1.031	0.50 ( 0.48)	0.97	5797.6	600.00
11	9422.19	50.30	0.674	0.50 ( 0.49)	0.98	12911.7	11801.00
12	9296.07	61.50	0.610	0.50 ( 0.49)	0.98	16144.3	11500.00
13	9208.11	67.11	0.591	0.50 ( 0.49)	0.98	18079.3	11701.00
14	9075.03	73.27	0.570	0.50 ( 0.49)	0.99	20188.8	11000.00
15	8781.08	89.46	0.515	0.50 ( 0.49)	0.99	27054.3	12500.00
16	8590.16	95.53	0.502	0.50 ( 0.49)	0.99	29923.7	10900.00
17	7949.02	103.89	0.486	0.50 ( 0.50)	0.99	33253.0	11130.00
18	7682.21	108.37	0.477	0.50 ( 0.50)	0.99	34663.8	12300.00
19	7283.27	114.99	0.465	0.50 ( 0.50)	0.99	36925.5	11620.00
20	6975.67	120.07	0.455	0.50 ( 0.50)	0.99	38563.3	10600.00
21	6245.61	130.15	0.443	0.50 ( 0.50)	0.99	41451.2	12400.00
22	5410.65	140.95	0.430	0.50 ( 0.49)	0.99	43757.4	12201.00
23	4810.03	149.75	0.419	0.50 ( 0.49)	0.99	45048.1	12111.00
24	4464.96	155.03	0.413	0.50 ( 0.49)	0.99	45794.5	10700.00
25	3903.23	164.51	0.402	0.50 ( 0.49)	0.99	46971.0	12261.00
26	3440.81	173.21	0.391	0.50 ( 0.49)	0.99	47782.1	10200.00
27	2879.84	187.73	0.379	0.50 ( 0.49)	0.99	49020.0	10300.00
28	2651.60	194.17	0.375	0.50 ( 0.49)	0.99	49372.2	12010.00
29	2187.35	213.61	0.365	0.50 ( 0.49)	0.99	49700.6	12000.00
30	1246.36	278.86	0.329	0.50 ( 0.49)	0.99	50371.4	10100.00
TOTAL AREA (ACRES) =					50371.4		

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 9909.67 Tc(MIN.) = 10.765  
 EFFECTIVE AREA(ACRES) = 2551.70 AREA-AVERAGED Fm(INCH/HR) = 0.47  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50371.4  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

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



=====  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 10.76  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.30 0.50 1.000 -  
USER-DEFINED - 0.70 0.50 0.100 -  
USER-DEFINED - 0.80 0.50 1.000 -  
USER-DEFINED - 11.90 0.50 1.000 -  
USER-DEFINED - 0.80 0.50 0.850 -  
USER-DEFINED - 1.50 0.50 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.953  
SUBAREA AREA(ACRES) = 16.00 SUBAREA RUNOFF(CFS) = 18.19  
EFFECTIVE AREA(ACRES) = 2567.70 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 50387.4 PEAK FLOW RATE(CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 10.76  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.40 0.50 0.100 -  
USER-DEFINED - 8.20 0.50 1.000 -  
USER-DEFINED - 3.90 0.50 1.000 -  
USER-DEFINED - 1.60 0.50 1.000 -  
USER-DEFINED - 1.90 0.50 1.000 -  
USER-DEFINED - 0.60 0.50 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.978  
SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 18.69  
EFFECTIVE AREA(ACRES) = 2584.30 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 50404.0 PEAK FLOW RATE(CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 10.76  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 1.80 0.50 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 2.01  
EFFECTIVE AREA(ACRES) = 2586.10 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 50405.8 PEAK FLOW RATE(CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

=====  
END OF STUDY SUMMARY:  
TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 10.76  
EFFECTIVE AREA(ACRES) = 2586.10 AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.940  
PEAK FLOW RATE(CFS) = 9909.67

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9909.66	10.57	1.759	0.50( 0.47)	0.94	2540.7	940.00
2	9909.67	10.76	1.740	0.50( 0.47)	0.94	2586.1	930.00
3	9878.83	13.32	1.490	0.50( 0.47)	0.94	3167.4	800.00
4	9860.21	14.22	1.402	0.50( 0.47)	0.95	3414.5	910.00
5	9816.14	17.12	1.244	0.50( 0.48)	0.96	4204.1	818.00
6	9570.00	18.50	1.192	0.50( 0.48)	0.96	4571.3	810.00
7	9585.28	18.99	1.173	0.50( 0.48)	0.96	4702.7	920.00
8	9590.64	19.23	1.164	0.50( 0.48)	0.96	4762.8	900.00
9	9593.85	19.37	1.159	0.50( 0.48)	0.96	4798.9	950.00
10	9687.90	23.56	1.031	0.50( 0.48)	0.97	5832.0	600.00
11	9422.19	50.30	0.674	0.50( 0.49)	0.98	12946.1	11801.00
12	9296.07	61.50	0.610	0.50( 0.49)	0.98	16178.7	11500.00
13	9208.11	67.11	0.591	0.50( 0.49)	0.98	18113.7	11701.00
14	9075.03	73.27	0.570	0.50( 0.49)	0.99	20223.2	11000.00
15	8781.08	89.46	0.515	0.50( 0.49)	0.99	27088.7	12500.00
16	8590.16	95.53	0.502	0.50( 0.49)	0.99	29958.1	10900.00
17	7949.02	103.89	0.486	0.50( 0.50)	0.99	33287.4	11130.00
18	7682.21	108.37	0.477	0.50( 0.50)	0.99	34698.2	12300.00
19	7283.27	114.99	0.465	0.50( 0.50)	0.99	36959.9	11620.00
20	6975.67	120.07	0.455	0.50( 0.50)	0.99	38597.7	10600.00
21	6245.61	130.15	0.443	0.50( 0.50)	0.99	41485.6	12400.00
22	5410.65	140.95	0.430	0.50( 0.49)	0.99	43791.8	12201.00
23	4810.03	149.75	0.419	0.50( 0.49)	0.99	45082.5	12111.00
24	4464.96	155.03	0.413	0.50( 0.49)	0.99	45828.9	10700.00
25	3903.23	164.51	0.402	0.50( 0.49)	0.99	47005.4	12261.00
26	3440.81	173.21	0.391	0.50( 0.49)	0.99	47816.5	10200.00
27	2879.84	187.73	0.379	0.50( 0.49)	0.99	49054.4	10300.00
28	2651.60	194.17	0.375	0.50( 0.49)	0.99	49406.6	12010.00
29	2187.35	213.61	0.365	0.50( 0.49)	0.99	49735.0	12000.00
30	1246.36	278.86	0.329	0.50( 0.49)	0.99	50405.8	10100.00

=====  
END OF RATIONAL METHOD ANALYSIS  
=====



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S27- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV27.DAT  
TIME/DATE OF STUDY: 11:32 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.715
- 2) 10.00; 1.802
- 3) 15.00; 1.320
- 4) 20.00; 1.130
- 5) 25.00; 0.985
- 6) 30.00; 0.883
- 7) 40.00; 0.756
- 8) 50.00; 0.673
- 9) 60.00; 0.612
- 10) 90.00; 0.510
- 11) 120.00; 0.452
- 12) 180.00; 0.379
- 13) 360.00; 0.281
- 14) 1200.00; 0.124

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU05EV26.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9909.67	10.76	0.50 ( 0.47)	0.94	2586.1	930.00
2	9816.14	17.12	0.50 ( 0.48)	0.96	4204.1	818.00
3	9687.90	23.56	0.50 ( 0.48)	0.97	5832.0	600.00
4	9422.19	50.30	0.50 ( 0.49)	0.98	12946.1	11801.00
5	9296.07	61.50	0.50 ( 0.49)	0.98	16178.7	11500.00
6	9208.11	67.11	0.50 ( 0.49)	0.98	18113.7	11701.00
7	9075.03	73.27	0.50 ( 0.49)	0.99	20223.2	11000.00
8	8781.08	89.46	0.50 ( 0.49)	0.99	27088.7	12500.00
9	8590.16	95.53	0.50 ( 0.49)	0.99	29958.1	10900.00
10	7949.02	103.89	0.50 ( 0.50)	0.99	33287.4	11130.00
11	7283.27	114.99	0.50 ( 0.50)	0.99	36959.9	11620.00
12	6245.61	130.15	0.50 ( 0.50)	0.99	41485.6	12400.00
13	5410.65	140.95	0.50 ( 0.49)	0.99	43791.8	12201.00
14	4810.03	149.75	0.50 ( 0.49)	0.99	45082.5	12111.00
15	3903.23	164.51	0.50 ( 0.49)	0.99	47005.4	12261.00
16	3440.81	173.21	0.50 ( 0.49)	0.99	47816.5	10200.00
17	2879.84	187.73	0.50 ( 0.49)	0.99	49054.4	10300.00
18	2651.60	194.17	0.50 ( 0.49)	0.99	49406.6	12010.00
19	2187.35	213.61	0.50 ( 0.49)	0.99	49735.0	12000.00
20	1246.36	278.86	0.50 ( 0.49)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =						50405.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9909.67	10.76	0.50 ( 0.47)	0.94	2586.1	930.00
2	9816.14	17.12	0.50 ( 0.48)	0.96	4204.1	818.00
3	9687.90	23.56	0.50 ( 0.48)	0.97	5832.0	600.00
4	9422.19	50.30	0.50 ( 0.49)	0.98	12946.1	11801.00
5	9296.07	61.50	0.50 ( 0.49)	0.98	16178.7	11500.00
6	9208.11	67.11	0.50 ( 0.49)	0.98	18113.7	11701.00
7	9075.03	73.27	0.50 ( 0.49)	0.99	20223.2	11000.00
8	8781.08	89.46	0.50 ( 0.49)	0.99	27088.7	12500.00
9	8590.16	95.53	0.50 ( 0.49)	0.99	29958.1	10900.00
10	7949.02	103.89	0.50 ( 0.50)	0.99	33287.4	11130.00
11	7283.27	114.99	0.50 ( 0.50)	0.99	36959.9	11620.00
12	6245.61	130.15	0.50 ( 0.50)	0.99	41485.6	12400.00
13	5410.65	140.95	0.50 ( 0.49)	0.99	43791.8	12201.00

14	4810.03	149.75	0.50	( 0.49)	0.99	45082.5	12111.00
15	3903.23	164.51	0.50	( 0.49)	0.99	47005.4	12261.00
16	3440.81	173.21	0.50	( 0.49)	0.99	47816.5	10200.00
17	2879.84	187.73	0.50	( 0.49)	0.99	49054.4	10300.00
18	2651.60	194.17	0.50	( 0.49)	0.99	49406.6	12010.00
19	2187.35	213.61	0.50	( 0.49)	0.99	49735.0	12000.00
20	1246.36	278.86	0.50	( 0.49)	0.99	50405.8	10100.00

TOTAL AREA (ACRES) = 50405.8

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 286.00 DOWNSTREAM (FEET) = 276.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1260.19 CHANNEL SLOPE = 0.0079  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.601

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.55	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 9913.41  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.90  
AVERAGE FLOW DEPTH (FEET) = 14.42 TRAVEL TIME (MIN.) = 1.32  
Tc (MIN.) = 12.09  
SUBAREA AREA (ACRES) = 7.55 SUBAREA RUNOFF (CFS) = 7.48  
EFFECTIVE AREA (ACRES) = 2593.65 AREA-AVERAGED Fm (INCH/HR) = 0.47  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 50413.3 PEAK FLOW RATE (CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 14.41 FLOW VELOCITY (FEET/SEC.) = 15.90  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 105865.19 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 12.09  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.601

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.90	0.50	0.850	-
USER-DEFINED	-	3.40	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	0.500	-
USER-DEFINED	-	23.00	0.50	1.000	-
USER-DEFINED	-	3.30	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.989

SUBAREA AREA (ACRES) = 31.40 SUBAREA RUNOFF (CFS) = 31.26  
EFFECTIVE AREA (ACRES) = 2625.05 AREA-AVERAGED Fm (INCH/HR) = 0.47  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 50444.7 PEAK FLOW RATE (CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 12.09  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.601  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.70	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 1.70 SUBAREA RUNOFF (CFS) = 1.68  
EFFECTIVE AREA (ACRES) = 2626.75 AREA-AVERAGED Fm (INCH/HR) = 0.47  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 50446.4 PEAK FLOW RATE (CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 276.00 DOWNSTREAM (FEET) = 275.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 147.65 CHANNEL SLOPE = 0.0068  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.585

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.49	0.50	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 9910.45  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.98  
AVERAGE FLOW DEPTH (FEET) = 14.85 TRAVEL TIME (MIN.) = 0.16  
Tc (MIN.) = 12.25  
SUBAREA AREA (ACRES) = 1.49 SUBAREA RUNOFF (CFS) = 1.56  
EFFECTIVE AREA (ACRES) = 2628.24 AREA-AVERAGED Fm (INCH/HR) = 0.47  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 50447.9 PEAK FLOW RATE (CFS) = 9909.67  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 14.85 FLOW VELOCITY (FEET/SEC.) = 14.98  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 1

-----  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
-----

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 12.25  
RAINFALL INTENSITY(INCH/HR) = 1.59  
AREA-AVERAGED Fm(INCH/HR) = 0.47  
AREA-AVERAGED Fp(INCH/HR) = 0.50  
AREA-AVERAGED Ap = 0.94  
EFFECTIVE STREAM AREA(ACRES) = 2628.24  
TOTAL STREAM AREA(ACRES) = 50447.93  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9909.67

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12710.00 TO NODE 12711.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
-----

INITIAL SUBAREA FLOW-LENGTH(FEET) = 943.56  
ELEVATION DATA: UPSTREAM(FEET) = 940.78 DOWNSTREAM(FEET) = 657.79

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$   
SUBAREA ANALYSIS USED MINIMUM  $T_c$ (MIN.) = 13.910  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.425  
SUBAREA  $T_c$  AND LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  $T_c$   
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
NATURAL FAIR COVER  
"GRASS" - 6.56 0.50 1.000 0 13.91  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 5.46  
TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 5.46

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12711.00 TO NODE 12712.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 657.79 DOWNSTREAM(FEET) = 585.63  
CHANNEL LENGTH THRU SUBAREA(FEET) = 766.00 CHANNEL SLOPE = 0.0942  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.258  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 26.94 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.69  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.71  
AVERAGE FLOW DEPTH(FEET) = 1.02 TRAVEL TIME(MIN.) = 2.71  
 $T_c$ (MIN.) = 16.62  
SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 18.38

EFFECTIVE AREA(ACRES) = 33.50 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 33.5 PEAK FLOW RATE(CFS) = 22.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.21 FLOW VELOCITY(FEET/SEC.) = 5.22  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12712.00 = 1709.56 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12712.00 TO NODE 12713.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 585.63 DOWNSTREAM(FEET) = 463.75  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1025.79 CHANNEL SLOPE = 0.1188  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.153  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 14.73 0.50 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 30.15  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.15  
AVERAGE FLOW DEPTH(FEET) = 1.28 TRAVEL TIME(MIN.) = 2.78  
 $T_c$ (MIN.) = 19.40  
SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 14.62  
EFFECTIVE AREA(ACRES) = 48.23 AREA-AVERAGED Fm(INCH/HR) = 0.36  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
TOTAL AREA(ACRES) = 48.2 PEAK FLOW RATE(CFS) = 34.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.35 FLOW VELOCITY(FEET/SEC.) = 6.31  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12713.00 = 2735.35 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12713.00 TO NODE 12714.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
-----

ELEVATION DATA: UPSTREAM(FEET) = 463.75 DOWNSTREAM(FEET) = 360.30  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1148.54 CHANNEL SLOPE = 0.0901  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.069  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 105.64 0.50 0.100 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 82.62  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.09  
AVERAGE FLOW DEPTH(FEET) = 1.97 TRAVEL TIME(MIN.) = 2.70

Tc(MIN.) = 22.10  
 SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 96.88  
 EFFECTIVE AREA(ACRES) = 153.87 AREA-AVERAGED Fm(INCH/HR) = 0.15  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.30  
 TOTAL AREA(ACRES) = 153.9 PEAK FLOW RATE(CFS) = 127.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH( FEET ) = 2.32 FLOW VELOCITY( FEET/SEC. ) = 7.92  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12714.00 = 3883.89 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12714.00 TO NODE 12720.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM( FEET ) = 360.30 DOWNSTREAM( FEET ) = 275.00  
 CHANNEL LENGTH THRU SUBAREA( FEET ) = 1314.99 CHANNEL SLOPE = 0.0649  
 CHANNEL BASE( FEET ) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH( FEET ) = 20.00

\* 5 YEAR RAINFALL INTENSITY( INCH/HR ) = 0.986

SUBAREA LOSS RATE DATA( AMC II ):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	127.13	0.50	0.100	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp( INCH/HR ) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW( CFS ) = 181.07

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC. ) = 7.64

AVERAGE FLOW DEPTH( FEET ) = 2.81 TRAVEL TIME( MIN. ) = 2.87

Tc( MIN. ) = 24.97

SUBAREA AREA( ACRES ) = 127.13 SUBAREA RUNOFF( CFS ) = 107.07

EFFECTIVE AREA( ACRES ) = 281.00 AREA-AVERAGED Fm( INCH/HR ) = 0.10

AREA-AVERAGED Fp( INCH/HR ) = 0.50 AREA-AVERAGED Ap = 0.21

TOTAL AREA( ACRES ) = 281.0 PEAK FLOW RATE( CFS ) = 223.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH( FEET ) = 3.04 FLOW VELOCITY( FEET/SEC. ) = 8.05  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION( MIN. ) = 24.97

RAINFALL INTENSITY( INCH/HR ) = 0.99

AREA-AVERAGED Fm( INCH/HR ) = 0.10

AREA-AVERAGED Fp( INCH/HR ) = 0.50

AREA-AVERAGED Ap = 0.21

EFFECTIVE STREAM AREA( ACRES ) = 281.00

TOTAL STREAM AREA( ACRES ) = 281.00

PEAK FLOW RATE( CFS ) AT CONFLUENCE = 223.10

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	9909.67	12.25	1.585	0.50( 0.47)	0.94	2628.2	930.00
1	9816.14	18.61	1.183	0.50( 0.48)	0.96	4246.3	818.00
1	9687.90	25.05	0.984	0.50( 0.48)	0.97	5874.1	600.00
1	9422.19	51.80	0.662	0.50( 0.49)	0.98	12988.3	11801.00
1	9296.07	63.01	0.602	0.50( 0.49)	0.98	16220.8	11500.00
1	9208.11	68.63	0.583	0.50( 0.49)	0.98	18155.9	11701.00
1	9075.03	74.79	0.562	0.50( 0.49)	0.99	20265.3	11000.00
1	8781.08	90.99	0.508	0.50( 0.49)	0.99	27130.9	12500.00
1	8590.16	97.07	0.496	0.50( 0.49)	0.99	30000.3	10900.00
1	7949.02	105.45	0.480	0.50( 0.50)	0.99	33329.5	11130.00
1	7283.27	116.59	0.459	0.50( 0.50)	0.99	37002.0	11620.00
1	6245.61	131.82	0.438	0.50( 0.50)	0.99	41527.8	12400.00
1	5410.65	142.68	0.424	0.50( 0.49)	0.99	43834.0	12201.00
1	4810.03	151.53	0.414	0.50( 0.49)	0.99	45124.6	12111.00
1	3903.23	166.38	0.396	0.50( 0.49)	0.99	47047.5	12261.00
1	3440.81	175.15	0.385	0.50( 0.49)	0.99	47858.6	10200.00
1	2879.84	189.75	0.374	0.50( 0.49)	0.99	49096.6	10300.00
1	2651.60	196.24	0.370	0.50( 0.49)	0.99	49448.8	12010.00
1	2187.35	215.77	0.360	0.50( 0.49)	0.99	49777.1	12000.00
1	1246.36	281.36	0.324	0.50( 0.49)	0.99	50447.9	10100.00
2	223.10	24.97	0.986	0.50( 0.10)	0.21	281.0	12710.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10093.46	12.25	1.585	0.50( 0.45)	0.90	2766.1	930.00
2	10019.53	18.61	1.183	0.50( 0.46)	0.92	4455.7	818.00
3	9912.65	24.97	0.986	0.50( 0.47)	0.93	6134.1	12710.00
4	9910.50	25.05	0.984	0.50( 0.47)	0.93	6155.1	600.00
5	9563.39	51.80	0.662	0.50( 0.48)	0.96	13269.3	11801.00
6	9422.03	63.01	0.602	0.50( 0.49)	0.97	16501.8	11500.00
7	9329.24	68.63	0.583	0.50( 0.49)	0.97	18436.9	11701.00
8	9190.86	74.79	0.562	0.50( 0.49)	0.98	20546.3	11000.00
9	8883.35	90.99	0.508	0.50( 0.49)	0.98	27411.9	12500.00
10	8689.66	97.07	0.496	0.50( 0.49)	0.98	30281.3	10900.00
11	8045.27	105.45	0.480	0.50( 0.49)	0.98	33610.5	11130.00
12	7375.20	116.59	0.459	0.50( 0.49)	0.98	37283.0	11620.00
13	6333.34	131.82	0.438	0.50( 0.49)	0.98	41808.8	12400.00
14	5495.73	142.68	0.424	0.50( 0.49)	0.98	44115.0	12201.00
15	4892.95	151.53	0.414	0.50( 0.49)	0.98	45405.6	12111.00
16	3982.53	166.38	0.396	0.50( 0.49)	0.98	47328.5	12261.00
17	3517.97	175.15	0.385	0.50( 0.49)	0.98	48139.6	10200.00
18	2954.75	189.75	0.374	0.50( 0.49)	0.98	49377.6	10300.00
19	2725.81	196.24	0.370	0.50( 0.49)	0.98	49729.8	12010.00
20	2259.42	215.77	0.360	0.50( 0.49)	0.98	50058.1	12000.00
21	1311.27	281.36	0.324	0.50( 0.49)	0.99	50728.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE( CFS ) = 10093.46 Tc( MIN. ) = 12.25  
 EFFECTIVE AREA( ACRES ) = 2766.09 AREA-AVERAGED Fm( INCH/HR ) = 0.45  
 AREA-AVERAGED Fp( INCH/HR ) = 0.50 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA( ACRES ) = 50728.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

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*****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 12.25
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.585
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         3.80   0.50  1.000  -
USER-DEFINED        -         0.40   0.50  0.850  -
USER-DEFINED        -         0.20   0.50  0.500  -
USER-DEFINED        -         0.10   0.50  1.000  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.964
SUBAREA AREA(ACRES) = 4.50   SUBAREA RUNOFF(CFS) = 4.47
EFFECTIVE AREA(ACRES) = 2770.59   AREA-AVERAGED Fm(INCH/HR) = 0.45
AREA-AVERAGED Fp(INCH/HR) = 0.50   AREA-AVERAGED Ap = 0.90
TOTAL AREA(ACRES) = 50733.4   PEAK FLOW RATE(CFS) = 10093.46
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 275.00   DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21   CHANNEL SLOPE = 0.0064
CHANNEL BASE(FEET) = 0.00   "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         62.15   0.50  0.100  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10128.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.72
AVERAGE FLOW DEPTH(FEET) = 15.15   TRAVEL TIME(MIN.) = 3.02
Tc(MIN.) = 15.27
SUBAREA AREA(ACRES) = 62.15   SUBAREA RUNOFF(CFS) = 70.46
EFFECTIVE AREA(ACRES) = 2832.74   AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.50   AREA-AVERAGED Ap = 0.89
TOTAL AREA(ACRES) = 50795.6   PEAK FLOW RATE(CFS) = 10093.46
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 15.13   FLOW VELOCITY(FEET/SEC.) = 14.70
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

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*****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 15.27
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.10   0.50  0.100  -
USER-DEFINED        -         0.70   0.50  1.000  -
USER-DEFINED        -         0.30   0.50  1.000  -
USER-DEFINED        -        17.90   0.50  1.000  -
USER-DEFINED        -         0.20   0.50  1.000  -
USER-DEFINED        -         0.30   0.50  0.850  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.993
SUBAREA AREA(ACRES) = 19.50   SUBAREA RUNOFF(CFS) = 14.27
EFFECTIVE AREA(ACRES) = 2852.24   AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.50   AREA-AVERAGED Ap = 0.89
TOTAL AREA(ACRES) = 50815.1   PEAK FLOW RATE(CFS) = 10093.46
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc(MIN.) = 15.27
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.10   0.50  0.500  -
USER-DEFINED        -         1.10   0.50  1.000  -
USER-DEFINED        -         0.90   0.50  1.000  -
USER-DEFINED        -         0.60   0.50  0.900  -
USER-DEFINED        -         0.30   0.50  0.900  -
USER-DEFINED        -         0.50   0.50  1.000  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960
SUBAREA AREA(ACRES) = 3.50   SUBAREA RUNOFF(CFS) = 2.61
EFFECTIVE AREA(ACRES) = 2855.74   AREA-AVERAGED Fm(INCH/HR) = 0.44
AREA-AVERAGED Fp(INCH/HR) = 0.50   AREA-AVERAGED Ap = 0.89
TOTAL AREA(ACRES) = 50818.6   PEAK FLOW RATE(CFS) = 10093.46
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 15.1
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>>>>DEFINE MEMORY BANK # 2 <<<<
=====
PEAK FLOWRATE TABLE FILE NAME: 3D05EVRL.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)      (MIN.)      (INCH/HR)      (ACRES)      NODE
1          335.91    23.47    0.50( 0.24)  0.48    352.9    413.00
2          323.42    31.23    0.50( 0.24)  0.48    430.2    430.00
3          308.01    33.56    0.50( 0.24)  0.48    439.5    400.00
TOTAL AREA(ACRES) = 439.5

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\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10093.46	15.27	1.310	0.50 ( 0.44)	0.89	2855.7	930.00
2	10019.53	21.64	1.083	0.50 ( 0.46)	0.91	4545.3	818.00
3	9912.65	28.01	0.924	0.50 ( 0.46)	0.92	6223.8	12710.00
4	9910.50	28.09	0.922	0.50 ( 0.46)	0.92	6244.8	600.00
5	9563.39	54.87	0.643	0.50 ( 0.48)	0.96	13358.9	11801.00
6	9422.03	66.08	0.591	0.50 ( 0.48)	0.97	16591.4	11500.00
7	9329.24	71.71	0.572	0.50 ( 0.49)	0.97	18526.5	11701.00
8	9190.86	77.89	0.551	0.50 ( 0.49)	0.97	20635.9	11000.00
9	8883.35	94.11	0.502	0.50 ( 0.49)	0.98	27501.5	12500.00
10	8689.66	100.21	0.490	0.50 ( 0.49)	0.98	30370.9	10900.00
11	8045.27	108.65	0.474	0.50 ( 0.49)	0.98	33700.1	11130.00
12	7375.20	119.86	0.452	0.50 ( 0.49)	0.98	37372.7	11620.00
13	6333.34	135.21	0.433	0.50 ( 0.49)	0.98	41898.4	12400.00
14	5495.73	146.20	0.420	0.50 ( 0.49)	0.98	44204.6	12201.00
15	4892.95	155.15	0.409	0.50 ( 0.49)	0.98	45495.3	12111.00
16	3982.53	170.20	0.391	0.50 ( 0.49)	0.98	47418.2	12261.00
17	3517.97	179.08	0.380	0.50 ( 0.49)	0.98	48229.3	10200.00
18	2954.75	193.86	0.371	0.50 ( 0.49)	0.98	49467.2	10300.00
19	2725.81	200.43	0.368	0.50 ( 0.49)	0.98	49819.4	12010.00
20	2259.42	220.17	0.357	0.50 ( 0.49)	0.98	50147.8	12000.00
21	1311.27	286.39	0.321	0.50 ( 0.49)	0.98	50818.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	335.91	23.47	1.030	0.50 ( 0.24)	0.48	352.9	413.00
2	323.42	31.23	0.867	0.50 ( 0.24)	0.48	430.2	430.00
3	308.01	33.56	0.838	0.50 ( 0.24)	0.48	439.5	400.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 12720.50 = 11352.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10389.45	15.27	1.310	0.50 ( 0.43)	0.86	3085.5	930.00
2	10350.01	21.64	1.083	0.50 ( 0.44)	0.88	4870.8	818.00
3	10324.77	23.47	1.030	0.50 ( 0.44)	0.89	5379.9	413.00
4	10241.26	28.01	0.924	0.50 ( 0.45)	0.90	6621.9	12710.00
5	10238.97	28.09	0.922	0.50 ( 0.45)	0.90	6643.7	600.00
6	10193.27	31.23	0.867	0.50 ( 0.45)	0.90	7508.3	430.00
7	10147.59	33.56	0.838	0.50 ( 0.45)	0.91	8138.0	400.00
8	9771.32	54.87	0.643	0.50 ( 0.47)	0.95	13798.4	11801.00
9	9603.21	66.08	0.591	0.50 ( 0.48)	0.95	17030.9	11500.00
10	9500.57	71.71	0.572	0.50 ( 0.48)	0.96	18966.0	11701.00
11	9351.38	77.89	0.551	0.50 ( 0.48)	0.96	21075.4	11000.00
12	9018.58	94.11	0.502	0.50 ( 0.49)	0.97	27941.0	12500.00
13	8821.27	100.21	0.490	0.50 ( 0.49)	0.97	30810.4	10900.00
14	8172.50	108.65	0.474	0.50 ( 0.49)	0.98	34139.6	11130.00
15	7496.61	119.86	0.452	0.50 ( 0.49)	0.98	37812.2	11620.00

16	6449.71	135.21	0.433	0.50 ( 0.49)	0.98	42337.9	12400.00
17	5608.52	146.20	0.420	0.50 ( 0.49)	0.98	44644.1	12201.00
18	5002.81	155.15	0.409	0.50 ( 0.49)	0.98	45934.8	12111.00
19	4087.47	170.20	0.391	0.50 ( 0.49)	0.98	47857.7	12261.00
20	3620.01	179.08	0.380	0.50 ( 0.49)	0.98	48668.8	10200.00
21	3054.47	193.86	0.371	0.50 ( 0.49)	0.98	49906.7	10300.00
22	2824.57	200.43	0.368	0.50 ( 0.49)	0.98	50258.9	12010.00
23	2355.29	220.17	0.357	0.50 ( 0.49)	0.98	50587.3	12000.00
24	1397.47	286.39	0.321	0.50 ( 0.49)	0.98	51258.1	10100.00

TOTAL AREA (ACRES) = 51258.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 10389.45 Tc (MIN.) = 15.273  
EFFECTIVE AREA (ACRES) = 3085.46 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 51258.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*

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

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

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 258.00 DOWNSTREAM (FEET) = 256.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 438.77 CHANNEL SLOPE = 0.0046  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 10389.45  
FLOW VELOCITY (FEET/SEC.) = 13.07 FLOW DEPTH (FEET) = 16.28  
TRAVEL TIME (MIN.) = 0.56 Tc (MIN.) = 15.83  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12721.00 TO NODE 12722.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 256.00 DOWNSTREAM (FEET) = 255.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 830.42 CHANNEL SLOPE = 0.0012  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY ( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.228  
SUBAREA LOSS RATE DATA (AMC II):



DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 11.24 0.50 0.100 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10395.40  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.66  
 AVERAGE FLOW DEPTH(FEET) = 20.00 TRAVEL TIME(MIN.) = 1.60  
 Tc(MIN.) = 17.43  
 SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 11.91  
 EFFECTIVE AREA(ACRES) = 3096.70 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 51269.3 PEAK FLOW RATE(CFS) = 10389.45  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

====>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
 CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
 ALLOWABLE DEPTH).  
 AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
 ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 20.00 FLOW VELOCITY(FEET/SEC.) = 8.66

==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc(MIN.) = 17.43  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.228  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 2.10 0.50 1.000 -  
 USER-DEFINED - 0.10 0.50 1.000 -  
 USER-DEFINED - 3.60 0.50 1.000 -  
 USER-DEFINED - 4.10 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 6.48  
 EFFECTIVE AREA(ACRES) = 3106.60 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 51279.2 PEAK FLOW RATE(CFS) = 10389.45  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc(MIN.) = 17.43  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.228

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.60 0.50 0.900 -  
 USER-DEFINED - 1.90 0.50 1.000 -  
 USER-DEFINED - 0.10 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977  
 SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 1.73  
 EFFECTIVE AREA(ACRES) = 3109.20 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 51281.8 PEAK FLOW RATE(CFS) = 10389.45  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.198

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 1.50 0.50 0.100 -  
 USER-DEFINED - 2.50 0.50 1.000 -  
 USER-DEFINED - 0.50 0.50 1.000 -  
 USER-DEFINED - 0.70 0.50 1.000 -  
 USER-DEFINED - 6.20 0.50 1.000 -  
 USER-DEFINED - 6.50 0.50 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.925  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10395.37  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.16  
 AVERAGE FLOW DEPTH(FEET) = 16.22 TRAVEL TIME(MIN.) = 0.79  
 Tc(MIN.) = 18.22  
 SUBAREA AREA(ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 11.84  
 EFFECTIVE AREA(ACRES) = 3127.10 AREA-AVERAGED Fm(INCH/HR) = 0.43  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA(ACRES) = 51299.7 PEAK FLOW RATE(CFS) = 10389.45  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 16.22 FLOW VELOCITY(FEET/SEC.) = 13.16  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc(MIN.) = 18.22  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.198  
 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
USER-DEFINED       -         4.70   0.50  1.000 -
USER-DEFINED       -         6.70   0.50  1.000 -
USER-DEFINED       -        12.00  0.50  1.000 -
USER-DEFINED       -         0.80   0.50  1.000 -
USER-DEFINED       -        20.20  0.50  1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 44.40 SUBAREA RUNOFF(CFS) = 27.87
EFFECTIVE AREA(ACRES) = 3171.50 AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 51344.1 PEAK FLOW RATE(CFS) = 10389.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
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TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 18.22
RAINFALL INTENSITY(INCH/HR) = 1.20
AREA-AVERAGED Fm(INCH/HR) = 0.43
AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.86
EFFECTIVE STREAM AREA(ACRES) = 3171.50
TOTAL STREAM AREA(ACRES) = 51344.12
PEAK FLOW RATE(CFS) AT CONFLUENCE = 10389.45

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

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

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.823
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL  AREA   Fp   Ap   SCS   Tc
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" -         6.33   0.50  1.000  0  13.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 5.32
TOTAL AREA(ACRES) = 6.33 PEAK FLOW RATE(CFS) = 5.32

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*****
FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
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=====
ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40
CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.226

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SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL  AREA   Fp   Ap   SCS
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -        34.62  0.50  0.100 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.43
AVERAGE FLOW DEPTH(FEET) = 1.33 TRAVEL TIME(MIN.) = 3.65
Tc(MIN.) = 17.48
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 36.64
EFFECTIVE AREA(ACRES) = 40.95 AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.24
TOTAL AREA(ACRES) = 40.9 PEAK FLOW RATE(CFS) = 40.77

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.64 FLOW VELOCITY(FEET/SEC.) = 5.08
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

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*****
FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
-----

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```

ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.104
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL  AREA   Fp   Ap   SCS
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -        59.52  0.50  0.100 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 69.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.64
AVERAGE FLOW DEPTH(FEET) = 2.02 TRAVEL TIME(MIN.) = 3.41
Tc(MIN.) = 20.89
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 56.47
EFFECTIVE AREA(ACRES) = 100.47 AREA-AVERAGED Fm(INCH/HR) = 0.08
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.16
TOTAL AREA(ACRES) = 100.5 PEAK FLOW RATE(CFS) = 92.75

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.26 FLOW VELOCITY(FEET/SEC.) = 6.08
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12733.00 = 2689.86 FEET.

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*****
FLOW PROCESS FROM NODE 12733.00 TO NODE 12734.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 431.00 DOWNSTREAM(FEET) = 367.10  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1654.48 CHANNEL SLOPE = 0.0386  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 64.05 0.50 0.100 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 119.28  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.66  
 AVERAGE FLOW DEPTH(FEET) = 2.65 TRAVEL TIME(MIN.) = 4.87  
 Tc(MIN.) = 25.76  
 SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 53.00  
 EFFECTIVE AREA(ACRES) = 164.52 AREA-AVERAGED Fm(INCH/HR) = 0.07  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.13  
 TOTAL AREA(ACRES) = 164.5 PEAK FLOW RATE(CFS) = 133.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.76 FLOW VELOCITY(FEET/SEC.) = 5.83  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12734.00 = 4344.34 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12734.00 TO NODE 12740.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 367.11 DOWNSTREAM(FEET) = 252.10  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1880.98 CHANNEL SLOPE = 0.0611  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.880

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 26.02 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 138.02  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.99  
 AVERAGE FLOW DEPTH(FEET) = 2.57 TRAVEL TIME(MIN.) = 4.49  
 Tc(MIN.) = 30.25  
 SUBAREA AREA(ACRES) = 26.02 SUBAREA RUNOFF(CFS) = 8.89  
 EFFECTIVE AREA(ACRES) = 190.54 AREA-AVERAGED Fm(INCH/HR) = 0.13  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.25  
 TOTAL AREA(ACRES) = 190.5 PEAK FLOW RATE(CFS) = 133.57  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.54 FLOW VELOCITY(FEET/SEC.) = 6.92  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 30.25  
 RAINFALL INTENSITY(INCH/HR) = 0.88  
 AREA-AVERAGED Fm(INCH/HR) = 0.13  
 AREA-AVERAGED Fp(INCH/HR) = 0.50  
 AREA-AVERAGED Ap = 0.25  
 EFFECTIVE STREAM AREA(ACRES) = 190.54  
 TOTAL STREAM AREA(ACRES) = 190.54  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 133.57

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10389.45	18.22	1.198	0.50( 0.43)	0.86	3171.5	930.00
1	10350.01	24.59	0.997	0.50( 0.44)	0.88	4956.8	818.00
1	10324.77	26.42	0.956	0.50( 0.44)	0.89	5465.9	413.00
1	10241.26	30.98	0.871	0.50( 0.45)	0.90	6707.9	12710.00
1	10238.97	31.07	0.869	0.50( 0.45)	0.90	6729.8	600.00
1	10193.27	34.21	0.830	0.50( 0.45)	0.90	7594.3	430.00
1	10147.59	36.56	0.800	0.50( 0.45)	0.91	8224.0	400.00
1	9771.32	57.94	0.625	0.50( 0.47)	0.95	13884.5	11801.00
1	9603.21	69.19	0.581	0.50( 0.48)	0.95	17117.0	11500.00
1	9500.57	74.84	0.562	0.50( 0.48)	0.96	19052.1	11701.00
1	9351.38	81.05	0.540	0.50( 0.48)	0.96	21161.5	11000.00
1	9018.58	97.32	0.496	0.50( 0.49)	0.97	28027.1	12500.00
1	8821.27	103.43	0.484	0.50( 0.49)	0.97	30896.5	10900.00
1	8172.50	111.94	0.468	0.50( 0.49)	0.98	34225.7	11130.00
1	7496.61	123.22	0.448	0.50( 0.49)	0.98	37898.2	11620.00
1	6449.71	138.70	0.429	0.50( 0.49)	0.98	42424.0	12400.00
1	5608.52	149.81	0.416	0.50( 0.49)	0.98	44730.2	12201.00
1	5002.81	158.87	0.405	0.50( 0.49)	0.98	46020.8	12111.00
1	4087.47	174.10	0.386	0.50( 0.49)	0.98	47943.7	12261.00
1	3620.01	183.11	0.377	0.50( 0.49)	0.98	48754.8	10200.00
1	3054.47	198.07	0.369	0.50( 0.49)	0.98	49992.8	10300.00
1	2824.57	204.71	0.366	0.50( 0.49)	0.98	50345.0	12010.00
1	2355.29	224.65	0.355	0.50( 0.49)	0.98	50673.3	12000.00
1	1397.47	291.50	0.318	0.50( 0.49)	0.98	51344.1	10100.00
2	133.57	30.25	0.880	0.50( 0.13)	0.25	190.5	12730.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10503.84	18.22	1.198	0.50( 0.42)	0.84	3286.3	930.00
2	10475.46	24.59	0.997	0.50( 0.43)	0.86	5111.7	818.00
3	10453.24	26.42	0.956	0.50( 0.43)	0.87	5632.4	413.00
4	10388.24	30.25	0.880	0.50( 0.44)	0.88	6699.1	12730.00
5	10373.18	30.98	0.871	0.50( 0.44)	0.88	6898.4	12710.00
6	10370.71	31.07	0.869	0.50( 0.44)	0.88	6920.3	600.00

7	10317.92	34.21	0.830	0.50	( 0.44)	0.89	7784.9	430.00
8	10266.96	36.56	0.800	0.50	( 0.45)	0.89	8414.5	400.00
9	9859.64	57.94	0.625	0.50	( 0.47)	0.94	14075.0	11801.00
10	9683.75	69.19	0.581	0.50	( 0.47)	0.95	17307.5	11500.00
11	9577.72	74.84	0.562	0.50	( 0.48)	0.95	19242.6	11701.00
12	9424.78	81.05	0.540	0.50	( 0.48)	0.96	21352.0	11000.00
13	9084.27	97.32	0.496	0.50	( 0.48)	0.97	28217.6	12500.00
14	8885.39	103.43	0.484	0.50	( 0.48)	0.97	31087.0	10900.00
15	8234.45	111.94	0.468	0.50	( 0.49)	0.97	34416.2	11130.00
16	7555.97	123.22	0.448	0.50	( 0.49)	0.97	38088.7	11620.00
17	6506.58	138.70	0.429	0.50	( 0.49)	0.97	42614.5	12400.00
18	5663.59	149.81	0.416	0.50	( 0.49)	0.97	44920.7	12201.00
19	5056.42	158.87	0.405	0.50	( 0.49)	0.98	46211.3	12111.00
20	4138.63	174.10	0.386	0.50	( 0.49)	0.98	48134.2	12261.00
21	3669.99	183.11	0.377	0.50	( 0.49)	0.98	48945.4	10200.00
22	3103.37	198.07	0.369	0.50	( 0.49)	0.98	50183.3	10300.00
23	2872.99	204.71	0.366	0.50	( 0.49)	0.98	50535.5	12010.00
24	2402.28	224.65	0.355	0.50	( 0.49)	0.98	50863.9	12000.00
25	1439.63	291.50	0.318	0.50	( 0.49)	0.98	51534.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 10503.84 Tc(MIN.) = 18.22  
EFFECTIVE AREA(ACRES) = 3286.26 AREA-AVERAGED Fm(INCH/HR) = 0.42  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84  
TOTAL AREA(ACRES) = 51534.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12741.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 247.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 401.47 CHANNEL SLOPE = 0.0127  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 10503.84  
FLOW VELOCITY(FEET/SEC.) = 19.24 FLOW DEPTH(FEET) = 13.49  
TRAVEL TIME(MIN.) = 0.35 Tc(MIN.) = 18.57  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 18.57

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.184

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.10	0.50	0.100	-
USER-DEFINED	-	7.50	0.50	1.000	-
USER-DEFINED	-	0.90	0.50	1.000	-
USER-DEFINED	-	1.90	0.50	0.850	-
USER-DEFINED	-	0.40	0.50	0.900	-
USER-DEFINED	-	0.50	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.833  
SUBAREA AREA(ACRES) = 13.30 SUBAREA RUNOFF(CFS) = 9.19  
EFFECTIVE AREA(ACRES) = 3299.56 AREA-AVERAGED Fm(INCH/HR) = 0.42  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84  
TOTAL AREA(ACRES) = 51548.0 PEAK FLOW RATE(CFS) = 10503.84  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 18.57

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.184

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.90	0.50	1.000	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 0.55					
EFFECTIVE AREA(ACRES) = 3300.46 AREA-AVERAGED Fm(INCH/HR) = 0.42					
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84					
TOTAL AREA(ACRES) = 51548.9 PEAK FLOW RATE(CFS) = 10503.84					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: 3C05EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	532.55	20.27	0.50( 0.23)	0.46	630.1	300.00
2	533.26	25.89	0.50( 0.23)	0.47	762.0	327.00
3	519.94	27.14	0.50( 0.24)	0.47	775.5	350.00
4	500.35	28.77	0.50( 0.24)	0.47	789.5	320.00
5	457.40	32.87	0.50( 0.24)	0.48	812.5	306.00
6	367.00	46.47	0.50( 0.25)	0.50	870.6	390.00
TOTAL AREA(ACRES) =					870.6	

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10503.84	18.57	1.184	0.50( 0.42)	0.84	3300.5	930.00
2	10475.46	24.94	0.987	0.50( 0.43)	0.86	5125.9	818.00
3	10453.24	26.77	0.949	0.50( 0.43)	0.87	5646.6	413.00
4	10388.24	30.60	0.875	0.50( 0.44)	0.88	6713.3	12730.00
5	10373.18	31.33	0.866	0.50( 0.44)	0.88	6912.6	12710.00

6	10370.71	31.42	0.865	0.50 ( 0.44)	0.88	6934.5	600.00
7	10317.92	34.56	0.825	0.50 ( 0.44)	0.89	7799.1	430.00
8	10266.96	36.91	0.795	0.50 ( 0.45)	0.89	8428.7	400.00
9	9859.64	58.29	0.622	0.50 ( 0.47)	0.94	14089.2	11801.00
10	9683.75	69.54	0.580	0.50 ( 0.47)	0.95	17321.7	11500.00
11	9577.72	75.19	0.560	0.50 ( 0.48)	0.95	19256.8	11701.00
12	9424.78	81.40	0.539	0.50 ( 0.48)	0.96	21366.2	11000.00
13	9084.27	97.68	0.495	0.50 ( 0.48)	0.97	28231.8	12500.00
14	8885.39	103.79	0.483	0.50 ( 0.48)	0.97	31101.2	10900.00
15	8234.45	112.31	0.467	0.50 ( 0.49)	0.97	34430.4	11130.00
16	7555.97	123.60	0.448	0.50 ( 0.49)	0.97	38102.9	11620.00
17	6506.58	139.09	0.429	0.50 ( 0.49)	0.97	42628.7	12400.00
18	5663.59	150.21	0.415	0.50 ( 0.49)	0.97	44934.9	12201.00
19	5056.42	159.29	0.404	0.50 ( 0.49)	0.97	46225.5	12111.00
20	4138.63	174.54	0.386	0.50 ( 0.49)	0.98	48148.4	12261.00
21	3669.99	183.56	0.377	0.50 ( 0.49)	0.98	48959.6	10200.00
22	3103.37	198.54	0.369	0.50 ( 0.49)	0.98	50197.5	10300.00
23	2872.99	205.19	0.365	0.50 ( 0.49)	0.98	50549.7	12010.00
24	2402.28	225.15	0.354	0.50 ( 0.49)	0.98	50878.1	12000.00
25	1439.63	292.07	0.318	0.50 ( 0.49)	0.98	51548.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	532.55	20.27	1.122	0.50 ( 0.23)	0.46	630.1	300.00
2	533.26	25.89	0.967	0.50 ( 0.23)	0.47	762.0	327.00
3	519.94	27.14	0.941	0.50 ( 0.24)	0.47	775.5	350.00
4	500.35	28.77	0.908	0.50 ( 0.24)	0.47	789.5	320.00
5	457.40	32.87	0.847	0.50 ( 0.24)	0.48	812.5	306.00
6	367.00	46.47	0.702	0.50 ( 0.25)	0.50	870.6	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12741.00 = 15238.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11025.69	18.57	1.184	0.50 ( 0.39)	0.78	3877.5	930.00
2	11028.80	20.27	1.122	0.50 ( 0.39)	0.79	4418.9	300.00
3	11008.60	24.94	0.987	0.50 ( 0.41)	0.81	5865.5	818.00
4	10997.14	25.89	0.967	0.50 ( 0.41)	0.82	6159.1	327.00
5	10977.10	26.77	0.949	0.50 ( 0.41)	0.82	6418.1	413.00
6	10966.95	27.14	0.941	0.50 ( 0.41)	0.82	6524.4	350.00
7	10919.74	28.77	0.908	0.50 ( 0.41)	0.83	6991.6	320.00
8	10869.38	30.60	0.875	0.50 ( 0.42)	0.83	7513.0	12730.00
9	10846.67	31.33	0.866	0.50 ( 0.42)	0.84	7716.5	12710.00
10	10843.30	31.42	0.865	0.50 ( 0.42)	0.84	7738.8	600.00
11	10803.75	32.87	0.847	0.50 ( 0.42)	0.84	8145.8	306.00
12	10764.05	34.56	0.825	0.50 ( 0.42)	0.85	8618.8	430.00
13	10697.52	36.91	0.795	0.50 ( 0.43)	0.86	9258.5	400.00
14	10451.73	46.47	0.702	0.50 ( 0.44)	0.88	11831.8	390.00
15	10161.70	58.29	0.622	0.50 ( 0.46)	0.91	14959.8	11801.00
16	9950.95	69.54	0.580	0.50 ( 0.46)	0.93	18192.3	11500.00
17	9829.28	75.19	0.560	0.50 ( 0.47)	0.93	20127.4	11701.00
18	9659.17	81.40	0.539	0.50 ( 0.47)	0.94	22236.8	11000.00
19	9284.88	97.68	0.495	0.50 ( 0.48)	0.95	29102.4	12500.00
20	9081.21	103.79	0.483	0.50 ( 0.48)	0.96	31971.8	10900.00
21	8423.59	112.31	0.467	0.50 ( 0.48)	0.96	35301.0	11130.00
22	7737.32	123.60	0.448	0.50 ( 0.48)	0.96	38973.5	11620.00

23	6680.29	139.09	0.429	0.50 ( 0.48)	0.96	43499.3	12400.00
24	5831.82	150.21	0.415	0.50 ( 0.48)	0.97	45805.5	12201.00
25	5220.18	159.29	0.404	0.50 ( 0.48)	0.97	47096.1	12111.00
26	4294.87	174.54	0.386	0.50 ( 0.48)	0.97	49019.0	12261.00
27	3822.76	183.56	0.377	0.50 ( 0.48)	0.97	49830.2	10200.00
28	3252.83	198.54	0.369	0.50 ( 0.48)	0.97	51068.1	10300.00
29	3020.99	205.19	0.365	0.50 ( 0.48)	0.97	51420.3	12010.00
30	2545.87	225.15	0.354	0.50 ( 0.48)	0.97	51748.7	12000.00
31	1568.46	292.07	0.318	0.50 ( 0.48)	0.97	52419.5	10100.00

TOTAL AREA (ACRES) = 52419.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 11028.80 Tc (MIN.) = 20.273  
EFFECTIVE AREA (ACRES) = 4418.90 AREA-AVERAGED Fm (INCH/HR) = 0.39  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
TOTAL AREA (ACRES) = 52419.5  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<<  
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\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<  
=====

ELEVATION DATA: UPSTREAM (FEET) = 247.00 DOWNSTREAM (FEET) = 240.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 819.00 CHANNEL SLOPE = 0.0085  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 11028.80  
FLOW VELOCITY (FEET/SEC.) = 16.79 FLOW DEPTH (FEET) = 14.80  
TRAVEL TIME (MIN.) = 0.81 Tc (MIN.) = 21.09  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
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MAINLINE Tc (MIN.) = 21.09  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.099  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 17.31 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 17.31 SUBAREA RUNOFF (CFS) = 9.32  
EFFECTIVE AREA (ACRES) = 4436.21 AREA-AVERAGED Fm (INCH/HR) = 0.39  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 52436.8 PEAK FLOW RATE (CFS) = 11028.80  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
=====

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52436.8 TC (MIN.) = 21.09  
 EFFECTIVE AREA (ACRES) = 4436.21 AREA-AVERAGED Fm (INCH/HR) = 0.39  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.789  
 PEAK FLOW RATE (CFS) = 11028.80

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11025.69	19.38	1.154	0.50 ( 0.39)	0.78	3894.9	930.00
2	11028.80	21.09	1.099	0.50 ( 0.39)	0.79	4436.2	300.00
3	11008.60	25.75	0.970	0.50 ( 0.41)	0.81	5882.8	818.00
4	10997.14	26.71	0.950	0.50 ( 0.41)	0.82	6176.4	327.00
5	10977.10	27.59	0.932	0.50 ( 0.41)	0.82	6435.4	413.00
6	10966.95	27.95	0.925	0.50 ( 0.41)	0.82	6541.7	350.00
7	10919.74	29.58	0.892	0.50 ( 0.41)	0.83	7008.9	320.00
8	10869.38	31.41	0.865	0.50 ( 0.42)	0.83	7530.3	12730.00
9	10846.67	32.15	0.856	0.50 ( 0.42)	0.84	7733.8	12710.00
10	10843.30	32.23	0.855	0.50 ( 0.42)	0.84	7756.2	600.00
11	10803.75	33.68	0.836	0.50 ( 0.42)	0.84	8163.1	306.00
12	10764.05	35.38	0.815	0.50 ( 0.42)	0.85	8636.1	430.00
13	10697.52	37.73	0.785	0.50 ( 0.43)	0.86	9275.8	400.00
14	10451.73	47.30	0.695	0.50 ( 0.44)	0.88	11849.1	390.00
15	10161.70	59.12	0.617	0.50 ( 0.46)	0.91	14977.1	11801.00
16	9950.95	70.38	0.577	0.50 ( 0.46)	0.93	18209.6	11500.00
17	9829.28	76.03	0.558	0.50 ( 0.47)	0.93	20144.7	11701.00
18	9659.17	82.24	0.536	0.50 ( 0.47)	0.94	22254.1	11000.00
19	9284.88	98.53	0.494	0.50 ( 0.48)	0.95	29119.7	12500.00
20	9081.21	104.65	0.482	0.50 ( 0.48)	0.96	31989.1	10900.00
21	8423.59	113.18	0.465	0.50 ( 0.48)	0.96	35318.3	11130.00
22	7737.32	124.49	0.447	0.50 ( 0.48)	0.96	38990.8	11620.00
23	6680.29	140.01	0.428	0.50 ( 0.48)	0.96	43516.6	12400.00
24	5831.82	151.17	0.414	0.50 ( 0.48)	0.97	45822.8	12201.00
25	5220.18	160.27	0.403	0.50 ( 0.48)	0.97	47113.4	12111.00
26	4294.87	175.57	0.384	0.50 ( 0.48)	0.97	49036.3	12261.00
27	3822.76	184.62	0.376	0.50 ( 0.48)	0.97	49847.5	10200.00
28	3252.83	199.64	0.368	0.50 ( 0.48)	0.97	51085.4	10300.00
29	3020.99	206.32	0.365	0.50 ( 0.48)	0.97	51437.6	12010.00
30	2545.87	226.33	0.354	0.50 ( 0.48)	0.97	51766.0	12000.00
31	1568.46	293.40	0.317	0.50 ( 0.48)	0.97	52436.8	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S28- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV28.DAT  
TIME/DATE OF STUDY: 11:32 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.715
- 2) 10.00; 1.802
- 3) 15.00; 1.320
- 4) 20.00; 1.130
- 5) 25.00; 0.985
- 6) 30.00; 0.883
- 7) 40.00; 0.756
- 8) 50.00; 0.673
- 9) 60.00; 0.612
- 10) 90.00; 0.510
- 11) 120.00; 0.452
- 12) 180.00; 0.379
- 13) 360.00; 0.281
- 14) 1200.00; 0.124

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU05EV27.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11028.80	21.09	0.50 ( 0.39)	0.79	4436.2	300.00
2	10803.75	33.68	0.50 ( 0.42)	0.84	8163.1	306.00
3	10451.73	47.30	0.50 ( 0.44)	0.88	11849.1	390.00
4	10161.70	59.12	0.50 ( 0.46)	0.91	14977.1	11801.00
5	9950.95	70.38	0.50 ( 0.46)	0.93	18209.6	11500.00
6	9829.28	76.03	0.50 ( 0.47)	0.93	20144.7	11701.00
7	9659.17	82.24	0.50 ( 0.47)	0.94	22254.1	11000.00
8	9284.88	98.53	0.50 ( 0.48)	0.95	29119.7	12500.00
9	9081.21	104.65	0.50 ( 0.48)	0.96	31989.1	10900.00
10	8423.59	113.18	0.50 ( 0.48)	0.96	35318.3	11130.00
11	7737.32	124.49	0.50 ( 0.48)	0.96	38990.8	11620.00
12	6680.29	140.01	0.50 ( 0.48)	0.96	43516.6	12400.00
13	5831.82	151.17	0.50 ( 0.48)	0.97	45822.8	12201.00
14	5220.18	160.27	0.50 ( 0.48)	0.97	47113.4	12111.00
15	4294.87	175.57	0.50 ( 0.48)	0.97	49036.3	12261.00
16	3822.76	184.62	0.50 ( 0.48)	0.97	49847.5	10200.00
17	3252.83	199.64	0.50 ( 0.48)	0.97	51085.4	10300.00
18	3020.99	206.32	0.50 ( 0.48)	0.97	51437.6	12010.00
19	2545.87	226.33	0.50 ( 0.48)	0.97	51766.0	12000.00
20	1568.46	293.40	0.50 ( 0.48)	0.97	52436.8	10100.00
TOTAL AREA (ACRES) =						52436.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: P501XX05.DNA  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	132.46	14.68	0.50 ( 0.42)	0.84	171.0	50110.00
2	129.35	20.00	0.50 ( 0.43)	0.85	223.2	50100.00
TOTAL AREA (ACRES) =						223.2

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1 132.46 14.68 0.50( 0.42) 0.84 171.0 50110.00  
 2 129.35 20.00 0.50( 0.43) 0.85 223.2 50100.00  
 TOTAL AREA(ACRES) = 223.2

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	132.46	14.68	1.350	0.50( 0.42)	0.84	171.0	50110.00
2	129.35	20.00	1.130	0.50( 0.43)	0.85	223.2	50100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11028.80	21.09	1.099	0.50( 0.39)	0.79	4436.2	300.00
2	10803.75	33.68	0.836	0.50( 0.42)	0.84	8163.1	306.00
3	10451.73	47.30	0.695	0.50( 0.44)	0.88	11849.1	390.00
4	10161.70	59.12	0.617	0.50( 0.46)	0.91	14977.1	11801.00
5	9950.95	70.38	0.577	0.50( 0.46)	0.93	18209.6	11500.00
6	9829.28	76.03	0.558	0.50( 0.47)	0.93	20144.7	11701.00
7	9659.17	82.24	0.536	0.50( 0.47)	0.94	22254.1	11000.00
8	9284.88	98.53	0.494	0.50( 0.48)	0.95	29119.7	12500.00
9	9081.21	104.65	0.482	0.50( 0.48)	0.96	31989.1	10900.00
10	8423.59	113.18	0.465	0.50( 0.48)	0.96	35318.3	11130.00
11	7737.32	124.49	0.447	0.50( 0.48)	0.96	38990.8	11620.00
12	6680.29	140.01	0.428	0.50( 0.48)	0.96	43516.6	12400.00
13	5831.82	151.17	0.414	0.50( 0.48)	0.97	45822.8	12201.00
14	5220.18	160.27	0.403	0.50( 0.48)	0.97	47113.4	12111.00
15	4294.87	175.57	0.384	0.50( 0.48)	0.97	49036.3	12261.00
16	3822.76	184.62	0.376	0.50( 0.48)	0.97	49847.5	10200.00
17	3252.83	199.64	0.368	0.50( 0.48)	0.97	51085.4	10300.00
18	3020.99	206.32	0.365	0.50( 0.48)	0.97	51437.6	12010.00
19	2545.87	226.33	0.354	0.50( 0.48)	0.97	51766.0	12000.00
20	1568.46	293.40	0.317	0.50( 0.48)	0.97	52436.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10562.24	14.68	1.350	0.50( 0.40)	0.79	3260.4	50110.00
2	11058.43	20.00	1.130	0.50( 0.40)	0.79	4431.3	50100.00
3	11152.37	21.09	1.099	0.50( 0.40)	0.79	4659.4	300.00
4	10879.17	33.68	0.836	0.50( 0.42)	0.84	8386.3	306.00
5	10501.30	47.30	0.695	0.50( 0.44)	0.88	12072.3	390.00
6	10196.94	59.12	0.617	0.50( 0.45)	0.91	15200.3	11801.00
7	9978.72	70.38	0.577	0.50( 0.46)	0.92	18432.8	11500.00
8	9853.53	76.03	0.558	0.50( 0.47)	0.93	20367.9	11701.00
9	9679.54	82.24	0.536	0.50( 0.47)	0.94	22477.3	11000.00
10	9298.42	98.53	0.494	0.50( 0.48)	0.95	29342.9	12500.00
11	9094.42	104.65	0.482	0.50( 0.48)	0.95	32212.3	10900.00
12	8436.36	113.18	0.465	0.50( 0.48)	0.96	35541.5	11130.00
13	7749.58	124.49	0.447	0.50( 0.48)	0.96	39214.0	11620.00

14	6692.02	140.01	0.428	0.50( 0.48)	0.96	43739.8	12400.00
15	5843.19	151.17	0.414	0.50( 0.48)	0.97	46046.0	12201.00
16	5231.24	160.27	0.403	0.50( 0.48)	0.97	47336.6	12111.00
17	4305.42	175.57	0.384	0.50( 0.48)	0.97	49259.5	12261.00
18	3833.09	184.62	0.376	0.50( 0.48)	0.97	50070.7	10200.00
19	3262.94	199.64	0.368	0.50( 0.48)	0.97	51308.6	10300.00
20	3030.99	206.32	0.365	0.50( 0.48)	0.97	51660.8	12010.00
21	2555.58	226.33	0.354	0.50( 0.48)	0.97	51989.2	12000.00
22	1577.17	293.40	0.317	0.50( 0.48)	0.97	52660.0	10100.00

TOTAL AREA(ACRES) = 52660.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 11152.37 Tc(MIN.) = 21.086  
 EFFECTIVE AREA(ACRES) = 4659.41 AREA-AVERAGED Fm(INCH/HR) = 0.40  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 52660.0  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52660.0 TC(MIN.) = 21.09  
 EFFECTIVE AREA(ACRES) = 4659.41 AREA-AVERAGED Fm(INCH/HR) = 0.40  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.792  
 PEAK FLOW RATE(CFS) = 11152.37

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10562.24	14.68	1.350	0.50( 0.40)	0.79	3260.4	50110.00
2	11058.43	20.00	1.130	0.50( 0.40)	0.79	4431.3	50100.00
3	11152.37	21.09	1.099	0.50( 0.40)	0.79	4659.4	300.00
4	10879.17	33.68	0.836	0.50( 0.42)	0.84	8386.3	306.00
5	10501.30	47.30	0.695	0.50( 0.44)	0.88	12072.3	390.00
6	10196.94	59.12	0.617	0.50( 0.45)	0.91	15200.3	11801.00
7	9978.72	70.38	0.577	0.50( 0.46)	0.92	18432.8	11500.00
8	9853.53	76.03	0.558	0.50( 0.47)	0.93	20367.9	11701.00
9	9679.54	82.24	0.536	0.50( 0.47)	0.94	22477.3	11000.00
10	9298.42	98.53	0.494	0.50( 0.48)	0.95	29342.9	12500.00
11	9094.42	104.65	0.482	0.50( 0.48)	0.95	32212.3	10900.00
12	8436.36	113.18	0.465	0.50( 0.48)	0.96	35541.5	11130.00
13	7749.58	124.49	0.447	0.50( 0.48)	0.96	39214.0	11620.00
14	6692.02	140.01	0.428	0.50( 0.48)	0.96	43739.8	12400.00
15	5843.19	151.17	0.414	0.50( 0.48)	0.97	46046.0	12201.00
16	5231.24	160.27	0.403	0.50( 0.48)	0.97	47336.6	12111.00
17	4305.42	175.57	0.384	0.50( 0.48)	0.97	49259.5	12261.00
18	3833.09	184.62	0.376	0.50( 0.48)	0.97	50070.7	10200.00
19	3262.94	199.64	0.368	0.50( 0.48)	0.97	51308.6	10300.00
20	3030.99	206.32	0.365	0.50( 0.48)	0.97	51660.8	12010.00
21	2555.58	226.33	0.354	0.50( 0.48)	0.97	51989.2	12000.00
22	1577.17	293.40	0.317	0.50( 0.48)	0.97	52660.0	10100.00

END OF RATIONAL METHOD ANALYSIS





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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S29- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV29.DAT  
TIME/DATE OF STUDY: 11:32 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.698
- 2) 10.00; 1.792
- 3) 15.00; 1.316
- 4) 20.00; 1.127
- 5) 25.00; 0.982
- 6) 30.00; 0.881
- 7) 40.00; 0.754
- 8) 50.00; 0.671
- 9) 60.00; 0.610
- 10) 90.00; 0.507
- 11) 120.00; 0.449
- 12) 180.00; 0.377
- 13) 360.00; 0.279
- 14) 1200.00; 0.123

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU05EV28.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10562.24	14.68	0.50 ( 0.40)	0.79	3260.4	50110.00
2	11152.37	21.09	0.50 ( 0.40)	0.79	4659.4	300.00
3	10879.17	33.68	0.50 ( 0.42)	0.84	8386.3	306.00
4	10501.30	47.30	0.50 ( 0.44)	0.88	12072.3	390.00
5	10196.94	59.12	0.50 ( 0.45)	0.91	15200.3	11801.00
6	9978.72	70.38	0.50 ( 0.46)	0.92	18432.8	11500.00
7	9679.54	82.24	0.50 ( 0.47)	0.94	22477.3	11000.00
8	9298.42	98.53	0.50 ( 0.48)	0.95	29342.9	12500.00
9	9094.42	104.65	0.50 ( 0.48)	0.95	32212.3	10900.00
10	8436.36	113.18	0.50 ( 0.48)	0.96	35541.5	11130.00
11	7749.58	124.49	0.50 ( 0.48)	0.96	39214.0	11620.00
12	6692.02	140.01	0.50 ( 0.48)	0.96	43739.8	12400.00
13	5843.19	151.17	0.50 ( 0.48)	0.97	46046.0	12010.00
14	5231.24	160.27	0.50 ( 0.48)	0.97	47336.6	12111.00
15	4305.42	175.57	0.50 ( 0.48)	0.97	49259.5	12261.00
16	3833.09	184.62	0.50 ( 0.48)	0.97	50070.7	10200.00
17	3262.94	199.64	0.50 ( 0.48)	0.97	51308.6	10300.00
18	3030.99	206.32	0.50 ( 0.48)	0.97	51660.8	12010.00
19	2555.58	226.33	0.50 ( 0.48)	0.97	51989.2	12000.00
20	1577.17	293.40	0.50 ( 0.48)	0.97	52660.0	10100.00
TOTAL AREA (ACRES) =						52660.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10562.24	14.68	0.50 ( 0.40)	0.79	3260.4	50110.00
2	11152.37	21.09	0.50 ( 0.40)	0.79	4659.4	300.00
3	10879.17	33.68	0.50 ( 0.42)	0.84	8386.3	306.00
4	10501.30	47.30	0.50 ( 0.44)	0.88	12072.3	390.00
5	10196.94	59.12	0.50 ( 0.45)	0.91	15200.3	11801.00
6	9978.72	70.38	0.50 ( 0.46)	0.92	18432.8	11500.00
7	9679.54	82.24	0.50 ( 0.47)	0.94	22477.3	11000.00
8	9298.42	98.53	0.50 ( 0.48)	0.95	29342.9	12500.00
9	9094.42	104.65	0.50 ( 0.48)	0.95	32212.3	10900.00
10	8436.36	113.18	0.50 ( 0.48)	0.96	35541.5	11130.00
11	7749.58	124.49	0.50 ( 0.48)	0.96	39214.0	11620.00
12	6692.02	140.01	0.50 ( 0.48)	0.96	43739.8	12400.00
13	5843.19	151.17	0.50 ( 0.48)	0.97	46046.0	12201.00

14	5231.24	160.27	0.50	( 0.48)	0.97	47336.6	12111.00
15	4305.42	175.57	0.50	( 0.48)	0.97	49259.5	12261.00
16	3833.09	184.62	0.50	( 0.48)	0.97	50070.7	10200.00
17	3262.94	199.64	0.50	( 0.48)	0.97	51308.6	10300.00
18	3030.99	206.32	0.50	( 0.48)	0.97	51660.8	12010.00
19	2555.58	226.33	0.50	( 0.48)	0.97	51989.2	12000.00
20	1577.17	293.40	0.50	( 0.48)	0.97	52660.0	10100.00

TOTAL AREA(ACRES) = 52660.0

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 240.00 DOWNSTREAM(FEET) = 216.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 3120.28 CHANNEL SLOPE = 0.0077  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 11152.37  
FLOW VELOCITY(FEET/SEC.) = 16.18 FLOW DEPTH(FEET) = 15.16  
TRAVEL TIME(MIN.) = 3.21 Tc(MIN.) = 24.30  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 24.30  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.60	0.50	0.100	-
USER-DEFINED	-	3.20	0.50	0.100	-
USER-DEFINED	-	1.50	0.50	0.850	-
USER-DEFINED	-	5.60	0.50	0.100	-
USER-DEFINED	-	6.50	0.50	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.409  
SUBAREA AREA(ACRES) = 19.40 SUBAREA RUNOFF(CFS) = 13.93  
EFFECTIVE AREA(ACRES) = 4678.81 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA(ACRES) = 52679.4 PEAK FLOW RATE(CFS) = 11152.37  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 24.30  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.50	0.100	-
USER-DEFINED	-	4.10	0.50	0.850	-
USER-DEFINED	-	0.10	0.50	0.850	-
USER-DEFINED	-	1.60	0.50	0.900	-
USER-DEFINED	-	0.60	0.50	0.900	-
USER-DEFINED	-	1.00	0.50	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.823  
SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 4.20  
EFFECTIVE AREA(ACRES) = 4686.71 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA(ACRES) = 52687.3 PEAK FLOW RATE(CFS) = 11152.37  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 24.30  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.60	0.50	0.900	-
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	12.00	0.50	1.000	-
USER-DEFINED	-	36.10	0.50	0.850	-
USER-DEFINED	-	15.90	0.50	1.000	-
USER-DEFINED	-	1.50	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA(ACRES) = 69.40 SUBAREA RUNOFF(CFS) = 33.96  
EFFECTIVE AREA(ACRES) = 4756.11 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA(ACRES) = 52756.7 PEAK FLOW RATE(CFS) = 11152.37  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 24.30  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.002  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.20	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	1.000	-
USER-DEFINED	-	1.00	0.50	1.000	-
USER-DEFINED	-	4.10	0.50	0.500	-
USER-DEFINED	-	3.70	0.50	0.500	-

USER-DEFINED - 0.40 0.50 0.500 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.703  
 SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 8.08  
 EFFECTIVE AREA (ACRES) = 4769.91 AREA-AVERAGED Fm (INCH/HR) = 0.40  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 52770.5 PEAK FLOW RATE (CFS) = 11152.37  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 24.30  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.002  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.70 0.50 1.000 -  
 USER-DEFINED - 1.20 0.50 1.000 -  
 USER-DEFINED - 2.90 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 4.88  
 EFFECTIVE AREA (ACRES) = 4780.71 AREA-AVERAGED Fm (INCH/HR) = 0.40  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 52781.3 PEAK FLOW RATE (CFS) = 11152.37  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12902.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 216.00 DOWNSTREAM (FEET) = 215.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 122.04 CHANNEL SLOPE = 0.0082  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 11152.37  
 FLOW VELOCITY (FEET/SEC.) = 16.57 FLOW DEPTH (FEET) = 14.98  
 TRAVEL TIME (MIN.) = 0.12 Tc (MIN.) = 24.42  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P503XX05.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	584.35	21.36	0.50 (0.37)	0.74	995.0	50320.00
2	579.24	23.33	0.50 (0.37)	0.74	1063.4	50240.00
3	575.13	24.07	0.50 (0.37)	0.74	1088.2	50330.00
4	554.36	27.47	0.50 (0.37)	0.74	1186.0	50280.00

5	543.27	28.48	0.50 (0.37)	0.74	1207.3	50300.00
6	509.57	31.04	0.50 (0.37)	0.74	1246.1	50220.00
7	422.48	37.74	0.50 (0.37)	0.74	1295.8	50260.00
8	402.34	39.31	0.50 (0.37)	0.74	1298.6	50200.00
TOTAL AREA (ACRES) =						1298.6

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10562.24	18.07	1.200	0.50 (0.40)	0.79	3381.7	50110.00
2	11152.37	24.42	0.999	0.50 (0.40)	0.79	4780.7	300.00
3	10879.17	37.04	0.792	0.50 (0.42)	0.84	8507.6	306.00
4	10501.30	50.68	0.667	0.50 (0.44)	0.88	12193.6	390.00
5	10196.94	62.53	0.601	0.50 (0.45)	0.91	15321.6	11801.00
6	9978.72	73.81	0.563	0.50 (0.46)	0.92	18554.1	11500.00
7	9679.54	85.70	0.522	0.50 (0.47)	0.94	22598.6	11000.00
8	9298.42	102.02	0.484	0.50 (0.48)	0.95	29464.2	12500.00
9	9094.42	108.16	0.472	0.50 (0.48)	0.95	32333.6	10900.00
10	8436.36	116.76	0.455	0.50 (0.48)	0.96	35662.8	11130.00
11	7749.58	128.14	0.439	0.50 (0.48)	0.96	39335.3	11620.00
12	6692.02	143.80	0.420	0.50 (0.48)	0.96	43861.1	12400.00
13	5843.19	155.09	0.407	0.50 (0.48)	0.96	46167.3	12201.00
14	5231.24	164.30	0.396	0.50 (0.48)	0.97	47457.9	12111.00
15	4305.42	179.81	0.377	0.50 (0.48)	0.97	49380.8	12261.00
16	3833.09	188.98	0.372	0.50 (0.48)	0.97	50192.0	10200.00
17	3262.94	204.18	0.364	0.50 (0.48)	0.97	51429.9	10300.00
18	3030.99	210.94	0.360	0.50 (0.48)	0.97	51782.1	12010.00
19	2555.58	231.15	0.349	0.50 (0.48)	0.97	52110.5	12000.00
20	1577.17	298.84	0.312	0.50 (0.48)	0.97	52781.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	584.35	21.36	1.087	0.50 (0.37)	0.74	995.0	50320.00
2	579.24	23.33	1.030	0.50 (0.37)	0.74	1063.4	50240.00
3	575.13	24.07	1.009	0.50 (0.37)	0.74	1088.2	50330.00
4	554.36	27.47	0.932	0.50 (0.37)	0.74	1186.0	50280.00
5	543.27	28.48	0.912	0.50 (0.37)	0.74	1207.3	50300.00
6	509.57	31.04	0.868	0.50 (0.37)	0.74	1246.1	50220.00
7	422.48	37.74	0.783	0.50 (0.37)	0.74	1295.8	50260.00
8	402.34	39.31	0.763	0.50 (0.37)	0.74	1298.6	50200.00

LONGEST FLOWPATH FROM NODE 50220.00 TO NODE 12902.00 = 17597.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11134.02	18.07	1.200	0.50 (0.39)	0.78	4223.1	50110.00
2	11452.67	21.36	1.087	0.50 (0.39)	0.78	5102.3	50320.00
3	11630.25	23.33	1.030	0.50 (0.39)	0.78	5603.8	50240.00
4	11694.75	24.07	1.009	0.50 (0.39)	0.78	5791.3	50330.00
5	11725.34	24.42	0.999	0.50 (0.39)	0.78	5879.1	300.00

6	11640.86	27.47	0.932	0.50	(0.40)	0.79	6865.4	50280.00
7	11607.70	28.48	0.912	0.50	(0.40)	0.80	7187.6	50300.00
8	11518.60	31.04	0.868	0.50	(0.40)	0.81	7982.2	50220.00
9	11310.76	37.04	0.792	0.50	(0.41)	0.83	9798.1	306.00
10	11282.25	37.74	0.783	0.50	(0.42)	0.83	9992.6	50260.00
11	11218.57	39.31	0.763	0.50	(0.42)	0.84	10420.1	50200.00
12	10805.14	50.68	0.667	0.50	(0.43)	0.87	13492.2	390.00
13	10433.48	62.53	0.601	0.50	(0.45)	0.90	16620.2	11801.00
14	10175.49	73.81	0.563	0.50	(0.46)	0.91	19852.7	11500.00
15	9834.37	85.70	0.522	0.50	(0.46)	0.93	23897.2	11000.00
16	9426.74	102.02	0.484	0.50	(0.47)	0.94	30762.8	12500.00
17	9219.59	108.16	0.472	0.50	(0.47)	0.95	33632.2	10900.00
18	8557.12	116.76	0.455	0.50	(0.48)	0.95	36961.4	11130.00
19	7866.08	128.14	0.439	0.50	(0.48)	0.95	40633.9	11620.00
20	6803.54	143.80	0.420	0.50	(0.48)	0.96	45159.7	12400.00
21	5951.11	155.09	0.407	0.50	(0.48)	0.96	47465.9	12201.00
22	5336.23	164.30	0.396	0.50	(0.48)	0.96	48756.5	12111.00
23	4405.48	179.81	0.377	0.50	(0.48)	0.96	50679.4	12261.00
24	3931.79	188.98	0.372	0.50	(0.48)	0.96	51490.6	10200.00
25	3359.45	204.18	0.364	0.50	(0.48)	0.96	52728.5	10300.00
26	3126.52	210.94	0.360	0.50	(0.48)	0.96	53080.7	12010.00
27	2648.19	231.15	0.349	0.50	(0.48)	0.96	53409.1	12000.00
28	1660.00	298.84	0.312	0.50	(0.48)	0.96	54079.9	10100.00

TOTAL AREA (ACRES) = 54079.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 11725.34 Tc (MIN.) = 24.423  
EFFECTIVE AREA (ACRES) = 5879.09 AREA-AVERAGED Fm (INCH/HR) = 0.39  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.78  
TOTAL AREA (ACRES) = 54079.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 215.00 DOWNSTREAM (FEET) = 214.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 895.53 CHANNEL SLOPE = 0.0011  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00

==>>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY (NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA (CFS) = 11725.34  
FLOW VELOCITY (FEET/SEC.) = 9.77 FLOW DEPTH (FEET) = 20.00  
TRAVEL TIME (MIN.) = 1.53 Tc (MIN.) = 25.95

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P504XX05.DNA  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	46.39	15.05	0.50 (0.47)	0.94	70.7	50400.00
TOTAL AREA (ACRES) =						70.7

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11134.02	19.67	1.139	0.50 (0.39)	0.78	4223.1	50110.00
2	11452.67	22.93	1.042	0.50 (0.39)	0.78	5102.3	50320.00
3	11630.25	24.87	0.986	0.50 (0.39)	0.78	5603.8	50240.00
4	11694.75	25.60	0.970	0.50 (0.39)	0.78	5791.3	50330.00
5	11725.34	25.95	0.963	0.50 (0.39)	0.78	5879.1	300.00
6	11640.86	29.00	0.901	0.50 (0.40)	0.79	6865.4	50280.00
7	11607.70	30.03	0.881	0.50 (0.40)	0.80	7187.6	50300.00
8	11518.60	32.60	0.848	0.50 (0.40)	0.81	7982.2	50220.00
9	11310.76	38.63	0.771	0.50 (0.41)	0.83	9798.1	306.00
10	11282.25	39.33	0.763	0.50 (0.42)	0.83	9992.6	50260.00
11	11218.57	40.91	0.746	0.50 (0.42)	0.84	10420.1	50200.00
12	10805.14	52.34	0.657	0.50 (0.43)	0.87	13492.2	390.00
13	10433.48	64.25	0.595	0.50 (0.45)	0.90	16620.2	11801.00
14	10175.49	75.57	0.557	0.50 (0.46)	0.91	19852.7	11500.00
15	9834.37	87.52	0.516	0.50 (0.46)	0.93	23897.2	11000.00
16	9426.74	103.92	0.480	0.50 (0.47)	0.94	30762.8	12500.00
17	9219.59	110.10	0.468	0.50 (0.47)	0.95	33632.2	10900.00
18	8557.12	118.79	0.451	0.50 (0.48)	0.95	36961.4	11130.00
19	7866.08	130.22	0.437	0.50 (0.48)	0.95	40633.9	11620.00
20	6803.54	145.96	0.418	0.50 (0.48)	0.96	45159.7	12400.00
21	5951.11	157.31	0.404	0.50 (0.48)	0.96	47465.9	12201.00
22	5336.23	166.58	0.393	0.50 (0.48)	0.96	48756.5	12111.00
23	4405.48	182.20	0.376	0.50 (0.48)	0.96	50679.4	12261.00
24	3931.79	191.45	0.371	0.50 (0.48)	0.96	51490.6	10200.00
25	3359.45	206.74	0.362	0.50 (0.48)	0.96	52728.5	10300.00
26	3126.52	213.55	0.359	0.50 (0.48)	0.96	53080.7	12010.00
27	2648.19	233.87	0.348	0.50 (0.48)	0.96	53409.1	12000.00
28	1660.00	301.90	0.311	0.50 (0.48)	0.96	54079.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	46.39	15.05	1.314	0.50 (0.47)	0.94	70.7	50400.00

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

\*\*\* PEAK FLOW RATE TABLE \*\*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10553.60	15.05	1.314	0.50 ( 0.39)	0.79	3301.4	50400.00
2	11170.82	19.67	1.139	0.50 ( 0.39)	0.78	4293.8	50110.00
3	11484.13	22.93	1.042	0.50 ( 0.39)	0.78	5173.0	50320.00
4	11658.62	24.87	0.986	0.50 ( 0.39)	0.78	5674.5	50240.00
5	11722.25	25.60	0.970	0.50 ( 0.39)	0.78	5862.0	50330.00
6	11752.45	25.95	0.963	0.50 ( 0.39)	0.78	5949.8	300.00
7	11664.58	29.00	0.901	0.50 ( 0.40)	0.80	6936.1	50280.00
8	11630.30	30.03	0.881	0.50 ( 0.40)	0.80	7258.3	50300.00
9	11539.40	32.60	0.848	0.50 ( 0.40)	0.81	8052.9	50220.00
10	11327.36	38.63	0.771	0.50 ( 0.42)	0.83	9868.8	306.00
11	11298.36	39.33	0.763	0.50 ( 0.42)	0.83	10063.3	50260.00
12	11233.80	40.91	0.746	0.50 ( 0.42)	0.84	10490.8	50200.00
13	10815.44	52.34	0.657	0.50 ( 0.43)	0.87	13562.9	390.00
14	10440.41	64.25	0.595	0.50 ( 0.45)	0.90	16690.9	11801.00
15	10180.29	75.57	0.557	0.50 ( 0.46)	0.91	19923.4	11500.00
16	9836.92	87.52	0.516	0.50 ( 0.46)	0.93	23967.9	11000.00
17	9428.38	103.92	0.480	0.50 ( 0.47)	0.94	30833.5	12500.00
18	9221.19	110.10	0.468	0.50 ( 0.47)	0.95	33702.9	10900.00
19	8558.66	118.79	0.451	0.50 ( 0.48)	0.95	37032.1	11130.00
20	7867.57	130.22	0.437	0.50 ( 0.48)	0.95	40704.6	11620.00
21	6804.97	145.96	0.418	0.50 ( 0.48)	0.96	45230.4	12400.00
22	5952.50	157.31	0.404	0.50 ( 0.48)	0.96	47536.6	12201.00
23	5337.58	166.58	0.393	0.50 ( 0.48)	0.96	48827.2	12111.00
24	4406.76	182.20	0.376	0.50 ( 0.48)	0.96	50750.1	12261.00
25	3933.06	191.45	0.371	0.50 ( 0.48)	0.96	51561.3	10200.00
26	3360.68	206.74	0.362	0.50 ( 0.48)	0.96	52799.2	10300.00
27	3127.75	213.55	0.359	0.50 ( 0.48)	0.96	53151.4	12010.00
28	2649.38	233.87	0.348	0.50 ( 0.48)	0.96	53479.8	12000.00
29	1661.06	301.90	0.311	0.50 ( 0.48)	0.96	54150.6	10100.00
TOTAL AREA (ACRES) =		54150.6					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 11752.45 Tc (MIN.) = 25.950  
 EFFECTIVE AREA (ACRES) = 5949.79 AREA-AVERAGED Fm (INCH/HR) = 0.39  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.78  
 TOTAL AREA (ACRES) = 54150.6  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 214.00 DOWNSTREAM (FEET) = 213.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 767.57 CHANNEL SLOPE = 0.0013  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
 CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
 ALLOWABLE DEPTH) .  
 AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
 ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA (CFS) = 11752.45  
 FLOW VELOCITY (FEET/SEC.) = 9.79 FLOW DEPTH (FEET) = 20.00  
 TRAVEL TIME (MIN.) = 1.31 Tc (MIN.) = 27.26  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: 3B05EVR.L.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	184.41	16.60	0.50 ( 0.21)	0.42	196.1	200.00
2	182.58	19.24	0.50 ( 0.21)	0.42	214.7	210.00
TOTAL AREA (ACRES) =		214.7				

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<<  
 =====

\*\*\* MAIN STREAM CONFLUENCE DATA \*\*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10553.60	16.51	1.259	0.50 ( 0.39)	0.79	3301.4	50400.00
2	11170.82	21.05	1.097	0.50 ( 0.39)	0.78	4293.8	50110.00
3	11484.13	24.26	1.003	0.50 ( 0.39)	0.78	5173.0	50320.00
4	11658.62	26.19	0.958	0.50 ( 0.39)	0.78	5674.5	50240.00
5	11722.25	26.91	0.943	0.50 ( 0.39)	0.78	5862.0	50330.00
6	11752.45	27.26	0.936	0.50 ( 0.39)	0.78	5949.8	300.00
7	11664.58	30.32	0.877	0.50 ( 0.40)	0.80	6936.1	50280.00
8	11630.30	31.35	0.864	0.50 ( 0.40)	0.80	7258.3	50300.00
9	11539.40	33.93	0.831	0.50 ( 0.40)	0.81	8052.9	50220.00
10	11327.36	39.98	0.754	0.50 ( 0.42)	0.83	9868.8	306.00
11	11298.36	40.69	0.748	0.50 ( 0.42)	0.83	10063.3	50260.00
12	11233.80	42.28	0.735	0.50 ( 0.42)	0.84	10490.8	50200.00
13	10815.44	53.76	0.648	0.50 ( 0.43)	0.87	13562.9	390.00
14	10440.41	65.72	0.590	0.50 ( 0.45)	0.90	16690.9	11801.00
15	10180.29	77.08	0.551	0.50 ( 0.46)	0.91	19923.4	11500.00
16	9836.92	89.08	0.510	0.50 ( 0.46)	0.93	23967.9	11000.00
17	9428.38	105.52	0.477	0.50 ( 0.47)	0.94	30833.5	12500.00
18	9221.19	111.72	0.465	0.50 ( 0.47)	0.95	33702.9	10900.00
19	8558.66	120.43	0.448	0.50 ( 0.48)	0.95	37032.1	11130.00
20	7867.57	131.90	0.435	0.50 ( 0.48)	0.95	40704.6	11620.00
21	6804.97	147.70	0.416	0.50 ( 0.48)	0.96	45230.4	12400.00
22	5952.50	159.11	0.402	0.50 ( 0.48)	0.96	47536.6	12201.00
23	5337.58	168.43	0.391	0.50 ( 0.48)	0.96	48827.2	12111.00
24	4406.76	184.14	0.375	0.50 ( 0.48)	0.96	50750.1	12261.00

25 3933.06 193.44 0.370 0.50( 0.48) 0.96 51561.3 10200.00  
 26 3360.68 208.82 0.361 0.50( 0.48) 0.96 52799.2 10300.00  
 27 3127.75 215.66 0.358 0.50( 0.48) 0.96 53151.4 12010.00  
 28 2649.38 236.08 0.346 0.50( 0.48) 0.96 53479.8 12000.00  
 29 1661.06 304.38 0.309 0.50( 0.48) 0.96 54150.6 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	184.41	16.60	1.256	0.50( 0.21)	0.42	196.1	200.00
2	182.58	19.24	1.156	0.50( 0.21)	0.42	214.7	210.00

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 5961.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10737.61	16.51	1.259	0.50( 0.38)	0.77	3496.4	50400.00
2	10750.42	16.60	1.256	0.50( 0.38)	0.77	3517.5	200.00
3	11107.99	19.24	1.156	0.50( 0.38)	0.77	4113.9	210.00
4	11341.99	21.05	1.097	0.50( 0.38)	0.77	4508.5	50110.00
5	11637.29	24.26	1.003	0.50( 0.39)	0.77	5387.7	50320.00
6	11803.01	26.19	0.958	0.50( 0.39)	0.77	5889.2	50240.00
7	11863.82	26.91	0.943	0.50( 0.39)	0.77	6076.7	50330.00
8	11892.67	27.26	0.936	0.50( 0.39)	0.77	6164.5	300.00
9	11793.31	30.32	0.877	0.50( 0.39)	0.78	7150.8	50280.00
10	11756.50	31.35	0.864	0.50( 0.39)	0.79	7473.0	50300.00
11	11659.27	33.93	0.831	0.50( 0.40)	0.80	8267.6	50220.00
12	11432.38	39.98	0.754	0.50( 0.41)	0.82	10083.5	306.00
13	11402.23	40.69	0.748	0.50( 0.41)	0.82	10278.0	50260.00
14	11335.12	42.28	0.735	0.50( 0.41)	0.83	10705.5	50200.00
15	10899.94	53.76	0.648	0.50( 0.43)	0.86	13777.6	390.00
16	10513.77	65.72	0.590	0.50( 0.45)	0.89	16905.6	11801.00
17	10246.12	77.08	0.551	0.50( 0.45)	0.91	20138.1	11500.00
18	9894.77	89.08	0.510	0.50( 0.46)	0.92	24182.6	11000.00
19	9481.72	105.52	0.477	0.50( 0.47)	0.94	31048.2	12500.00
20	9273.19	111.72	0.465	0.50( 0.47)	0.94	33917.6	10900.00
21	8608.81	120.43	0.448	0.50( 0.47)	0.95	37246.8	11130.00
22	7916.18	131.90	0.435	0.50( 0.48)	0.95	40919.3	11620.00
23	6851.46	147.70	0.416	0.50( 0.48)	0.95	45445.1	12400.00
24	5997.46	159.11	0.402	0.50( 0.48)	0.96	47751.3	12201.00
25	5381.29	168.43	0.391	0.50( 0.48)	0.96	49041.9	12111.00
26	4448.67	184.14	0.375	0.50( 0.48)	0.96	50964.8	12261.00
27	3974.39	193.44	0.370	0.50( 0.48)	0.96	51776.0	10200.00
28	3401.09	208.82	0.361	0.50( 0.48)	0.96	53013.9	10300.00
29	3167.73	215.66	0.358	0.50( 0.48)	0.96	53366.1	12010.00
30	2688.12	236.08	0.346	0.50( 0.48)	0.96	53694.5	12000.00
31	1695.65	304.38	0.309	0.50( 0.48)	0.96	54365.3	10100.00

TOTAL AREA (ACRES) = 54365.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 11892.67 Tc(MIN.) = 27.256  
 EFFECTIVE AREA(ACRES) = 6164.49 AREA-AVERAGED Fm(INCH/HR) = 0.39  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 54365.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 27.26  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.936  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.70	0.50	0.100	-
USER-DEFINED	-	20.00	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	14.90	0.50	0.850	-
USER-DEFINED	-	2.60	0.50	0.900	-
USER-DEFINED	-	0.80	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.920  
 SUBAREA AREA(ACRES) = 39.10 SUBAREA RUNOFF(CFS) = 16.76  
 EFFECTIVE AREA(ACRES) = 6203.59 AREA-AVERAGED Fm(INCH/HR) = 0.39  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 54404.4 PEAK FLOW RATE(CFS) = 11892.67  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 27.26  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.936  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.50	0.100	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	1.70	0.50	0.900	-
USER-DEFINED	-	2.60	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.912  
 SUBAREA AREA(ACRES) = 5.00 SUBAREA RUNOFF(CFS) = 2.16  
 EFFECTIVE AREA(ACRES) = 6208.59 AREA-AVERAGED Fm(INCH/HR) = 0.39  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 54409.4 PEAK FLOW RATE(CFS) = 11892.67  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 27.26  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.936  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.50	1.000	-

USER-DEFINED - 2.60 0.50 0.900 -  
 USER-DEFINED - 0.20 0.50 1.000 -  
 USER-DEFINED - 3.00 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.956  
 SUBAREA AREA (ACRES) = 5.90 SUBAREA RUNOFF (CFS) = 2.43  
 EFFECTIVE AREA (ACRES) = 6214.49 AREA-AVERAGED Fm (INCH/HR) = 0.39  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA (ACRES) = 54415.3 PEAK FLOW RATE (CFS) = 11892.67  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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 END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 54415.3 TC (MIN.) = 27.26  
 EFFECTIVE AREA (ACRES) = 6214.49 AREA-AVERAGED Fm (INCH/HR) = 0.39  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.773  
 PEAK FLOW RATE (CFS) = 11892.67

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	10737.61	16.51	1.259	0.50 ( 0.38)	0.77	3546.4	50400.00
2	10750.42	16.60	1.256	0.50 ( 0.38)	0.77	3567.5	200.00
3	11107.99	19.24	1.156	0.50 ( 0.38)	0.77	4163.9	210.00
4	11341.99	21.05	1.097	0.50 ( 0.38)	0.77	4558.5	50110.00
5	11637.29	24.26	1.003	0.50 ( 0.39)	0.77	5437.7	50320.00
6	11803.01	26.19	0.958	0.50 ( 0.39)	0.77	5939.2	50240.00
7	11863.82	26.91	0.943	0.50 ( 0.39)	0.77	6126.7	50330.00
8	11892.67	27.26	0.936	0.50 ( 0.39)	0.77	6214.5	300.00
9	11793.31	30.32	0.877	0.50 ( 0.39)	0.78	7200.8	50280.00
10	11756.50	31.35	0.864	0.50 ( 0.39)	0.79	7523.0	50300.00
11	11659.27	33.93	0.831	0.50 ( 0.40)	0.80	8317.6	50220.00
12	11432.38	39.98	0.754	0.50 ( 0.41)	0.82	10133.5	306.00
13	11402.23	40.69	0.748	0.50 ( 0.41)	0.82	10328.0	50260.00
14	11335.12	42.28	0.735	0.50 ( 0.41)	0.83	10755.5	50200.00
15	10899.94	53.76	0.648	0.50 ( 0.43)	0.86	13827.6	390.00
16	10513.77	65.72	0.590	0.50 ( 0.45)	0.89	16955.6	11801.00
17	10246.12	77.08	0.551	0.50 ( 0.45)	0.91	20188.1	11500.00
18	9894.77	89.08	0.510	0.50 ( 0.46)	0.92	24232.6	11000.00
19	9481.72	105.52	0.477	0.50 ( 0.47)	0.94	31098.2	12500.00
20	9273.19	111.72	0.465	0.50 ( 0.47)	0.94	33967.6	10900.00
21	8608.81	120.43	0.448	0.50 ( 0.47)	0.95	37296.8	11130.00
22	7916.18	131.90	0.435	0.50 ( 0.48)	0.95	40969.3	11620.00
23	6851.46	147.70	0.416	0.50 ( 0.48)	0.95	45495.1	12400.00
24	5997.46	159.11	0.402	0.50 ( 0.48)	0.96	47801.3	12201.00
25	5381.29	168.43	0.391	0.50 ( 0.48)	0.96	49091.9	12111.00
26	4448.67	184.14	0.375	0.50 ( 0.48)	0.96	51014.8	12261.00
27	3974.39	193.44	0.370	0.50 ( 0.48)	0.96	51826.0	10200.00
28	3401.09	208.82	0.361	0.50 ( 0.48)	0.96	53063.9	10300.00
29	3167.73	215.66	0.358	0.50 ( 0.48)	0.96	53416.1	12010.00
30	2688.12	236.08	0.346	0.50 ( 0.48)	0.96	53744.5	12000.00
31	1695.65	304.38	0.309	0.50 ( 0.48)	0.96	54415.3	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S33- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV33.DAT  
TIME/DATE OF STUDY: 11:33 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.642
- 2) 10.00; 1.762
- 3) 15.00; 1.304
- 4) 20.00; 1.115
- 5) 25.00; 0.974
- 6) 30.00; 0.875
- 7) 40.00; 0.748
- 8) 50.00; 0.665
- 9) 60.00; 0.603
- 10) 90.00; 0.500
- 11) 120.00; 0.441
- 12) 180.00; 0.369
- 13) 360.00; 0.272
- 14) 1200.00; 0.119

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S31X05.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	769.71	39.09	0.50 ( 0.41)	0.81	2485.9	13100.00
2	520.73	70.06	0.50 ( 0.40)	0.81	3771.2	13000.00
3	475.69	73.98	0.50 ( 0.40)	0.81	3796.8	13010.00
TOTAL AREA (ACRES) =						3796.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S32X05.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	284.60	41.45	0.50 ( 0.41)	0.83	1124.1	13200.00
2	281.25	41.90	0.50 ( 0.41)	0.83	1127.6	13210.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	284.60	41.45	0.50 ( 0.41)	0.83	1124.1	13200.00
2	281.25	41.90	0.50 ( 0.41)	0.83	1127.6	13210.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 11  
-----

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

=====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	284.60	41.45	0.736	0.50 ( 0.41)	0.83	1124.1	13200.00
2	281.25	41.90	0.732	0.50 ( 0.41)	0.83	1127.6	13210.00

LONGEST FLOWPATH FROM NODE 13200.00 TO NODE 13222.00 = 16821.05 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	769.71	39.09	0.760	0.50( 0.41)	0.81	2485.9	13100.00
2	520.73	70.06	0.568	0.50( 0.40)	0.81	3771.2	13000.00
3	475.69	73.98	0.555	0.50( 0.40)	0.81	3796.8	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1054.32	39.09	0.760	0.50( 0.41)	0.82	3546.1	13100.00
2	1035.40	41.45	0.736	0.50( 0.41)	0.82	3707.6	13200.00
3	1028.41	41.90	0.732	0.50( 0.41)	0.82	3729.9	13210.00
4	657.26	70.06	0.568	0.50( 0.41)	0.81	4898.8	13000.00
5	600.32	73.98	0.555	0.50( 0.41)	0.81	4924.4	13010.00

TOTAL AREA (ACRES) = 4924.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1054.32 Tc(MIN.) = 39.093  
EFFECTIVE AREA(ACRES) = 3546.13 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.82  
TOTAL AREA (ACRES) = 4924.4  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12  
-----

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.720

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.40	0.50	0.100	-
USER-DEFINED	-	15.60	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	0.600	-
USER-DEFINED	-	5.30	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	22.60	0.50	0.100	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.521

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1063.66  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.97  
AVERAGE FLOW DEPTH(FEET) = 5.96 TRAVEL TIME(MIN.) = 4.23  
Tc(MIN.) = 43.33  
SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 18.70  
EFFECTIVE AREA(ACRES) = 3591.33 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.81  
TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 1054.32  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.95 FLOW VELOCITY(FEET/SEC.) = 9.94  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 43.33  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.720

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.00	0.50	1.000	-
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	7.40	0.50	0.100	-
USER-DEFINED	-	4.70	0.50	1.000	-
USER-DEFINED	-	2.90	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.596  
SUBAREA AREA(ACRES) = 16.50 SUBAREA RUNOFF(CFS) = 6.27  
EFFECTIVE AREA(ACRES) = 3607.83 AREA-AVERAGED Fm(INCH/HR) = 0.41  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.81  
TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 1054.32  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 43.33  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.720

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.30	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	0.100	-
USER-DEFINED	-	5.30	0.50	1.000	-
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977  
SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 1.65  
EFFECTIVE AREA(ACRES) = 3615.73 AREA-AVERAGED Fm(INCH/HR) = 0.41

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 4994.0 PEAK FLOW RATE (CFS) = 1054.32  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 43.33  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.720

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.30	0.50	1.000	-
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	1.10	0.50	1.000	-
USER-DEFINED	-	6.90	0.50	1.000	-
USER-DEFINED	-	7.90	0.50	1.000	-
USER-DEFINED	-	1.00	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 22.00 SUBAREA RUNOFF (CFS) = 4.36  
EFFECTIVE AREA (ACRES) = 3637.73 AREA-AVERAGED Fm (INCH/HR) = 0.41  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 5016.0 PEAK FLOW RATE (CFS) = 1054.32  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 43.33  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.720

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.40	0.50	1.000	-
USER-DEFINED	-	14.60	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 2.97  
EFFECTIVE AREA (ACRES) = 3652.73 AREA-AVERAGED Fm (INCH/HR) = 0.41  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 5031.0 PEAK FLOW RATE (CFS) = 1054.32  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1<<<<

\*\*\*\*\*

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

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00  
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$

SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 2.001

SUBAREA Tc AND LOSS RATE DATA (AMC II):

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

NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	-	0.50	0.50	1.000	0	8.64
--	---	------	------	-------	---	------

NATURAL FAIR COVER "OPEN BRUSH"	-	0.30	0.50	1.000	0	8.64
------------------------------------	---	------	------	-------	---	------

NATURAL FAIR COVER "OPEN BRUSH"	-	0.30	0.50	1.000	0	8.64
------------------------------------	---	------	------	-------	---	------

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF (CFS) = 1.49

TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 1.49

\*\*\*\*\*

FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 685.00 DOWNSTREAM (FEET) = 655.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 135.00 CHANNEL SLOPE = 0.2222

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.929

SUBAREA LOSS RATE DATA (AMC II):

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

USER-DEFINED	-	0.50	0.50	1.000	-
--------------	---	------	------	-------	---

USER-DEFINED	-	0.10	0.50	1.000	-
--------------	---	------	------	-------	---

USER-DEFINED	-	0.70	0.50	1.000	-
--------------	---	------	------	-------	---

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2.32

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.46

AVERAGE FLOW DEPTH (FEET) = 0.38 TRAVEL TIME (MIN.) = 0.41

Tc (MIN.) = 9.05

SUBAREA AREA (ACRES) = 1.30 SUBAREA RUNOFF (CFS) = 1.67

EFFECTIVE AREA (ACRES) = 2.40 AREA-AVERAGED Fm (INCH/HR) = 0.50

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 2.4 PEAK FLOW RATE (CFS) = 3.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 0.42 FLOW VELOCITY (FEET/SEC.) = 5.92

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.815
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.30 0.50 1.000 -
USER-DEFINED - 0.10 0.50 1.000 -
USER-DEFINED - 1.90 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.45
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.25
AVERAGE FLOW DEPTH(FEET) = 0.53 TRAVEL TIME(MIN.) = 0.64
Tc(MIN.) = 9.70
SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 2.72
EFFECTIVE AREA(ACRES) = 4.70 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 5.56
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.58 FLOW VELOCITY(FEET/SEC.) = 5.46
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.692
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 1.10 0.50 1.000 -
USER-DEFINED - 2.50 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.49
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.00
AVERAGE FLOW DEPTH(FEET) = 0.71 TRAVEL TIME(MIN.) = 1.07
Tc(MIN.) = 10.77
SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 3.86
EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 8.90
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.75 FLOW VELOCITY(FEET/SEC.) = 5.24
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.610
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.70 0.50 1.000 -
USER-DEFINED - 0.60 0.50 1.000 -
USER-DEFINED - 3.00 0.50 1.000 -
USER-DEFINED - 2.10 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.10
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.39
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 0.89
Tc(MIN.) = 11.66
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 6.39
EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 14.69
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.93 FLOW VELOCITY(FEET/SEC.) = 5.68
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.526
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.60 0.50 1.000 -
USER-DEFINED - 2.80 0.50 1.000 -
USER-DEFINED - 0.60 0.50 1.000 -
USER-DEFINED - 0.10 0.50 1.000 -
USER-DEFINED - 2.60 0.50 1.000 -
USER-DEFINED - 4.10 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 19.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.22

AVERAGE FLOW DEPTH (FEET) = 1.03 TRAVEL TIME (MIN.) = 0.92  
Tc (MIN.) = 12.58  
SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 9.97  
EFFECTIVE AREA (ACRES) = 25.50 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 25.5 PEAK FLOW RATE (CFS) = 23.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.10 FLOW VELOCITY (FEET/SEC.) = 6.47  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM (FEET) = 560.00 DOWNSTREAM (FEET) = 530.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 619.00 CHANNEL SLOPE = 0.0485  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.365

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	1.90	0.50	1.000	-
USER-DEFINED	-	1.50	0.50	1.000	-
USER-DEFINED	-	8.20	0.50	1.000	-
USER-DEFINED	-	2.70	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 29.42  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.87  
AVERAGE FLOW DEPTH (FEET) = 1.29 TRAVEL TIME (MIN.) = 1.76  
Tc (MIN.) = 14.34  
SUBAREA AREA (ACRES) = 15.10 SUBAREA RUNOFF (CFS) = 11.75  
EFFECTIVE AREA (ACRES) = 40.60 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 40.6 PEAK FLOW RATE (CFS) = 31.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.32 FLOW VELOCITY (FEET/SEC.) = 6.00  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM (FEET) = 530.00 DOWNSTREAM (FEET) = 515.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 377.00 CHANNEL SLOPE = 0.0398  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.288

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	6.50	0.50	1.000	-
USER-DEFINED	-	1.30	0.50	1.000	-
USER-DEFINED	-	1.10	0.50	1.000	-
USER-DEFINED	-	5.50	0.50	1.000	-
USER-DEFINED	-	3.40	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 38.08  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.83  
AVERAGE FLOW DEPTH (FEET) = 1.48 TRAVEL TIME (MIN.) = 1.08  
Tc (MIN.) = 15.41  
SUBAREA AREA (ACRES) = 18.30 SUBAREA RUNOFF (CFS) = 12.98  
EFFECTIVE AREA (ACRES) = 58.90 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 58.9 PEAK FLOW RATE (CFS) = 41.78

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.53 FLOW VELOCITY (FEET/SEC.) = 5.96  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
ELEVATION DATA: UPSTREAM (FEET) = 515.00 DOWNSTREAM (FEET) = 490.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 520.00 CHANNEL SLOPE = 0.0481  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.239

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.70	0.50	1.000	-
USER-DEFINED	-	2.20	0.50	1.000	-
USER-DEFINED	-	3.10	0.50	1.000	-
USER-DEFINED	-	0.90	0.50	1.000	-
USER-DEFINED	-	7.40	0.50	1.000	-
USER-DEFINED	-	0.30	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 46.63  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.59  
AVERAGE FLOW DEPTH (FEET) = 1.54 TRAVEL TIME (MIN.) = 1.32  
Tc (MIN.) = 16.73  
SUBAREA AREA (ACRES) = 14.60 SUBAREA RUNOFF (CFS) = 9.70  
EFFECTIVE AREA (ACRES) = 73.50 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 73.5 PEAK FLOW RATE (CFS) = 48.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.56 FLOW VELOCITY (FEET/SEC.) = 6.68  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 16.73  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.239  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	11.40	0.50	1.000	-
USER-DEFINED	-	8.90	0.50	1.000	-
USER-DEFINED	-	1.90	0.50	1.000	-
USER-DEFINED	-	9.20	0.50	1.000	-
USER-DEFINED	-	1.40	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 32.80 SUBAREA RUNOFF(CFS) = 21.80  
 EFFECTIVE AREA(ACRES) = 106.30 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 106.3 PEAK FLOW RATE(CFS) = 70.64

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 490.00 DOWNSTREAM(FEET) = 432.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1420.00 CHANNEL SLOPE = 0.0408  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.111  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	0.900	-
USER-DEFINED	-	1.30	0.50	1.000	-
USER-DEFINED	-	4.00	0.50	1.000	-
USER-DEFINED	-	1.50	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 72.93  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.94  
 AVERAGE FLOW DEPTH(FEET) = 1.87 TRAVEL TIME(MIN.) = 3.41  
 Tc(MIN.) = 20.14  
 SUBAREA AREA(ACRES) = 8.30 SUBAREA RUNOFF(CFS) = 4.57  
 EFFECTIVE AREA(ACRES) = 114.60 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 114.6 PEAK FLOW RATE(CFS) = 70.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.85 FLOW VELOCITY(FEET/SEC.) = 6.89  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31110.00 = 4544.00 FEET.

\*\*\*\*\*

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 20.14  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.111  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	9.60	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	0.900	-
USER-DEFINED	-	6.20	0.50	1.000	-
USER-DEFINED	-	3.90	0.50	1.000	-
USER-DEFINED	-	1.40	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.998  
 SUBAREA AREA(ACRES) = 21.80 SUBAREA RUNOFF(CFS) = 12.00  
 EFFECTIVE AREA(ACRES) = 136.40 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 136.4 PEAK FLOW RATE(CFS) = 75.01

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 432.00 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1847.00 CHANNEL SLOPE = 0.0271  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.970  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.90	0.50	1.000	-
USER-DEFINED	-	1.50	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	0.900	-
USER-DEFINED	-	2.50	0.50	1.000	-
USER-DEFINED	-	5.30	0.50	1.000	-
USER-DEFINED	-	3.30	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.997  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 78.85  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.07  
 AVERAGE FLOW DEPTH(FEET) = 2.08 TRAVEL TIME(MIN.) = 5.07  
 Tc(MIN.) = 25.21  
 SUBAREA AREA(ACRES) = 18.10 SUBAREA RUNOFF(CFS) = 7.68  
 EFFECTIVE AREA(ACRES) = 154.50 AREA-AVERAGED Fm(INCH/HR) = 0.50  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 154.5 PEAK FLOW RATE(CFS) = 75.01  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.04 FLOW VELOCITY(FEET/SEC.) = 6.00  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

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*****
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 11
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1          75.01  25.21  0.970    0.50( 0.50) 1.00   154.5  31100.00
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1          1054.32  43.33  0.720    0.50( 0.41) 0.81   3652.7  13100.00
2          1035.40  45.70  0.701    0.50( 0.41) 0.81   3814.2  13200.00
3          1028.41  46.16  0.697    0.50( 0.41) 0.81   3836.5  13210.00
4           660.41  74.82  0.552    0.50( 0.41) 0.81   5005.4  13000.00
5           601.45  78.87  0.538    0.50( 0.41) 0.81   5031.0  13010.00
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1          1129.32  25.21  0.970    0.50( 0.41) 0.83   2279.7  31100.00
2          1089.51  43.33  0.720    0.50( 0.41) 0.82   3807.2  13100.00
3          1067.44  45.70  0.701    0.50( 0.41) 0.82   3968.7  13200.00
4          1059.85  46.16  0.697    0.50( 0.41) 0.82   3991.0  13210.00
5           668.75  74.82  0.552    0.50( 0.41) 0.82   5159.9  13000.00
6           607.57  78.87  0.538    0.50( 0.41) 0.82   5185.5  13010.00
TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 1129.32 Tc(MIN.) = 25.209
EFFECTIVE AREA(ACRES) = 2279.72 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA (ACRES) = 5185.5
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

*****
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12
-----
>>>>CLEAR MEMORY BANK # 1 <<<<
=====
*****
FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.914
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
USER-DEFINED      -        9.42  0.50  1.000  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1131.08
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.76
AVERAGE FLOW DEPTH(FEET) = 7.47 TRAVEL TIME(MIN.) = 2.81
Tc(MIN.) = 28.02
SUBAREA AREA(ACRES) = 9.42 SUBAREA RUNOFF(CFS) = 3.51
EFFECTIVE AREA(ACRES) = 2289.14 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 7.46 FLOW VELOCITY(FEET/SEC.) = 6.76
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

*****
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 28.02
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.914
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/  SCS SOIL  AREA  Fp  Ap  SCS
LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED      -        13.80  0.50  1.000  -
USER-DEFINED      -         2.60  0.50  1.000  -
USER-DEFINED      -         1.10  0.50  0.100  -
USER-DEFINED      -         3.50  0.50  0.900  -
USER-DEFINED      -         6.90  0.50  1.000  -
USER-DEFINED      -         0.20  0.50  1.000  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952
SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 11.07
EFFECTIVE AREA(ACRES) = 2317.24 AREA-AVERAGED Fm(INCH/HR) = 0.41
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

*****
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 28.02
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.914
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/  SCS SOIL  AREA  Fp  Ap  SCS
LAND USE          GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED      -         0.10  0.50  1.000  -
USER-DEFINED      -         0.10  0.50  0.100  -
USER-DEFINED      -         2.40  0.50  0.900  -
USER-DEFINED      -         0.50  0.50  1.000  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

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SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.894  
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 1.30  
 EFFECTIVE AREA (ACRES) = 2320.34 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.02  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.914  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	2.60	0.50	1.000	-
USER-DEFINED	-	3.10	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	13.80	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 7.53  
 EFFECTIVE AREA (ACRES) = 2340.54 AREA-AVERAGED Fm (INCH/HR) = 0.41  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5246.4 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.02  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.914  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.60	0.50	1.000	-
USER-DEFINED	-	2.40	0.50	1.000	-
USER-DEFINED	-	22.60	0.50	1.000	-
USER-DEFINED	-	11.60	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	0.200	-
USER-DEFINED	-	4.80	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.996  
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 28.61  
 EFFECTIVE AREA (ACRES) = 2416.94 AREA-AVERAGED Fm (INCH/HR) = 0.42  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5322.8 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 28.02  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.914  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.60	0.50	1.000	-
USER-DEFINED	-	46.40	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	0.200	-
USER-DEFINED	-	60.70	0.50	1.000	-
USER-DEFINED	-	5.80	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.999  
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 42.73  
 EFFECTIVE AREA (ACRES) = 2531.54 AREA-AVERAGED Fm (INCH/HR) = 0.42  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5437.4 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 1129.32  
 FLOW VELOCITY (FEET/SEC.) = 7.84 FLOW DEPTH (FEET) = 6.93  
 TRAVEL TIME (MIN.) = 4.67 Tc (MIN.) = 32.69  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

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 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 32.69  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.841  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	1.000	-
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	1.40	0.50	0.100	-
USER-DEFINED	-	2.60	0.50	1.000	-
USER-DEFINED	-	2.20	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.834  
 SUBAREA AREA (ACRES) = 7.60 SUBAREA RUNOFF (CFS) = 2.90  
 EFFECTIVE AREA (ACRES) = 2539.14 AREA-AVERAGED Fm (INCH/HR) = 0.42  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5445.0 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE



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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 32.69

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.10	0.50	1.000	-
USER-DEFINED	-	3.40	0.50	1.000	-
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	3.60	0.50	0.100	-
USER-DEFINED	-	4.00	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781

SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 6.00

EFFECTIVE AREA(ACRES) = 2553.94 AREA-AVERAGED Fm(INCH/HR) = 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5459.8 PEAK FLOW RATE(CFS) = 1129.32

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 32.69

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.60	0.50	1.000	-
USER-DEFINED	-	6.30	0.50	1.000	-
USER-DEFINED	-	3.70	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 7.54

EFFECTIVE AREA(ACRES) = 2578.54 AREA-AVERAGED Fm(INCH/HR) = 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5484.4 PEAK FLOW RATE(CFS) = 1129.32

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 32.69

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	0.30	0.50	0.100	-

USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.80	0.50	0.900	-
USER-DEFINED	-	1.60	0.50	1.000	-
USER-DEFINED	-	31.90	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990

SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 10.98

EFFECTIVE AREA(ACRES) = 2613.84 AREA-AVERAGED Fm(INCH/HR) = 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85

TOTAL AREA(ACRES) = 5519.6 PEAK FLOW RATE(CFS) = 1129.32

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 32.69

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.70	0.50	0.100	-
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	2.60	0.50	0.900	-
USER-DEFINED	-	5.50	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830

SUBAREA AREA(ACRES) = 10.50 SUBAREA RUNOFF(CFS) = 4.03

EFFECTIVE AREA(ACRES) = 2624.34 AREA-AVERAGED Fm(INCH/HR) = 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5530.1 PEAK FLOW RATE(CFS) = 1129.32

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 32.69

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.30	0.50	0.900	-
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	0.100	-
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	6.50	0.50	0.900	-
USER-DEFINED	-	3.00	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917

SUBAREA AREA(ACRES) = 11.60 SUBAREA RUNOFF(CFS) = 3.99

EFFECTIVE AREA(ACRES) = 2635.94 AREA-AVERAGED Fm(INCH/HR) = 0.42

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85

TOTAL AREA(ACRES) = 5541.8 PEAK FLOW RATE(CFS) = 1129.32

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 355.00 DOWNSTREAM(FEET) = 350.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 925.40 CHANNEL SLOPE = 0.0054
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.811

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 13.84 0.50 0.850 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1131.72
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.45
AVERAGE FLOW DEPTH(FEET) = 7.65 TRAVEL TIME(MIN.) = 2.39
Tc(MIN.) = 35.08

SUBAREA AREA(ACRES) = 13.84 SUBAREA RUNOFF(CFS) = 4.80
EFFECTIVE AREA(ACRES) = 2649.78 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5555.6 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 7.64 FLOW VELOCITY(FEET/SEC.) = 6.45
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13304.00 = 38920.27 FEET.

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FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 35.08
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.811

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 7.80 0.50 1.000 -
USER-DEFINED - 1.70 0.50 1.000 -
USER-DEFINED - 9.40 0.50 1.000 -
USER-DEFINED - 1.20 0.50 1.000 -
USER-DEFINED - 0.10 0.50 0.900 -
USER-DEFINED - 2.60 0.50 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 22.80 SUBAREA RUNOFF(CFS) = 6.37
EFFECTIVE AREA(ACRES) = 2672.58 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5578.4 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 35.08
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.811

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.20 0.50 1.000 -
USER-DEFINED - 0.30 0.50 1.000 -
USER-DEFINED - 0.20 0.50 0.900 -
USER-DEFINED - 2.70 0.50 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994
SUBAREA AREA(ACRES) = 3.40 SUBAREA RUNOFF(CFS) = 0.96
EFFECTIVE AREA(ACRES) = 2675.98 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5581.8 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.741

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 27.39 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1132.30
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.64
AVERAGE FLOW DEPTH(FEET) = 6.61 TRAVEL TIME(MIN.) = 5.72
Tc(MIN.) = 40.80

SUBAREA AREA(ACRES) = 27.39 SUBAREA RUNOFF(CFS) = 5.94
EFFECTIVE AREA(ACRES) = 2703.37 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85
TOTAL AREA(ACRES) = 5609.2 PEAK FLOW RATE(CFS) = 1129.32
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 6.60 FLOW VELOCITY(FEET/SEC.) = 8.64
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 40.80

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.741  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	18.40	0.50	1.000	-
USER-DEFINED	-	1.20	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	26.60	0.50	1.000	-
USER-DEFINED	-	3.90	0.50	0.100	-
USER-DEFINED	-	3.00	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934  
 SUBAREA AREA (ACRES) = 53.20 SUBAREA RUNOFF (CFS) = 13.13  
 EFFECTIVE AREA (ACRES) = 2756.57 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA (ACRES) = 5662.4 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
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MAINLINE Tc (MIN.) = 40.80  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.741  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.10	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	14.00	0.50	1.000	-
USER-DEFINED	-	4.30	0.50	0.100	-
USER-DEFINED	-	5.30	0.50	1.000	-
USER-DEFINED	-	2.70	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860  
 SUBAREA AREA (ACRES) = 27.60 SUBAREA RUNOFF (CFS) = 7.73  
 EFFECTIVE AREA (ACRES) = 2784.17 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA (ACRES) = 5690.0 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
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MAINLINE Tc (MIN.) = 40.80  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.741  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.20	0.50	1.000	-
USER-DEFINED	-	6.10	0.50	1.000	-
USER-DEFINED	-	7.50	0.50	0.900	-
USER-DEFINED	-	5.40	0.50	1.000	-
USER-DEFINED	-	1.60	0.50	1.000	-
USER-DEFINED	-	1.90	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971  
 SUBAREA AREA (ACRES) = 25.70 SUBAREA RUNOFF (CFS) = 5.92  
 EFFECTIVE AREA (ACRES) = 2809.87 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA (ACRES) = 5715.7 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 40.80  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.741  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.00	0.50	0.100	-
USER-DEFINED	-	3.70	0.50	1.000	-
USER-DEFINED	-	2.10	0.50	1.000	-
USER-DEFINED	-	2.60	0.50	0.900	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807  
 SUBAREA AREA (ACRES) = 10.70 SUBAREA RUNOFF (CFS) = 3.25  
 EFFECTIVE AREA (ACRES) = 2820.57 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA (ACRES) = 5726.4 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 40.80  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.741  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	8.20	0.50	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
 SUBAREA AREA (ACRES) = 8.70 SUBAREA RUNOFF (CFS) = 2.26  
 EFFECTIVE AREA (ACRES) = 2829.27 AREA-AVERAGED Fm (INCH/HR) = 0.43  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.85  
 TOTAL AREA (ACRES) = 5735.1 PEAK FLOW RATE (CFS) = 1129.32  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: 3A05EVRL.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	448.39	14.96	0.50 ( 0.22)	0.43	429.7	120.00
2	443.05	15.30	0.50 ( 0.21)	0.43	435.1	110.00
3	375.74	23.09	0.50 ( 0.21)	0.42	501.8	100.00
4	332.86	27.58	0.50 ( 0.22)	0.43	510.2	150.00
TOTAL AREA (ACRES) =			510.2			

\*\*\*\*\*

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	1129.32	40.80	0.741	0.50 ( 0.43)	0.85	2829.3	31100.00
2	1089.51	59.07	0.609	0.50 ( 0.42)	0.84	4356.8	13100.00
3	1067.44	61.52	0.598	0.50 ( 0.42)	0.84	4518.2	13200.00
4	1059.85	62.00	0.596	0.50 ( 0.42)	0.84	4540.5	13210.00
5	668.75	92.59	0.495	0.50 ( 0.42)	0.83	5709.5	13000.00
6	607.57	97.07	0.486	0.50 ( 0.42)	0.83	5735.1	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	448.39	14.96	1.308	0.50 ( 0.22)	0.43	429.7	120.00
2	443.05	15.30	1.293	0.50 ( 0.21)	0.43	435.1	110.00
3	375.74	23.09	1.028	0.50 ( 0.21)	0.42	501.8	100.00
4	332.86	27.58	0.923	0.50 ( 0.22)	0.43	510.2	150.00

LONGEST FLOWPATH FROM NODE 150.00 TO NODE 13305.00 = 9867.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	1577.71	14.96	1.308	0.50 ( 0.36)	0.73	1466.8	120.00
2	1572.37	15.30	1.293	0.50 ( 0.36)	0.73	1496.0	110.00
3	1505.06	23.09	1.028	0.50 ( 0.37)	0.75	2103.0	100.00
4	1462.18	27.58	0.923	0.50 ( 0.38)	0.76	2422.9	150.00
5	1376.61	40.80	0.741	0.50 ( 0.39)	0.79	3339.5	31100.00
6	1274.29	59.07	0.609	0.50 ( 0.40)	0.80	4867.0	13100.00
7	1247.04	61.52	0.598	0.50 ( 0.40)	0.80	5028.4	13200.00
8	1238.66	62.00	0.596	0.50 ( 0.40)	0.80	5050.7	13210.00
9	800.92	92.59	0.495	0.50 ( 0.40)	0.80	6219.7	13000.00
10	737.39	97.07	0.486	0.50 ( 0.40)	0.80	6245.3	13010.00
TOTAL AREA (ACRES) =			6245.3				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1577.71 Tc (MIN.) = 14.955  
 EFFECTIVE AREA (ACRES) = 1466.79 AREA-AVERAGED Fm (INCH/HR) = 0.36  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA (ACRES) = 6245.3  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 315.00 DOWNSTREAM (FEET) = 245.50  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 4408.41 CHANNEL SLOPE = 0.0158  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.060

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	68.77	0.50	0.850	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1597.37					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.50					
AVERAGE FLOW DEPTH (FEET) = 7.12 TRAVEL TIME (MIN.) = 7.00					
Tc (MIN.) = 21.95					
SUBAREA AREA (ACRES) =		68.77	SUBAREA RUNOFF (CFS) =		39.29
EFFECTIVE AREA (ACRES) =		1535.56	AREA-AVERAGED Fm (INCH/HR) =		0.37
AREA-AVERAGED Fp (INCH/HR) =		0.50	AREA-AVERAGED Ap =		0.73
TOTAL AREA (ACRES) =		6314.1	PEAK FLOW RATE (CFS) =		1577.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 7.09 FLOW VELOCITY (FEET/SEC.) = 10.46  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13306.00 = 46294.95 FEET.

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FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 21.95

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.060

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	21.50	0.50	1.000	-
USER-DEFINED	-	15.30	0.50	0.100	-
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	1.000	-
USER-DEFINED	-	8.00	0.50	0.900	-
USER-DEFINED	-	0.10	0.50	1.000	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.685					
SUBAREA AREA (ACRES) =		46.30	SUBAREA RUNOFF (CFS) =		29.88
EFFECTIVE AREA (ACRES) =		1581.86	AREA-AVERAGED Fm (INCH/HR) =		0.37
AREA-AVERAGED Fp (INCH/HR) =		0.50	AREA-AVERAGED Ap =		0.73
TOTAL AREA (ACRES) =		6360.4	PEAK FLOW RATE (CFS) =		1577.71

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

-----  
MAINLINE Tc(MIN.) = 21.95  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.060  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 43.30 0.50 1.000 -  
USER-DEFINED - 4.90 0.50 0.100 -  
USER-DEFINED - 5.70 0.50 1.000 -  
USER-DEFINED - 0.50 0.50 1.000 -  
USER-DEFINED - 1.10 0.50 0.850 -  
USER-DEFINED - 3.10 0.50 0.900 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA(ACRES) = 58.60 SUBAREA RUNOFF(CFS) = 31.72  
EFFECTIVE AREA(ACRES) = 1640.46 AREA-AVERAGED Fm(INCH/HR) = 0.37  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA(ACRES) = 6419.0 PEAK FLOW RATE(CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

-----  
MAINLINE Tc(MIN.) = 21.95  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.060  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 6.80 0.50 1.000 -  
USER-DEFINED - 0.70 0.50 1.000 -  
USER-DEFINED - 1.10 0.50 0.100 -  
USER-DEFINED - 0.50 0.50 1.000 -  
USER-DEFINED - 0.10 0.50 1.000 -  
USER-DEFINED - 0.50 0.50 0.850 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.890  
SUBAREA AREA(ACRES) = 9.70 SUBAREA RUNOFF(CFS) = 5.37  
EFFECTIVE AREA(ACRES) = 1650.16 AREA-AVERAGED Fm(INCH/HR) = 0.37  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA(ACRES) = 6428.7 PEAK FLOW RATE(CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

-----  
MAINLINE Tc(MIN.) = 21.95  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.060  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 2.20 0.50 0.900 -  
USER-DEFINED - 0.10 0.50 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.904  
SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 1.26  
EFFECTIVE AREA(ACRES) = 1652.46 AREA-AVERAGED Fm(INCH/HR) = 0.37  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA(ACRES) = 6431.0 PEAK FLOW RATE(CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 245.50 DOWNSTREAM(FEET) = 220.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1543.21 CHANNEL SLOPE = 0.0165  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 1577.71  
FLOW VELOCITY(FEET/SEC.) = 10.66 FLOW DEPTH(FEET) = 7.02  
TRAVEL TIME(MIN.) = 2.41 Tc(MIN.) = 24.37  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13307.00 = 47838.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

-----  
MAINLINE Tc(MIN.) = 24.37  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.992  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.20 0.50 0.100 -  
USER-DEFINED - 0.10 0.50 1.000 -  
USER-DEFINED - 0.20 0.50 1.000 -  
USER-DEFINED - 3.70 0.50 1.000 -  
USER-DEFINED - 0.30 0.50 0.100 -  
USER-DEFINED - 3.20 0.50 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.942  
SUBAREA AREA(ACRES) = 7.70 SUBAREA RUNOFF(CFS) = 3.61  
EFFECTIVE AREA(ACRES) = 1660.16 AREA-AVERAGED Fm(INCH/HR) = 0.37  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA(ACRES) = 6438.7 PEAK FLOW RATE(CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

-----  
MAINLINE Tc(MIN.) = 24.37  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.992

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	3.60	0.50	1.000	-
USER-DEFINED	-	1.90	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 6.10 SUBAREA RUNOFF (CFS) = 2.70  
EFFECTIVE AREA (ACRES) = 1666.26 AREA-AVERAGED Fm (INCH/HR) = 0.37  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA (ACRES) = 6444.8 PEAK FLOW RATE (CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 220.00 DOWNSTREAM(FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.62 CHANNEL SLOPE = 0.0086  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 1577.71  
FLOW VELOCITY (FEET/SEC.) = 8.36 FLOW DEPTH (FEET) = 7.93  
TRAVEL TIME (MIN.) = 1.85 Tc (MIN.) = 26.21  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 26.21  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	5.00	0.50	1.000	-
USER-DEFINED	-	3.20	0.50	0.100	-
USER-DEFINED	-	0.10	0.50	1.000	-
USER-DEFINED	-	0.90	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697  
SUBAREA AREA (ACRES) = 9.50 SUBAREA RUNOFF (CFS) = 5.14  
EFFECTIVE AREA (ACRES) = 1675.76 AREA-AVERAGED Fm (INCH/HR) = 0.37  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA (ACRES) = 6454.3 PEAK FLOW RATE (CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 26.21  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.50	0.200	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	1.00	0.50	1.000	-
USER-DEFINED	-	41.90	0.50	0.100	-
USER-DEFINED	-	7.20	0.50	1.000	-
USER-DEFINED	-	25.00	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498  
SUBAREA AREA (ACRES) = 75.60 SUBAREA RUNOFF (CFS) = 47.69  
EFFECTIVE AREA (ACRES) = 1751.36 AREA-AVERAGED Fm (INCH/HR) = 0.37  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
TOTAL AREA (ACRES) = 6529.9 PEAK FLOW RATE (CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 26.21  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.10	0.50	0.850	-
USER-DEFINED	-	0.90	0.50	1.000	-
USER-DEFINED	-	0.30	0.50	0.600	-
USER-DEFINED	-	13.20	0.50	1.000	-
USER-DEFINED	-	0.50	0.50	0.200	-
USER-DEFINED	-	0.60	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966  
SUBAREA AREA (ACRES) = 15.60 SUBAREA RUNOFF (CFS) = 6.56  
EFFECTIVE AREA (ACRES) = 1766.96 AREA-AVERAGED Fm (INCH/HR) = 0.37  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
TOTAL AREA (ACRES) = 6545.5 PEAK FLOW RATE (CFS) = 1577.71  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 26.21  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	33.90	0.50	0.100	-
USER-DEFINED	-	17.60	0.50	1.000	-
USER-DEFINED	-	16.80	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	0.200	-
USER-DEFINED	-	1.50	0.50	0.400	-

USER-DEFINED - 10.00 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603  
 SUBAREA AREA (ACRES) = 80.40 SUBAREA RUNOFF (CFS) = 46.91  
 EFFECTIVE AREA (ACRES) = 1847.36 AREA-AVERAGED Fm (INCH/HR) = 0.36  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 6625.9 PEAK FLOW RATE (CFS) = 1577.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 26.21  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.50	0.600	-
USER-DEFINED	-	0.70	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
 SUBAREA AREA (ACRES) = 1.00 SUBAREA RUNOFF (CFS) = 0.46  
 EFFECTIVE AREA (ACRES) = 1848.36 AREA-AVERAGED Fm (INCH/HR) = 0.36  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 6626.9 PEAK FLOW RATE (CFS) = 1577.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 26.21  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.30	0.50	1.000	-
USER-DEFINED	-	0.80	0.50	1.000	-
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	0.30	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 2.10 SUBAREA RUNOFF (CFS) = 0.85  
 EFFECTIVE AREA (ACRES) = 1850.46 AREA-AVERAGED Fm (INCH/HR) = 0.36  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 6629.0 PEAK FLOW RATE (CFS) = 1577.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 26.21

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.950

SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.20	0.50	1.000	-
USER-DEFINED	-	0.50	0.50	1.000	-
USER-DEFINED	-	1.70	0.50	0.850	-
USER-DEFINED	-	7.20	0.50	1.000	-
USER-DEFINED	-	1.00	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978  
 SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 4.81  
 EFFECTIVE AREA (ACRES) = 1862.06 AREA-AVERAGED Fm (INCH/HR) = 0.36  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 6640.6 PEAK FLOW RATE (CFS) = 1577.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: RU05EV29.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11892.67	27.26	0.50 ( 0.39)	0.77	6214.5	300.00
2	11659.27	33.93	0.50 ( 0.40)	0.80	8317.6	50220.00
3	11432.38	39.98	0.50 ( 0.41)	0.82	10133.5	306.00
4	10899.94	53.76	0.50 ( 0.43)	0.86	13827.6	390.00
5	10513.77	65.72	0.50 ( 0.45)	0.89	16955.6	11801.00
6	10246.12	77.08	0.50 ( 0.45)	0.91	20188.1	11500.00
7	9894.77	89.08	0.50 ( 0.46)	0.92	24232.6	11000.00
8	9481.72	105.52	0.50 ( 0.47)	0.94	31098.2	12500.00
9	9273.19	111.72	0.50 ( 0.47)	0.94	33967.6	10900.00
10	8608.81	120.43	0.50 ( 0.47)	0.95	37296.8	11130.00
11	7916.18	131.90	0.50 ( 0.48)	0.95	40969.3	11620.00
12	6851.46	147.70	0.50 ( 0.48)	0.95	45495.1	12400.00
13	5997.46	159.11	0.50 ( 0.48)	0.96	47801.3	12201.00
14	5381.29	168.43	0.50 ( 0.48)	0.96	49091.9	12111.00
15	4448.67	184.14	0.50 ( 0.48)	0.96	51014.8	12261.00
16	3974.39	193.44	0.50 ( 0.48)	0.96	51826.0	10200.00
17	3401.09	208.82	0.50 ( 0.48)	0.96	53063.9	10300.00
18	3167.73	215.66	0.50 ( 0.48)	0.96	53416.1	12010.00
19	2688.12	236.08	0.50 ( 0.48)	0.96	53744.5	12000.00
20	1695.65	304.38	0.50 ( 0.48)	0.96	54415.3	10100.00
TOTAL AREA (ACRES) =						54415.3

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11892.67	27.26	0.50 ( 0.39)	0.77	6214.5	300.00
2	11659.27	33.93	0.50 ( 0.40)	0.80	8317.6	50220.00
3	11432.38	39.98	0.50 ( 0.41)	0.82	10133.5	306.00
4	10899.94	53.76	0.50 ( 0.43)	0.86	13827.6	390.00
5	10513.77	65.72	0.50 ( 0.45)	0.89	16955.6	11801.00
6	10246.12	77.08	0.50 ( 0.45)	0.91	20188.1	11500.00
7	9894.77	89.08	0.50 ( 0.46)	0.92	24232.6	11000.00
8	9481.72	105.52	0.50 ( 0.47)	0.94	31098.2	12500.00
9	9273.19	111.72	0.50 ( 0.47)	0.94	33967.6	10900.00
10	8608.81	120.43	0.50 ( 0.47)	0.95	37296.8	11130.00
11	7916.18	131.90	0.50 ( 0.48)	0.95	40969.3	11620.00
12	6851.46	147.70	0.50 ( 0.48)	0.95	45495.1	12400.00
13	5997.46	159.11	0.50 ( 0.48)	0.96	47801.3	12201.00
14	5381.29	168.43	0.50 ( 0.48)	0.96	49091.9	12111.00
15	4448.67	184.14	0.50 ( 0.48)	0.96	51014.8	12261.00
16	3974.39	193.44	0.50 ( 0.48)	0.96	51826.0	10200.00
17	3401.09	208.82	0.50 ( 0.48)	0.96	53063.9	10300.00
18	3167.73	215.66	0.50 ( 0.48)	0.96	53416.1	12010.00
19	2688.12	236.08	0.50 ( 0.48)	0.96	53744.5	12000.00
20	1695.65	304.38	0.50 ( 0.48)	0.96	54415.3	10100.00
TOTAL AREA (ACRES) =		54415.3				

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 213.00 DOWNSTREAM (FEET) = 212.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1389.52 CHANNEL SLOPE = 0.0007  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
 CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
 ALLOWABLE DEPTH).  
 AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
 ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA (CFS) = 11892.67  
 FLOW VELOCITY (FEET/SEC.) = 9.91 FLOW DEPTH (FEET) = 20.00  
 TRAVEL TIME (MIN.) = 2.34 Tc (MIN.) = 29.59  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1	11892.67	29.59	0.883	0.50 ( 0.39)	0.77	6214.5	300.00
2	11659.27	36.31	0.795	0.50 ( 0.40)	0.80	8317.6	50220.00
3	11432.38	42.41	0.728	0.50 ( 0.41)	0.82	10133.5	306.00
4	10899.94	56.31	0.626	0.50 ( 0.43)	0.86	13827.6	390.00
5	10513.77	68.36	0.574	0.50 ( 0.45)	0.89	16955.6	11801.00
6	10246.12	79.79	0.535	0.50 ( 0.45)	0.91	20188.1	11500.00
7	9894.77	91.89	0.496	0.50 ( 0.46)	0.92	24232.6	11000.00
8	9481.72	108.45	0.464	0.50 ( 0.47)	0.94	31098.2	12500.00
9	9273.19	114.71	0.451	0.50 ( 0.47)	0.94	33967.6	10900.00
10	8608.81	123.66	0.437	0.50 ( 0.47)	0.95	37296.8	11130.00
11	7916.18	135.41	0.423	0.50 ( 0.48)	0.95	40969.3	11620.00
12	6851.46	151.63	0.403	0.50 ( 0.48)	0.95	45495.1	12400.00
13	5997.46	163.17	0.389	0.50 ( 0.48)	0.96	47801.3	12201.00
14	5381.29	172.61	0.378	0.50 ( 0.48)	0.96	49091.9	12111.00
15	4448.67	188.52	0.364	0.50 ( 0.48)	0.96	51014.8	12261.00
16	3974.39	197.94	0.359	0.50 ( 0.48)	0.96	51826.0	10200.00
17	3401.09	213.50	0.351	0.50 ( 0.48)	0.96	53063.9	10300.00
18	3167.73	220.43	0.347	0.50 ( 0.48)	0.96	53416.1	12010.00
19	2688.12	241.04	0.336	0.50 ( 0.48)	0.96	53744.5	12000.00
20	1695.65	309.95	0.299	0.50 ( 0.48)	0.96	54415.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1577.71	26.21	0.950	0.50 ( 0.36)	0.73	1862.1	120.00
2	1572.37	26.57	0.943	0.50 ( 0.37)	0.73	1891.3	110.00
3	1505.06	34.48	0.818	0.50 ( 0.37)	0.75	2498.3	100.00
4	1462.18	39.06	0.760	0.50 ( 0.38)	0.76	2818.2	150.00
5	1376.61	52.46	0.650	0.50 ( 0.39)	0.78	3734.7	31100.00
6	1274.29	70.95	0.565	0.50 ( 0.40)	0.79	5262.3	13100.00
7	1247.04	73.47	0.557	0.50 ( 0.40)	0.79	5423.7	13200.00
8	1238.66	73.98	0.555	0.50 ( 0.40)	0.79	5446.0	13210.00
9	800.92	105.96	0.469	0.50 ( 0.40)	0.79	6614.9	13000.00
10	737.39	110.71	0.459	0.50 ( 0.40)	0.79	6640.6	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13470.39	26.21	0.950	0.50 ( 0.38)	0.76	7366.3	120.00
2	13465.05	26.57	0.943	0.50 ( 0.38)	0.76	7471.1	110.00
3	13439.33	29.59	0.883	0.50 ( 0.38)	0.76	8337.7	300.00
4	13227.92	34.48	0.818	0.50 ( 0.39)	0.78	10243.0	100.00
5	13147.19	36.31	0.795	0.50 ( 0.39)	0.79	10943.8	50220.00
6	13019.21	39.06	0.760	0.50 ( 0.40)	0.80	11954.2	150.00
7	12873.17	42.41	0.728	0.50 ( 0.40)	0.81	13180.9	306.00
8	12424.14	52.46	0.650	0.50 ( 0.42)	0.83	16538.3	31100.00
9	12255.23	56.31	0.626	0.50 ( 0.42)	0.84	17880.6	390.00
10	11802.39	68.36	0.574	0.50 ( 0.43)	0.87	22003.9	11801.00
11	11727.39	70.95	0.565	0.50 ( 0.44)	0.87	22950.7	13100.00
12	11641.05	73.47	0.557	0.50 ( 0.44)	0.87	23825.7	13200.00
13	11620.90	73.98	0.555	0.50 ( 0.44)	0.87	23990.1	13210.00
14	11405.23	79.79	0.535	0.50 ( 0.44)	0.88	25846.6	11500.00
15	10888.22	91.89	0.496	0.50 ( 0.45)	0.90	30333.5	11000.00
16	10344.91	105.96	0.469	0.50 ( 0.46)	0.91	36678.1	13000.00
17	10249.23	108.45	0.464	0.50 ( 0.46)	0.91	37726.6	12500.00
18	10144.07	110.71	0.459	0.50 ( 0.46)	0.91	38771.2	13010.00



19	9997.93	114.71	0.451	0.50	( 0.46)	0.92	40608.2	10900.00
20	9309.79	123.66	0.437	0.50	( 0.46)	0.92	43937.4	11130.00
21	8594.54	135.41	0.423	0.50	( 0.46)	0.93	47609.9	11620.00
22	7498.57	151.63	0.403	0.50	( 0.47)	0.93	52135.7	12400.00
23	6622.32	163.17	0.389	0.50	( 0.47)	0.94	54441.9	12201.00
24	5987.97	172.61	0.378	0.50	( 0.47)	0.94	55732.5	12111.00
25	5033.74	188.52	0.364	0.50	( 0.47)	0.94	57655.4	12261.00
26	4551.31	197.94	0.359	0.50	( 0.47)	0.94	58466.5	10200.00
27	3964.54	213.50	0.351	0.50	( 0.47)	0.94	59704.4	10300.00
28	3725.20	220.43	0.347	0.50	( 0.47)	0.94	60056.6	12010.00
29	3227.75	241.04	0.336	0.50	( 0.47)	0.94	60385.0	12000.00
30	2175.66	309.95	0.299	0.50	( 0.47)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 13470.39 Tc (MIN.) = 26.211  
EFFECTIVE AREA (ACRES) = 7366.29 AREA-AVERAGED Fm (INCH/HR) = 0.38  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 61055.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 61055.8 TC (MIN.) = 26.21  
EFFECTIVE AREA (ACRES) = 7366.29 AREA-AVERAGED Fm (INCH/HR) = 0.38  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.762  
PEAK FLOW RATE (CFS) = 13470.39

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13470.39	26.21	0.950	0.50 ( 0.38)	0.76	7366.3	120.00
2	13465.05	26.57	0.943	0.50 ( 0.38)	0.76	7471.1	110.00
3	13439.33	29.59	0.883	0.50 ( 0.38)	0.76	8337.7	300.00
4	13227.92	34.48	0.818	0.50 ( 0.39)	0.78	10243.0	100.00
5	13147.19	36.31	0.795	0.50 ( 0.39)	0.79	10943.8	50220.00
6	13019.21	39.06	0.760	0.50 ( 0.40)	0.80	11954.2	150.00
7	12873.17	42.41	0.728	0.50 ( 0.40)	0.81	13180.9	306.00
8	12424.14	52.46	0.650	0.50 ( 0.42)	0.83	16538.3	31100.00
9	12255.23	56.31	0.626	0.50 ( 0.42)	0.84	17880.6	390.00
10	11802.39	68.36	0.574	0.50 ( 0.43)	0.87	22003.9	11801.00
11	11727.39	70.95	0.565	0.50 ( 0.44)	0.87	22950.7	13100.00
12	11641.05	73.47	0.557	0.50 ( 0.44)	0.87	23825.7	13200.00
13	11620.90	73.98	0.555	0.50 ( 0.44)	0.87	23990.1	13210.00
14	11405.23	79.79	0.535	0.50 ( 0.44)	0.88	25846.6	11500.00
15	10888.22	91.89	0.496	0.50 ( 0.45)	0.90	30333.5	11000.00
16	10344.91	105.96	0.469	0.50 ( 0.46)	0.91	36678.1	13000.00
17	10249.23	108.45	0.464	0.50 ( 0.46)	0.91	37726.6	12500.00
18	10144.07	110.71	0.459	0.50 ( 0.46)	0.91	38771.2	13010.00
19	9997.93	114.71	0.451	0.50 ( 0.46)	0.92	40608.2	10900.00
20	9309.79	123.66	0.437	0.50 ( 0.46)	0.92	43937.4	11130.00
21	8594.54	135.41	0.423	0.50 ( 0.46)	0.93	47609.9	11620.00
22	7498.57	151.63	0.403	0.50 ( 0.47)	0.93	52135.7	12400.00
23	6622.32	163.17	0.389	0.50 ( 0.47)	0.94	54441.9	12201.00
24	5987.97	172.61	0.378	0.50 ( 0.47)	0.94	55732.5	12111.00
25	5033.74	188.52	0.364	0.50 ( 0.47)	0.94	57655.4	12261.00
26	4551.31	197.94	0.359	0.50 ( 0.47)	0.94	58466.5	10200.00
27	3964.54	213.50	0.351	0.50 ( 0.47)	0.94	59704.4	10300.00
28	3725.20	220.43	0.347	0.50 ( 0.47)	0.94	60056.6	12010.00

29	3227.75	241.04	0.336	0.50	( 0.47)	0.94	60385.0	12000.00
30	2175.66	309.95	0.299	0.50	( 0.47)	0.94	61055.8	10100.00

=====  
END OF RATIONAL METHOD ANALYSIS  
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\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S34- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV34.DAT  
TIME/DATE OF STUDY: 11:33 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.630
- 2) 10.00; 1.755
- 3) 15.00; 1.301
- 4) 20.00; 1.113
- 5) 25.00; 0.972
- 6) 30.00; 0.874
- 7) 40.00; 0.746
- 8) 50.00; 0.663
- 9) 60.00; 0.602
- 10) 90.00; 0.498
- 11) 120.00; 0.439
- 12) 180.00; 0.368
- 13) 360.00; 0.270
- 14) 1200.00; 0.118

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES: LIP (FT)	MANNING HIKE FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167 0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU05EV33.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13470.39	26.21	0.50 ( 0.38)	0.76	7366.3	120.00
2	13227.92	34.48	0.50 ( 0.39)	0.78	10243.0	100.00
3	12424.14	52.46	0.50 ( 0.42)	0.83	16538.3	31100.00
4	11802.39	68.36	0.50 ( 0.43)	0.87	22003.9	11801.00
5	11641.05	73.47	0.50 ( 0.44)	0.87	23825.7	13200.00
6	11405.23	79.79	0.50 ( 0.44)	0.88	25846.6	11500.00
7	10888.22	91.89	0.50 ( 0.45)	0.90	30333.5	11000.00
8	10344.91	105.96	0.50 ( 0.46)	0.91	36678.1	13000.00
9	10144.07	110.71	0.50 ( 0.46)	0.91	38771.2	13010.00
10	9309.79	123.66	0.50 ( 0.46)	0.92	43937.4	11130.00
11	8594.54	135.41	0.50 ( 0.46)	0.93	47609.9	11620.00
12	7498.57	151.63	0.50 ( 0.47)	0.93	52135.7	12400.00
13	6622.32	163.17	0.50 ( 0.47)	0.94	54441.9	12201.00
14	5987.97	172.61	0.50 ( 0.47)	0.94	55732.5	12111.00
15	5033.74	188.52	0.50 ( 0.47)	0.94	57655.4	12261.00
16	4551.31	197.94	0.50 ( 0.47)	0.94	58466.5	10200.00
17	3964.54	213.50	0.50 ( 0.47)	0.94	59704.4	10300.00
18	3725.20	220.43	0.50 ( 0.47)	0.94	60056.6	12010.00
19	3227.75	241.04	0.50 ( 0.47)	0.94	60385.0	12000.00
20	2175.66	309.95	0.50 ( 0.47)	0.94	61055.8	10100.00
TOTAL AREA (ACRES) =						61055.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13470.39	26.21	0.50 ( 0.38)	0.76	7366.3	120.00
2	13227.92	34.48	0.50 ( 0.39)	0.78	10243.0	100.00
3	12424.14	52.46	0.50 ( 0.42)	0.83	16538.3	31100.00
4	11802.39	68.36	0.50 ( 0.43)	0.87	22003.9	11801.00
5	11641.05	73.47	0.50 ( 0.44)	0.87	23825.7	13200.00
6	11405.23	79.79	0.50 ( 0.44)	0.88	25846.6	11500.00
7	10888.22	91.89	0.50 ( 0.45)	0.90	30333.5	11000.00
8	10344.91	105.96	0.50 ( 0.46)	0.91	36678.1	13000.00
9	10144.07	110.71	0.50 ( 0.46)	0.91	38771.2	13010.00
10	9309.79	123.66	0.50 ( 0.46)	0.92	43937.4	11130.00
11	8594.54	135.41	0.50 ( 0.46)	0.93	47609.9	11620.00
12	7498.57	151.63	0.50 ( 0.47)	0.93	52135.7	12400.00
13	6622.32	163.17	0.50 ( 0.47)	0.94	54441.9	12201.00

14	5987.97	172.61	0.50	( 0.47)	0.94	55732.5	12111.00
15	5033.74	188.52	0.50	( 0.47)	0.94	57655.4	12261.00
16	4551.31	197.94	0.50	( 0.47)	0.94	58466.5	10200.00
17	3964.54	213.50	0.50	( 0.47)	0.94	59704.4	10300.00
18	3725.20	220.43	0.50	( 0.47)	0.94	60056.6	12010.00
19	3227.75	241.04	0.50	( 0.47)	0.94	60385.0	12000.00
20	2175.66	309.95	0.50	( 0.47)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 212.00 DOWNSTREAM(FEET) = 209.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 623.02 CHANNEL SLOPE = 0.0048  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 13470.39  
 FLOW VELOCITY(FEET/SEC.) = 14.23 FLOW DEPTH(FEET) = 17.76  
 TRAVEL TIME(MIN.) = 0.73 Tc(MIN.) = 26.94  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: P505XX05.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	69.44	20.56	0.50 ( 0.48)	0.96	146.4	50500.00

TOTAL AREA (ACRES) = 146.4

\*\*\*\*\*

FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13470.39	26.94	0.934	0.50 ( 0.38)	0.76	7366.3	120.00
2	13227.92	35.22	0.807	0.50 ( 0.39)	0.78	10243.0	100.00
3	12424.14	53.20	0.643	0.50 ( 0.42)	0.83	16538.3	31100.00
4	11802.39	69.12	0.570	0.50 ( 0.43)	0.87	22003.9	11801.00
5	11641.05	74.23	0.553	0.50 ( 0.44)	0.87	23825.7	13200.00
6	11405.23	80.55	0.531	0.50 ( 0.44)	0.88	25846.6	11500.00
7	10888.22	92.66	0.493	0.50 ( 0.45)	0.90	30333.5	11000.00
8	10344.91	106.74	0.465	0.50 ( 0.46)	0.91	36678.1	13000.00
9	10144.07	111.49	0.456	0.50 ( 0.46)	0.91	38771.2	13010.00
10	9309.79	124.46	0.434	0.50 ( 0.46)	0.92	43937.4	11130.00
11	8594.54	136.22	0.420	0.50 ( 0.46)	0.93	47609.9	11620.00
12	7498.57	152.47	0.401	0.50 ( 0.47)	0.93	52135.7	12400.00
13	6622.32	164.04	0.387	0.50 ( 0.47)	0.94	54441.9	12201.00

14	5987.97	173.50	0.376	0.50 ( 0.47)	0.94	55732.5	12111.00
15	5033.74	189.46	0.363	0.50 ( 0.47)	0.94	57655.4	12261.00
16	4551.31	198.90	0.358	0.50 ( 0.47)	0.94	58466.5	10200.00
17	3964.54	214.49	0.349	0.50 ( 0.47)	0.94	59704.4	10300.00
18	3725.20	221.44	0.345	0.50 ( 0.47)	0.94	60056.6	12010.00
19	3227.75	242.09	0.334	0.50 ( 0.47)	0.94	60385.0	12000.00
20	2175.66	311.10	0.297	0.50 ( 0.47)	0.94	61055.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	69.44	20.56	1.097	0.50 ( 0.48)	0.96	146.4	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 5416.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13385.75	20.56	1.097	0.50 ( 0.38)	0.77	5768.4	50500.00
2	13521.48	26.94	0.934	0.50 ( 0.38)	0.77	7512.7	120.00
3	13264.76	35.22	0.807	0.50 ( 0.39)	0.78	10389.4	100.00
4	12442.57	53.20	0.643	0.50 ( 0.42)	0.84	16684.8	31100.00
5	11812.61	69.12	0.570	0.50 ( 0.43)	0.87	22150.3	11801.00
6	11649.28	74.23	0.553	0.50 ( 0.44)	0.87	23972.1	13200.00
7	11410.99	80.55	0.531	0.50 ( 0.44)	0.88	25993.0	11500.00
8	10890.51	92.66	0.493	0.50 ( 0.45)	0.90	30479.9	11000.00
9	10347.07	106.74	0.465	0.50 ( 0.46)	0.91	36824.5	13000.00
10	10146.19	111.49	0.456	0.50 ( 0.46)	0.91	38917.6	13010.00
11	9311.81	124.46	0.434	0.50 ( 0.46)	0.92	44083.8	11130.00
12	8596.49	136.22	0.420	0.50 ( 0.46)	0.93	47756.3	11620.00
13	7500.43	152.47	0.401	0.50 ( 0.47)	0.93	52282.1	12400.00
14	6624.12	164.04	0.387	0.50 ( 0.47)	0.94	54588.2	12201.00
15	5989.72	173.50	0.376	0.50 ( 0.47)	0.94	55878.9	12111.00
16	5035.42	189.46	0.363	0.50 ( 0.47)	0.94	57801.8	12261.00
17	4552.97	198.90	0.358	0.50 ( 0.47)	0.94	58612.9	10200.00
18	3966.17	214.49	0.349	0.50 ( 0.47)	0.94	59850.8	10300.00
19	3726.80	221.44	0.345	0.50 ( 0.47)	0.94	60203.0	12010.00
20	3229.30	242.09	0.334	0.50 ( 0.47)	0.94	60531.4	12000.00
21	2177.04	311.10	0.297	0.50 ( 0.47)	0.94	61202.2	10100.00

TOTAL AREA (ACRES) = 61202.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13521.48 Tc(MIN.) = 26.941  
 EFFECTIVE AREA(ACRES) = 7512.69 AREA-AVERAGED Fm(INCH/HR) = 0.38  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 61202.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13402.00 TO NODE 13404.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 209.00 DOWNSTREAM(FEET) = 207.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 395.35 CHANNEL SLOPE = 0.0051  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

CHANNEL FLOW THRU SUBAREA(CFS) = 13521.48  
 FLOW VELOCITY(FEET/SEC.) = 14.52 FLOW DEPTH(FEET) = 17.62  
 TRAVEL TIME(MIN.) = 0.45 Tc(MIN.) = 27.39  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P506XX05.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.28	20.61	0.50 ( 0.48)	0.97	49.5	50600.00
TOTAL AREA (ACRES) =						49.5

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13385.75	21.02	1.084	0.50 ( 0.38)	0.77	5768.4	50500.00
2	13521.48	27.39	0.925	0.50 ( 0.38)	0.77	7512.7	120.00
3	13264.76	35.67	0.801	0.50 ( 0.39)	0.78	10389.4	100.00
4	12442.57	53.67	0.641	0.50 ( 0.42)	0.84	16684.8	31100.00
5	11812.61	69.58	0.569	0.50 ( 0.43)	0.87	22150.3	11801.00
6	11649.28	74.70	0.551	0.50 ( 0.44)	0.87	23972.1	13200.00
7	11410.99	81.02	0.529	0.50 ( 0.44)	0.88	25993.0	11500.00
8	10890.51	93.14	0.492	0.50 ( 0.45)	0.90	30479.9	11000.00
9	10347.07	107.22	0.464	0.50 ( 0.46)	0.91	36824.5	13000.00
10	10146.19	111.98	0.455	0.50 ( 0.46)	0.91	38917.6	13010.00
11	9311.81	124.96	0.433	0.50 ( 0.46)	0.92	44083.8	11130.00
12	8596.49	136.73	0.419	0.50 ( 0.46)	0.93	47756.3	11620.00
13	7500.43	153.00	0.400	0.50 ( 0.47)	0.93	52282.1	12400.00
14	6624.12	164.59	0.386	0.50 ( 0.47)	0.94	54588.2	12201.00
15	5989.72	174.06	0.375	0.50 ( 0.47)	0.94	55878.9	12111.00
16	5035.42	190.04	0.363	0.50 ( 0.47)	0.94	57801.8	12261.00
17	4552.97	199.50	0.357	0.50 ( 0.47)	0.94	58612.9	10200.00
18	3966.17	215.11	0.349	0.50 ( 0.47)	0.94	59850.8	10300.00
19	3726.80	222.06	0.345	0.50 ( 0.47)	0.94	60203.0	12010.00
20	3229.30	242.74	0.334	0.50 ( 0.47)	0.94	60531.4	12000.00
21	2177.04	311.82	0.296	0.50 ( 0.47)	0.94	61202.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 =						119109.03 FEET.	

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.28	20.61	1.096	0.50 ( 0.48)	0.97	49.5	50600.00
LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 =						4378.00 FEET.	

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.28	20.61	1.096	0.50 ( 0.48)	0.97	49.5	50600.00

1	13364.63	20.61	1.096	0.50 ( 0.38)	0.77	5705.7	50600.00
2	13408.59	21.02	1.084	0.50 ( 0.38)	0.77	5817.9	50500.00
3	13538.27	27.39	0.925	0.50 ( 0.38)	0.77	7562.2	120.00
4	13276.86	35.67	0.801	0.50 ( 0.39)	0.78	10438.9	100.00
5	12448.56	53.67	0.641	0.50 ( 0.42)	0.84	16734.2	31100.00
6	11815.87	69.58	0.569	0.50 ( 0.43)	0.87	22199.8	11801.00
7	11651.87	74.70	0.551	0.50 ( 0.44)	0.87	24021.6	13200.00
8	11412.75	81.02	0.529	0.50 ( 0.44)	0.88	26042.5	11500.00
9	10891.16	93.14	0.492	0.50 ( 0.45)	0.90	30529.4	11000.00
10	10347.68	107.22	0.464	0.50 ( 0.46)	0.91	36874.0	13000.00
11	10146.79	111.98	0.455	0.50 ( 0.46)	0.91	38967.1	13010.00
12	9312.38	124.96	0.433	0.50 ( 0.46)	0.92	44133.3	11130.00
13	8597.04	136.73	0.419	0.50 ( 0.46)	0.93	47805.8	11620.00
14	7500.95	153.00	0.400	0.50 ( 0.47)	0.93	52331.6	12400.00
15	6624.62	164.59	0.386	0.50 ( 0.47)	0.94	54637.8	12201.00
16	5990.21	174.06	0.375	0.50 ( 0.47)	0.94	55928.4	12111.00
17	5035.90	190.04	0.363	0.50 ( 0.47)	0.94	57851.3	12261.00
18	4553.44	199.50	0.357	0.50 ( 0.47)	0.94	58662.4	10200.00
19	3966.62	215.11	0.349	0.50 ( 0.47)	0.94	59900.3	10300.00
20	3727.26	222.06	0.345	0.50 ( 0.47)	0.94	60252.5	12010.00
21	3229.74	242.74	0.334	0.50 ( 0.47)	0.94	60580.9	12000.00
22	2177.43	311.82	0.296	0.50 ( 0.47)	0.94	61251.7	10100.00
TOTAL AREA (ACRES) =						61251.7	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 13538.27 Tc(MIN.) = 27.395  
 EFFECTIVE AREA(ACRES) = 7562.19 AREA-AVERAGED Fm(INCH/HR) = 0.38  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA (ACRES) = 61251.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 CHANNEL FLOW THRU SUBAREA(CFS) = 13538.27  
 FLOW VELOCITY(FEET/SEC.) = 16.82 FLOW DEPTH(FEET) = 16.38  
 TRAVEL TIME(MIN.) = 1.59 Tc(MIN.) = 28.98  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 28.98  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.894  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.20	0.50	1.000	-
USER-DEFINED	-	4.00	0.50	1.000	-

USER-DEFINED - 2.00 0.50 1.000 -  
 USER-DEFINED - 9.70 0.50 1.000 -  
 USER-DEFINED - 2.60 0.50 1.000 -  
 USER-DEFINED - 1.60 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 20.10 SUBAREA RUNOFF(CFS) = 7.12  
 EFFECTIVE AREA(ACRES) = 7582.29 AREA-AVERAGED Fm(INCH/HR) = 0.38  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 61271.8 PEAK FLOW RATE(CFS) = 13538.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 28.98  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.894  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.00	0.50	1.000	-
USER-DEFINED	-	7.10	0.50	1.000	-
USER-DEFINED	-	5.80	0.50	1.000	-
USER-DEFINED	-	0.10	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 5.32  
 EFFECTIVE AREA(ACRES) = 7597.29 AREA-AVERAGED Fm(INCH/HR) = 0.38  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 61286.8 PEAK FLOW RATE(CFS) = 13538.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.852  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.00	0.50	1.000	-
USER-DEFINED	-	3.30	0.50	1.000	-
USER-DEFINED	-	0.40	0.50	0.100	-
USER-DEFINED	-	1.40	0.50	1.000	-
USER-DEFINED	-	0.30	0.50	0.100	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 13540.37  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.77  
 AVERAGE FLOW DEPTH(FEET) = 17.48 TRAVEL TIME(MIN.) = 2.77

Tc(MIN.) = 31.76  
 SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 4.20  
 EFFECTIVE AREA(ACRES) = 7609.69 AREA-AVERAGED Fm(INCH/HR) = 0.38  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA(ACRES) = 61299.2 PEAK FLOW RATE(CFS) = 13538.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 17.48 FLOW VELOCITY(FEET/SEC.) = 14.76  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 2P05EVBB.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	324.09	10.46	0.50( 0.18)	0.37	230.2	429.00
2	338.93	12.25	0.50( 0.18)	0.37	269.4	425.00
3	340.01	12.46	0.50( 0.18)	0.37	274.1	400.00
4	343.88	14.30	0.50( 0.19)	0.37	315.0	300.00
5	364.37	20.67	0.50( 0.19)	0.37	439.8	210.00
6	360.20	22.34	0.50( 0.19)	0.37	459.0	410.00
7	355.69	24.05	0.50( 0.18)	0.37	478.3	200.00
8	351.99	24.89	0.50( 0.18)	0.37	487.0	230.00
9	344.00	26.01	0.50( 0.18)	0.37	491.2	220.50
TOTAL AREA(ACRES) =						491.2

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13364.63	24.98	0.972	0.50( 0.39)	0.77	5753.2	50600.00
2	13408.59	25.39	0.964	0.50( 0.39)	0.77	5865.4	50500.00
3	13538.27	31.76	0.852	0.50( 0.38)	0.77	7609.7	120.00
4	13276.86	40.06	0.746	0.50( 0.39)	0.79	10486.4	100.00
5	12448.56	58.12	0.613	0.50( 0.42)	0.84	16781.8	31100.00
6	11815.87	74.10	0.553	0.50( 0.43)	0.87	22247.3	11801.00
7	11651.87	79.23	0.535	0.50( 0.44)	0.87	24069.1	13200.00
8	11412.75	85.58	0.513	0.50( 0.44)	0.88	26090.0	11500.00
9	10891.16	97.75	0.483	0.50( 0.45)	0.90	30576.9	11000.00
10	10347.68	111.89	0.455	0.50( 0.46)	0.91	36921.5	13000.00
11	10146.79	116.66	0.446	0.50( 0.46)	0.92	39014.6	13010.00
12	9312.38	129.75	0.427	0.50( 0.46)	0.92	44180.8	11130.00

13	8597.04	141.62	0.413	0.50 ( 0.46)	0.93	47853.3	11620.00
14	7500.95	158.06	0.394	0.50 ( 0.47)	0.93	52379.1	12400.00
15	6624.62	169.81	0.380	0.50 ( 0.47)	0.94	54685.2	12201.00
16	5990.21	179.41	0.369	0.50 ( 0.47)	0.94	55975.9	12111.00
17	5035.90	195.62	0.359	0.50 ( 0.47)	0.94	57898.8	12261.00
18	4553.44	205.23	0.354	0.50 ( 0.47)	0.94	58709.9	10200.00
19	3966.62	221.04	0.346	0.50 ( 0.47)	0.94	59947.8	10300.00
20	3727.26	228.08	0.342	0.50 ( 0.47)	0.94	60300.0	12010.00
21	3229.74	248.98	0.330	0.50 ( 0.47)	0.94	60628.4	12000.00
22	2177.43	318.71	0.292	0.50 ( 0.47)	0.94	61299.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	324.09	10.46	1.713	0.50 ( 0.18)	0.37	230.2	429.00
2	338.93	12.25	1.551	0.50 ( 0.18)	0.37	269.4	425.00
3	340.01	12.46	1.532	0.50 ( 0.18)	0.37	274.1	400.00
4	343.88	14.30	1.364	0.50 ( 0.19)	0.37	315.0	300.00
5	364.37	20.67	1.094	0.50 ( 0.19)	0.37	439.8	210.00
6	360.20	22.34	1.047	0.50 ( 0.19)	0.37	459.0	410.00
7	355.69	24.05	0.999	0.50 ( 0.18)	0.37	478.3	200.00
8	351.99	24.89	0.975	0.50 ( 0.18)	0.37	487.0	230.00
9	344.00	26.01	0.952	0.50 ( 0.18)	0.37	491.2	220.50

LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13408.00 = 11903.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12980.14	10.46	1.713	0.50 ( 0.37)	0.74	2638.3	429.00
2	13347.20	12.25	1.551	0.50 ( 0.37)	0.74	3089.8	425.00
3	13354.83	12.46	1.532	0.50 ( 0.37)	0.74	3142.7	400.00
4	13102.27	14.30	1.364	0.50 ( 0.37)	0.74	3608.8	300.00
5	13713.15	20.67	1.094	0.50 ( 0.37)	0.74	5199.8	210.00
6	13724.83	22.34	1.047	0.50 ( 0.37)	0.74	5603.7	410.00
7	13720.31	24.05	0.999	0.50 ( 0.37)	0.74	6017.4	200.00
8	13716.62	24.89	0.975	0.50 ( 0.37)	0.74	6217.5	230.00
9	13715.92	24.98	0.972	0.50 ( 0.37)	0.74	6240.5	50600.00
10	13757.01	25.39	0.964	0.50 ( 0.37)	0.74	6354.3	50500.00
11	13765.28	26.01	0.952	0.50 ( 0.37)	0.74	6527.4	220.50
12	13837.24	31.76	0.852	0.50 ( 0.37)	0.74	8100.9	120.00
13	13528.41	40.06	0.746	0.50 ( 0.38)	0.77	10977.6	100.00
14	12641.02	58.12	0.613	0.50 ( 0.41)	0.82	17272.9	31100.00
15	11981.33	74.10	0.553	0.50 ( 0.43)	0.86	22738.5	11801.00
16	11809.36	79.23	0.535	0.50 ( 0.43)	0.86	24560.3	13200.00
17	11560.40	85.58	0.513	0.50 ( 0.44)	0.87	26581.2	11500.00
18	11027.99	97.75	0.483	0.50 ( 0.44)	0.89	31068.1	11000.00
19	10476.63	111.89	0.455	0.50 ( 0.45)	0.90	37412.7	13000.00
20	10273.08	116.66	0.446	0.50 ( 0.45)	0.91	39505.8	13010.00
21	9433.54	129.75	0.427	0.50 ( 0.46)	0.92	44672.0	11130.00
22	8714.21	141.62	0.413	0.50 ( 0.46)	0.92	48344.5	11620.00
23	7612.62	158.06	0.394	0.50 ( 0.46)	0.93	52870.3	12400.00
24	6732.35	169.81	0.380	0.50 ( 0.47)	0.93	55176.4	12201.00
25	6094.71	179.41	0.369	0.50 ( 0.47)	0.93	56467.1	12111.00
26	5137.79	195.62	0.359	0.50 ( 0.47)	0.93	58390.0	12261.00
27	4653.85	205.23	0.354	0.50 ( 0.47)	0.94	59201.1	10200.00
28	4064.60	221.04	0.346	0.50 ( 0.47)	0.94	60439.0	10300.00
29	3824.14	228.08	0.342	0.50 ( 0.47)	0.94	60791.2	12010.00

30	3323.40	248.98	0.330	0.50 ( 0.47)	0.94	61119.6	12000.00
31	2260.32	318.71	0.292	0.50 ( 0.47)	0.94	61790.4	10100.00

TOTAL AREA (ACRES) = 61790.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 13837.24 Tc (MIN.) = 31.756  
EFFECTIVE AREA (ACRES) = 8100.89 AREA-AVERAGED Fm (INCH/HR) = 0.37  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.74  
TOTAL AREA (ACRES) = 61790.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<<  
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\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 2 <<<<<<  
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PEAK FLOWRATE TABLE FILE NAME: P507XX05.DNA  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	76.41	27.15	0.50 ( 0.49)	0.99	231.4	50700.00

TOTAL AREA (ACRES) = 231.4

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12980.14	10.46	1.713	0.50 ( 0.37)	0.74	2638.3	429.00
2	13347.20	12.25	1.551	0.50 ( 0.37)	0.74	3089.8	425.00
3	13354.83	12.46	1.532	0.50 ( 0.37)	0.74	3142.7	400.00
4	13102.27	14.30	1.364	0.50 ( 0.37)	0.74	3608.8	300.00
5	13713.15	20.67	1.094	0.50 ( 0.37)	0.74	5199.8	210.00
6	13724.83	22.34	1.047	0.50 ( 0.37)	0.74	5603.7	410.00
7	13720.31	24.05	0.999	0.50 ( 0.37)	0.74	6017.4	200.00
8	13716.62	24.89	0.975	0.50 ( 0.37)	0.74	6217.5	230.00
9	13715.92	24.98	0.972	0.50 ( 0.37)	0.74	6240.5	50600.00
10	13757.01	25.39	0.964	0.50 ( 0.37)	0.74	6354.3	50500.00
11	13765.28	26.01	0.952	0.50 ( 0.37)	0.74	6527.4	220.50
12	13837.24	31.76	0.852	0.50 ( 0.37)	0.74	8100.9	120.00
13	13528.41	40.06	0.746	0.50 ( 0.38)	0.77	10977.6	100.00
14	12641.02	58.12	0.613	0.50 ( 0.41)	0.82	17272.9	31100.00
15	11981.33	74.10	0.553	0.50 ( 0.43)	0.86	22738.5	11801.00
16	11809.36	79.23	0.535	0.50 ( 0.43)	0.86	24560.3	13200.00
17	11560.40	85.58	0.513	0.50 ( 0.44)	0.87	26581.2	11500.00
18	11027.99	97.75	0.483	0.50 ( 0.44)	0.89	31068.1	11000.00
19	10476.63	111.89	0.455	0.50 ( 0.45)	0.90	37412.7	13000.00
20	10273.08	116.66	0.446	0.50 ( 0.45)	0.91	39505.8	13010.00

21	9433.54	129.75	0.427	0.50 ( 0.46)	0.92	44672.0	11130.00
22	8714.21	141.62	0.413	0.50 ( 0.46)	0.92	48344.5	11620.00
23	7612.62	158.06	0.394	0.50 ( 0.46)	0.93	52870.3	12400.00
24	6732.35	169.81	0.380	0.50 ( 0.47)	0.93	55176.4	12201.00
25	6094.71	179.41	0.369	0.50 ( 0.47)	0.93	56467.1	12111.00
26	5137.79	195.62	0.359	0.50 ( 0.47)	0.93	58390.0	12261.00
27	4653.85	205.23	0.354	0.50 ( 0.47)	0.94	59201.1	10200.00
28	4064.60	221.04	0.346	0.50 ( 0.47)	0.94	60439.0	10300.00
29	3824.14	228.08	0.342	0.50 ( 0.47)	0.94	60791.2	12010.00
30	3323.40	248.98	0.330	0.50 ( 0.47)	0.94	61119.6	12000.00
31	2260.32	318.71	0.292	0.50 ( 0.47)	0.94	61790.4	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	76.41	27.15	0.930	0.50 ( 0.49)	0.99	231.4	50700.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13056.55	10.46	1.713	0.50 ( 0.37)	0.74	2727.4	429.00
2	13423.61	12.25	1.551	0.50 ( 0.37)	0.74	3194.2	425.00
3	13431.24	12.46	1.532	0.50 ( 0.37)	0.74	3248.9	400.00
4	13178.68	14.30	1.364	0.50 ( 0.37)	0.74	3730.7	300.00
5	13789.56	20.67	1.094	0.50 ( 0.37)	0.75	5376.0	210.00
6	13801.24	22.34	1.047	0.50 ( 0.37)	0.75	5794.1	410.00
7	13796.72	24.05	0.999	0.50 ( 0.37)	0.75	6222.4	200.00
8	13793.03	24.89	0.975	0.50 ( 0.37)	0.75	6429.6	230.00
9	13792.33	24.98	0.972	0.50 ( 0.37)	0.75	6453.5	50600.00
10	13833.42	25.39	0.964	0.50 ( 0.37)	0.75	6570.7	50500.00
11	13841.70	26.01	0.952	0.50 ( 0.37)	0.75	6749.1	220.50
12	13855.96	27.15	0.930	0.50 ( 0.37)	0.75	7070.6	50700.00
13	13899.91	31.76	0.852	0.50 ( 0.38)	0.75	8332.3	120.00
14	13572.48	40.06	0.746	0.50 ( 0.39)	0.77	11209.0	100.00
15	12661.92	58.12	0.613	0.50 ( 0.41)	0.83	17504.3	31100.00
16	11991.64	74.10	0.553	0.50 ( 0.43)	0.86	22969.9	11801.00
17	11816.55	79.23	0.535	0.50 ( 0.43)	0.87	24791.7	13200.00
18	11563.73	85.58	0.513	0.50 ( 0.44)	0.87	26812.6	11500.00
19	11028.98	97.75	0.483	0.50 ( 0.44)	0.89	31299.5	11000.00
20	10477.56	111.89	0.455	0.50 ( 0.45)	0.90	37644.1	13000.00
21	10273.99	116.66	0.446	0.50 ( 0.45)	0.91	39737.2	13010.00
22	9434.41	129.75	0.427	0.50 ( 0.46)	0.92	44903.4	11130.00
23	8715.06	141.62	0.413	0.50 ( 0.46)	0.92	48575.9	11620.00
24	7613.43	158.06	0.394	0.50 ( 0.46)	0.93	53101.7	12400.00
25	6733.12	169.81	0.380	0.50 ( 0.47)	0.93	55407.8	12201.00
26	6095.47	179.41	0.369	0.50 ( 0.47)	0.93	56698.5	12111.00
27	5138.53	195.62	0.359	0.50 ( 0.47)	0.93	58621.4	12261.00
28	4654.58	205.23	0.354	0.50 ( 0.47)	0.94	59432.5	10200.00
29	4065.30	221.04	0.346	0.50 ( 0.47)	0.94	60670.4	10300.00
30	3824.84	228.08	0.342	0.50 ( 0.47)	0.94	61022.6	12010.00
31	3324.08	248.98	0.330	0.50 ( 0.47)	0.94	61351.0	12000.00
32	2260.92	318.71	0.292	0.50 ( 0.47)	0.94	62021.8	10100.00

TOTAL AREA (ACRES) = 62021.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 13899.91 Tc (MIN.) = 31.756

EFFECTIVE AREA (ACRES) = 8332.29 AREA-AVERAGED Fm (INCH/HR) = 0.38  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.75  
 TOTAL AREA (ACRES) = 62021.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.835

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.40	0.50	1.000	-
USER-DEFINED	-	2.90	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 13900.41  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.65  
 AVERAGE FLOW DEPTH (FEET) = 19.14 TRAVEL TIME (MIN.) = 1.26  
 Tc (MIN.) = 33.01

SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 1.00  
 EFFECTIVE AREA (ACRES) = 8335.58 AREA-AVERAGED Fm (INCH/HR) = 0.38  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.75  
 TOTAL AREA (ACRES) = 62025.1 PEAK FLOW RATE (CFS) = 13899.91  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 19.14 FLOW VELOCITY (FEET/SEC.) = 12.65  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: RU05EV36.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	716.94	33.96	0.50 ( 0.45)	0.90	1392.8	110.00
2	712.41	36.72	0.50 ( 0.45)	0.90	1540.3	100.00
3	702.91	38.48	0.50 ( 0.45)	0.90	1624.0	100.00
4	658.46	42.79	0.50 ( 0.45)	0.91	1804.5	130.00
5	539.46	61.06	0.50 ( 0.46)	0.93	2545.6	20100.00
6	464.24	68.52	0.50 ( 0.46)	0.93	2700.4	13600.00



7 180.53 136.50 0.50( 0.47) 0.93 3777.9 13510.00  
 8 122.83 163.10 0.50( 0.47) 0.93 3859.7 13500.00  
 TOTAL AREA (ACRES) = 3859.7

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13056.55	11.73	1.598	0.50( 0.37)	0.74	2730.7	429.00
2	13423.61	13.51	1.436	0.50( 0.37)	0.74	3197.5	425.00
3	13431.24	13.72	1.417	0.50( 0.37)	0.74	3252.2	400.00
4	13178.68	15.58	1.279	0.50( 0.37)	0.74	3734.0	300.00
5	13789.56	21.93	1.059	0.50( 0.37)	0.75	5379.3	210.00
6	13801.24	23.60	1.012	0.50( 0.37)	0.75	5797.4	410.00
7	13796.72	25.31	0.966	0.50( 0.37)	0.75	6225.7	200.00
8	13793.03	26.14	0.950	0.50( 0.37)	0.75	6432.9	230.00
9	13792.33	26.24	0.948	0.50( 0.37)	0.75	6456.8	50600.00
10	13833.42	26.65	0.940	0.50( 0.37)	0.75	6574.0	50500.00
11	13841.70	27.27	0.928	0.50( 0.37)	0.75	6752.4	220.50
12	13855.96	28.41	0.905	0.50( 0.37)	0.75	7073.9	50700.00
13	13899.91	33.01	0.835	0.50( 0.38)	0.75	8335.6	120.00
14	13572.48	41.32	0.735	0.50( 0.39)	0.77	11212.3	100.00
15	12661.92	59.41	0.606	0.50( 0.41)	0.83	17507.7	31100.00
16	11991.64	75.40	0.549	0.50( 0.43)	0.86	22973.2	11801.00
17	11816.55	80.54	0.531	0.50( 0.43)	0.87	24795.0	13200.00
18	11563.73	86.89	0.509	0.50( 0.44)	0.87	26815.9	11500.00
19	11028.98	99.08	0.480	0.50( 0.44)	0.89	31302.8	11000.00
20	10477.56	113.24	0.452	0.50( 0.45)	0.90	37647.4	13000.00
21	10273.99	118.02	0.443	0.50( 0.45)	0.91	39740.5	13010.00
22	9434.41	131.13	0.426	0.50( 0.46)	0.92	44906.7	11130.00
23	8715.06	143.03	0.412	0.50( 0.46)	0.92	48579.2	11620.00
24	7613.43	159.51	0.392	0.50( 0.46)	0.93	53105.0	12400.00
25	6733.12	171.31	0.378	0.50( 0.47)	0.93	55411.1	12201.00
26	6095.47	180.95	0.367	0.50( 0.47)	0.93	56701.8	12111.00
27	5138.53	197.23	0.359	0.50( 0.47)	0.93	58624.7	12261.00
28	4654.58	206.88	0.353	0.50( 0.47)	0.94	59435.8	12000.00
29	4065.30	222.75	0.345	0.50( 0.47)	0.94	60673.7	10300.00
30	3824.84	229.82	0.341	0.50( 0.47)	0.94	61025.9	12010.00
31	3324.08	250.77	0.329	0.50( 0.47)	0.94	61354.3	12000.00
32	2260.92	320.69	0.291	0.50( 0.47)	0.94	62025.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	716.94	33.96	0.823	0.50( 0.45)	0.90	1392.8	110.00
2	712.41	36.72	0.788	0.50( 0.45)	0.90	1540.3	100.00
3	702.91	38.48	0.765	0.50( 0.45)	0.90	1624.0	100.00
4	658.46	42.79	0.723	0.50( 0.45)	0.91	1804.5	130.00
5	539.46	61.06	0.598	0.50( 0.46)	0.93	2545.6	20100.00
6	464.24	68.52	0.572	0.50( 0.46)	0.93	2700.4	13600.00
7	180.53	136.50	0.419	0.50( 0.47)	0.93	3777.9	13510.00
8	122.83	163.10	0.388	0.50( 0.47)	0.93	3859.7	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13773.49	11.73	1.598	0.50( 0.38)	0.77	3211.8	429.00
2	14140.55	13.51	1.436	0.50( 0.38)	0.77	3751.6	425.00
3	14148.18	13.72	1.417	0.50( 0.38)	0.77	3815.0	400.00
4	13895.62	15.58	1.279	0.50( 0.38)	0.77	4372.7	300.00
5	14506.50	21.93	1.059	0.50( 0.38)	0.77	6278.5	210.00
6	14518.18	23.60	1.012	0.50( 0.38)	0.77	6765.1	410.00
7	14513.67	25.31	0.966	0.50( 0.38)	0.77	7263.7	200.00
8	14509.97	26.14	0.950	0.50( 0.38)	0.77	7505.0	230.00
9	14509.27	26.24	0.948	0.50( 0.38)	0.77	7532.9	50600.00
10	14550.36	26.65	0.940	0.50( 0.38)	0.77	7666.7	50500.00
11	14558.64	27.27	0.928	0.50( 0.39)	0.77	7870.6	220.50
12	14572.90	28.41	0.905	0.50( 0.39)	0.77	8238.8	50700.00
13	14616.86	33.01	0.835	0.50( 0.39)	0.77	9689.3	120.00
14	14579.32	33.96	0.823	0.50( 0.39)	0.77	10058.2	110.00
15	14466.06	36.72	0.788	0.50( 0.39)	0.78	11160.9	100.00
16	14387.28	38.48	0.765	0.50( 0.39)	0.78	11853.3	100.00
17	14246.13	41.32	0.735	0.50( 0.39)	0.79	12955.1	100.00
18	14156.71	42.79	0.723	0.50( 0.40)	0.79	13530.0	130.00
19	13212.15	59.41	0.606	0.50( 0.42)	0.84	19986.2	31100.00
20	13132.10	61.06	0.598	0.50( 0.42)	0.84	20618.2	20100.00
21	12744.38	68.52	0.572	0.50( 0.43)	0.85	23321.1	13600.00
22	12427.15	75.40	0.549	0.50( 0.43)	0.87	25782.7	11801.00
23	12230.62	80.54	0.531	0.50( 0.44)	0.87	27685.9	13200.00
24	11951.30	86.89	0.509	0.50( 0.44)	0.88	29807.4	11500.00
25	11365.68	99.08	0.480	0.50( 0.45)	0.89	34487.5	11000.00
26	10755.18	113.24	0.452	0.50( 0.45)	0.91	41056.6	13000.00
27	10531.65	118.02	0.443	0.50( 0.46)	0.91	43225.5	13010.00
28	9637.34	131.13	0.426	0.50( 0.46)	0.92	48599.5	11130.00
29	9290.41	136.50	0.419	0.50( 0.46)	0.92	50341.4	13510.00
30	8881.42	143.03	0.412	0.50( 0.46)	0.92	52377.2	11620.00
31	7744.03	159.51	0.392	0.50( 0.47)	0.93	56953.6	12400.00
32	7469.02	163.10	0.388	0.50( 0.47)	0.93	57664.7	13500.00
33	6852.88	171.31	0.378	0.50( 0.47)	0.93	59270.8	12201.00
34	6211.80	180.95	0.367	0.50( 0.47)	0.93	60561.5	12111.00
35	5252.06	197.23	0.359	0.50( 0.47)	0.93	62484.4	12261.00
36	4766.45	206.88	0.353	0.50( 0.47)	0.94	63295.5	12000.00
37	4174.43	222.75	0.345	0.50( 0.47)	0.94	64533.4	10300.00
38	3932.75	229.82	0.341	0.50( 0.47)	0.94	64885.6	12010.00
39	3428.38	250.77	0.329	0.50( 0.47)	0.94	65214.0	12000.00
40	2353.17	320.69	0.291	0.50( 0.47)	0.94	65884.8	10100.00

TOTAL AREA (ACRES) = 65884.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 14616.86 Tc (MIN.) = 33.012  
 EFFECTIVE AREA (ACRES) = 9689.29 AREA-AVERAGED Fm (INCH/HR) = 0.39  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.77  
 TOTAL AREA (ACRES) = 65884.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 178.72 DOWNSTREAM(FEET) = 176.93
CHANNEL LENGTH THRU SUBAREA(FEET) = 169.78 CHANNEL SLOPE = 0.0105
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00
CHANNEL FLOW THRU SUBAREA(CFS) = 14616.86
FLOW VELOCITY(FEET/SEC.) = 19.49 FLOW DEPTH(FEET) = 15.81
TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 33.16
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506101F.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 85.74 49.56 0.50(0.49) 0.98 591.0 10100.00
TOTAL AREA(ACRES) = 591.0

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 13773.49 11.88 1.584 0.50(0.38) 0.77 3211.8 429.00
2 14140.55 13.66 1.423 0.50(0.38) 0.77 3751.6 425.00
3 14148.18 13.87 1.404 0.50(0.38) 0.77 3815.0 400.00
4 13895.62 15.72 1.274 0.50(0.38) 0.77 4372.7 300.00
5 14506.50 22.07 1.054 0.50(0.38) 0.77 6278.5 210.00
6 14518.18 23.74 1.007 0.50(0.38) 0.77 6765.1 410.00
7 14513.67 25.46 0.963 0.50(0.38) 0.77 7263.7 200.00
8 14509.97 26.29 0.947 0.50(0.38) 0.77 7505.0 230.00
9 14509.27 26.39 0.945 0.50(0.38) 0.77 7532.9 50600.00
10 14550.36 26.79 0.937 0.50(0.38) 0.77 7666.7 50500.00
11 14558.64 27.42 0.925 0.50(0.39) 0.77 7870.6 220.50
12 14572.90 28.55 0.902 0.50(0.39) 0.77 8238.8 50700.00
13 14616.86 33.16 0.834 0.50(0.39) 0.77 9689.3 120.00
14 14579.32 34.11 0.821 0.50(0.39) 0.77 10058.2 110.00
15 14466.06 36.87 0.786 0.50(0.39) 0.78 11160.9 100.00
16 14387.28 38.63 0.764 0.50(0.39) 0.78 11853.3 100.00
17 14246.13 41.47 0.734 0.50(0.39) 0.79 12955.1 100.00
18 14156.71 42.94 0.722 0.50(0.40) 0.79 13530.0 130.00
19 13212.15 59.55 0.605 0.50(0.42) 0.84 19986.2 31100.00
20 13132.10 61.21 0.598 0.50(0.42) 0.84 20618.2 20100.00

21 12744.38 68.67 0.572 0.50(0.43) 0.85 23321.1 13600.00
22 12427.15 75.55 0.548 0.50(0.43) 0.87 25782.7 11801.00
23 12230.62 80.69 0.530 0.50(0.44) 0.87 27685.9 13200.00
24 11951.30 87.04 0.508 0.50(0.44) 0.88 29807.4 11500.00
25 11365.68 99.23 0.480 0.50(0.45) 0.89 34487.5 11000.00
26 10755.18 113.39 0.452 0.50(0.45) 0.91 41056.6 13000.00
27 10531.65 118.18 0.443 0.50(0.46) 0.91 43225.5 13010.00
28 9637.34 131.29 0.426 0.50(0.46) 0.92 48599.5 11130.00
29 9290.41 136.66 0.419 0.50(0.46) 0.92 50341.4 13510.00
30 8881.42 143.20 0.412 0.50(0.46) 0.92 52377.2 11620.00
31 7744.03 159.68 0.392 0.50(0.47) 0.93 56953.6 12400.00
32 7469.02 163.27 0.388 0.50(0.47) 0.93 57664.7 13500.00
33 6852.88 171.49 0.378 0.50(0.47) 0.93 59270.8 12201.00
34 6211.80 181.13 0.367 0.50(0.47) 0.93 60561.5 12111.00
35 5252.06 197.42 0.359 0.50(0.47) 0.93 62484.4 12261.00
36 4766.45 207.07 0.353 0.50(0.47) 0.94 63295.5 10200.00
37 4174.43 222.95 0.345 0.50(0.47) 0.94 64533.4 10300.00
38 3932.75 230.02 0.341 0.50(0.47) 0.94 64885.6 12010.00
39 3428.38 250.98 0.329 0.50(0.47) 0.94 65214.0 12000.00
40 2353.17 320.92 0.291 0.50(0.47) 0.94 65884.8 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 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 85.74 49.56 0.667 0.50(0.49) 0.98 591.0 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 14677.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 13859.23 11.88 1.584 0.50(0.39) 0.78 3353.5 429.00
2 14226.29 13.66 1.423 0.50(0.39) 0.78 3914.5 425.00
3 14233.92 13.87 1.404 0.50(0.39) 0.78 3980.4 400.00
4 13981.36 15.72 1.274 0.50(0.39) 0.78 4560.2 300.00
5 14592.24 22.07 1.054 0.50(0.39) 0.78 6541.8 210.00
6 14603.92 23.74 1.007 0.50(0.39) 0.78 7048.2 410.00
7 14599.40 25.46 0.963 0.50(0.39) 0.78 7567.2 200.00
8 14595.71 26.29 0.947 0.50(0.39) 0.78 7818.4 230.00
9 14595.01 26.39 0.945 0.50(0.39) 0.78 7847.5 50600.00
10 14636.10 26.79 0.937 0.50(0.39) 0.78 7986.2 50500.00
11 14644.38 27.42 0.925 0.50(0.39) 0.78 8197.6 220.50
12 14658.64 28.55 0.902 0.50(0.39) 0.78 8579.3 50700.00
13 14702.59 33.16 0.834 0.50(0.39) 0.78 10084.7 120.00
14 14665.05 34.11 0.821 0.50(0.39) 0.78 10464.9 110.00
15 14551.80 36.87 0.786 0.50(0.39) 0.79 11600.5 100.00
16 14473.01 38.63 0.764 0.50(0.40) 0.79 12313.9 100.00
17 14331.87 41.47 0.734 0.50(0.40) 0.80 13449.6 100.00
18 14242.45 42.94 0.722 0.50(0.40) 0.80 14042.0 130.00
19 13865.97 49.56 0.667 0.50(0.41) 0.82 16694.3 10100.00
20 13267.49 59.55 0.605 0.50(0.42) 0.84 20577.2 31100.00
21 13184.05 61.21 0.598 0.50(0.42) 0.84 21209.2 20100.00
22 12783.63 68.67 0.572 0.50(0.43) 0.86 23912.1 13600.00
23 12454.68 75.55 0.548 0.50(0.43) 0.87 26373.7 11801.00
24 12249.40 80.69 0.530 0.50(0.44) 0.87 28276.9 13200.00
25 11959.27 87.04 0.508 0.50(0.44) 0.88 30398.4 11500.00
26 11369.54 99.23 0.480 0.50(0.45) 0.89 35078.5 11000.00
27 10758.81 113.39 0.452 0.50(0.45) 0.91 41647.6 13000.00

28	10535.21	118.18	0.443	0.50	(0.46)	0.91	43816.5	13010.00
29	9640.76	131.29	0.426	0.50	(0.46)	0.92	49190.5	11130.00
30	9293.78	136.66	0.419	0.50	(0.46)	0.92	50932.4	13510.00
31	8884.73	143.20	0.412	0.50	(0.46)	0.93	52968.2	11620.00
32	7747.18	159.68	0.392	0.50	(0.47)	0.93	57544.6	12400.00
33	7472.13	163.27	0.388	0.50	(0.47)	0.93	58255.7	13500.00
34	6855.92	171.49	0.378	0.50	(0.47)	0.93	59861.8	12201.00
35	6214.75	181.13	0.367	0.50	(0.47)	0.93	61152.5	12111.00
36	5254.94	197.42	0.359	0.50	(0.47)	0.93	63075.4	12261.00
37	4769.28	207.07	0.353	0.50	(0.47)	0.94	63886.5	10200.00
38	4177.20	222.95	0.345	0.50	(0.47)	0.94	65124.4	10300.00
39	3935.49	230.02	0.341	0.50	(0.47)	0.94	65476.6	12010.00
40	3431.02	250.98	0.329	0.50	(0.47)	0.94	65805.0	12000.00
41	2355.51	320.92	0.291	0.50	(0.47)	0.94	66475.8	10100.00

TOTAL AREA (ACRES) = 66475.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 14702.59 Tc (MIN.) = 33.157  
EFFECTIVE AREA (ACRES) = 10084.66 AREA-AVERAGED Fm (INCH/HR) = 0.39  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.78  
TOTAL AREA (ACRES) = 66475.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 176.93 DOWNSTREAM (FEET) = 173.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 260.10 CHANNEL SLOPE = 0.0151  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 14702.59  
FLOW VELOCITY (FEET/SEC.) = 22.34 FLOW DEPTH (FEET) = 14.81  
TRAVEL TIME (MIN.) = 0.19 Tc (MIN.) = 33.35  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\*\*\*\*

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

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

\*\*\*\*\*

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

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P508XX05.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.66	26.25	0.50 (0.49)	0.99	131.3	50800.00

TOTAL AREA (ACRES) = 131.3

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13859.23	12.08	1.566	0.50 (0.39)	0.78	3353.5	429.00
2	14226.29	13.86	1.405	0.50 (0.39)	0.78	3914.5	425.00
3	14233.92	14.07	1.386	0.50 (0.39)	0.78	3980.4	400.00
4	13981.36	15.92	1.266	0.50 (0.39)	0.78	4560.2	300.00
5	14592.24	22.27	1.049	0.50 (0.39)	0.78	6541.8	210.00
6	14603.92	23.94	1.002	0.50 (0.39)	0.78	7048.2	410.00
7	14599.40	25.65	0.959	0.50 (0.39)	0.78	7567.2	200.00
8	14595.71	26.48	0.943	0.50 (0.39)	0.78	7818.4	230.00
9	14595.01	26.58	0.941	0.50 (0.39)	0.78	7847.5	50600.00
10	14636.10	26.99	0.933	0.50 (0.39)	0.78	7986.2	50500.00
11	14644.38	27.61	0.921	0.50 (0.39)	0.78	8197.6	220.50
12	14658.64	28.75	0.899	0.50 (0.39)	0.78	8579.3	50700.00
13	14702.59	33.35	0.831	0.50 (0.39)	0.78	10084.7	120.00
14	14665.05	34.30	0.819	0.50 (0.39)	0.78	10464.9	110.00
15	14551.80	37.06	0.784	0.50 (0.39)	0.79	11600.5	100.00
16	14473.01	38.82	0.761	0.50 (0.40)	0.79	12313.9	100.00
17	14331.87	41.66	0.732	0.50 (0.40)	0.80	13449.6	100.00
18	14242.45	43.14	0.720	0.50 (0.40)	0.80	14042.0	130.00
19	13865.97	49.76	0.665	0.50 (0.41)	0.82	16694.3	10100.00
20	13267.49	59.75	0.604	0.50 (0.42)	0.84	20577.2	31100.00
21	13184.05	61.41	0.597	0.50 (0.42)	0.84	21209.2	20100.00
22	12783.63	68.87	0.571	0.50 (0.43)	0.86	23912.1	13600.00
23	12454.68	75.75	0.547	0.50 (0.43)	0.87	26373.7	11801.00
24	12249.40	80.89	0.530	0.50 (0.44)	0.87	28276.9	13200.00
25	11959.27	87.25	0.508	0.50 (0.44)	0.88	30398.4	11500.00
26	11369.54	99.44	0.479	0.50 (0.45)	0.89	35078.5	11000.00
27	10758.81	113.60	0.452	0.50 (0.45)	0.91	41647.6	13000.00
28	10535.21	118.39	0.442	0.50 (0.46)	0.91	43816.5	13010.00
29	9640.76	131.51	0.425	0.50 (0.46)	0.92	49190.5	11130.00
30	9293.78	136.88	0.419	0.50 (0.46)	0.92	50932.4	13510.00
31	8884.73	143.42	0.411	0.50 (0.46)	0.93	52968.2	11620.00
32	7747.18	159.91	0.392	0.50 (0.47)	0.93	57544.6	12400.00
33	7472.13	163.50	0.388	0.50 (0.47)	0.93	58255.7	13500.00
34	6855.92	171.72	0.378	0.50 (0.47)	0.93	59861.8	12201.00
35	6214.75	181.37	0.367	0.50 (0.47)	0.93	61152.5	12111.00
36	5254.94	197.67	0.358	0.50 (0.47)	0.93	63075.4	12261.00
37	4769.28	207.33	0.353	0.50 (0.47)	0.94	63886.5	10200.00
38	4177.20	223.21	0.344	0.50 (0.47)	0.94	65124.4	10300.00
39	3935.49	230.29	0.341	0.50 (0.47)	0.94	65476.6	12010.00
40	3431.02	251.26	0.329	0.50 (0.47)	0.94	65805.0	12000.00
41	2355.51	321.22	0.291	0.50 (0.47)	0.94	66475.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.66	26.25	0.947	0.50 (0.49)	0.99	131.3	50800.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	---------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE	
1	13904.89	12.08	1.566	0.50 ( 0.39)	0.78	3413.9 429.00	
2	14271.95	13.86	1.405	0.50 ( 0.39)	0.78	3983.8 425.00	
3	14279.58	14.07	1.386	0.50 ( 0.39)	0.78	4050.7 400.00	
4	14027.02	15.92	1.266	0.50 ( 0.39)	0.78	4639.8 300.00	
5	14637.90	22.27	1.049	0.50 ( 0.39)	0.78	6653.1 210.00	
6	14649.58	23.94	1.002	0.50 ( 0.39)	0.78	7167.9 410.00	
7	14645.06	25.65	0.959	0.50 ( 0.39)	0.78	7695.5 200.00	
8	14642.39	26.25	0.947	0.50 ( 0.39)	0.78	7880.4 50800.00	
9	14640.91	26.48	0.943	0.50 ( 0.39)	0.78	7949.7 230.00	
10	14640.02	26.58	0.941	0.50 ( 0.39)	0.78	7978.8 50600.00	
11	14680.31	26.99	0.933	0.50 ( 0.39)	0.78	8117.5 50500.00	
12	14687.36	27.61	0.921	0.50 ( 0.39)	0.78	8328.9 220.50	
13	14699.37	28.75	0.899	0.50 ( 0.39)	0.78	8710.6 50700.00	
14	14736.53	33.35	0.831	0.50 ( 0.39)	0.78	10216.0 120.00	
15	14697.76	34.30	0.819	0.50 ( 0.39)	0.78	10596.2 110.00	
16	14580.95	37.06	0.784	0.50 ( 0.39)	0.79	11731.8 100.00	
17	14499.89	38.82	0.761	0.50 ( 0.40)	0.79	12445.2 100.00	
18	14355.84	41.66	0.732	0.50 ( 0.40)	0.80	13580.9 100.00	
19	14265.18	43.14	0.720	0.50 ( 0.40)	0.80	14173.3 130.00	
20	13883.16	49.76	0.665	0.50 ( 0.41)	0.82	16825.6 10100.00	
21	13278.49	59.75	0.604	0.50 ( 0.42)	0.84	20708.5 31100.00	
22	13194.40	61.41	0.597	0.50 ( 0.42)	0.85	21340.5 20100.00	
23	12791.38	68.87	0.571	0.50 ( 0.43)	0.86	24043.4 13600.00	
24	12460.02	75.75	0.547	0.50 ( 0.43)	0.87	26505.0 11801.00	
25	12252.95	80.89	0.530	0.50 ( 0.44)	0.87	28408.2 13200.00	
26	11960.60	87.25	0.508	0.50 ( 0.44)	0.88	30529.7 11500.00	
27	11370.10	99.44	0.479	0.50 ( 0.45)	0.89	35209.8 11000.00	
28	10759.34	113.60	0.452	0.50 ( 0.45)	0.91	41778.9 13000.00	
29	10535.73	118.39	0.442	0.50 ( 0.46)	0.91	43947.8 13010.00	
30	9641.26	131.51	0.425	0.50 ( 0.46)	0.92	49321.8 11130.00	
31	9294.27	136.88	0.419	0.50 ( 0.46)	0.92	51063.7 13510.00	
32	8885.21	143.42	0.411	0.50 ( 0.46)	0.93	53099.5 11620.00	
33	7747.64	159.91	0.392	0.50 ( 0.47)	0.93	57675.9 12400.00	
34	7472.59	163.50	0.388	0.50 ( 0.47)	0.93	58387.0 13500.00	
35	6856.36	171.72	0.378	0.50 ( 0.47)	0.93	59993.1 12201.00	
36	6215.19	181.37	0.367	0.50 ( 0.47)	0.93	61283.8 12111.00	
37	5255.36	197.67	0.358	0.50 ( 0.47)	0.93	63206.7 12261.00	
38	4769.70	207.33	0.353	0.50 ( 0.47)	0.94	64017.8 10200.00	
39	4177.61	223.21	0.344	0.50 ( 0.47)	0.94	65255.7 10300.00	
40	3935.89	230.29	0.341	0.50 ( 0.47)	0.94	65607.9 12010.00	
41	3431.41	251.26	0.329	0.50 ( 0.47)	0.94	65936.3 12000.00	
42	2355.86	321.22	0.291	0.50 ( 0.47)	0.94	66607.1 10100.00	
TOTAL AREA (ACRES) =			66607.1				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14736.53 Tc(MIN.) = 33.351  
EFFECTIVE AREA(ACRES) = 10215.96 AREA-AVERAGED Fm(INCH/HR) = 0.39  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.78  
TOTAL AREA(ACRES) = 66607.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 66607.1 TC(MIN.) = 33.35  
EFFECTIVE AREA(ACRES) = 10215.96 AREA-AVERAGED Fm(INCH/HR) = 0.39  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.783  
PEAK FLOW RATE(CFS) = 14736.53

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13904.89	12.08	1.566	0.50 ( 0.39)	0.78	3413.9	429.00
2	14271.95	13.86	1.405	0.50 ( 0.39)	0.78	3983.8	425.00
3	14279.58	14.07	1.386	0.50 ( 0.39)	0.78	4050.7	400.00
4	14027.02	15.92	1.266	0.50 ( 0.39)	0.78	4639.8	300.00
5	14637.90	22.27	1.049	0.50 ( 0.39)	0.78	6653.1	210.00
6	14649.58	23.94	1.002	0.50 ( 0.39)	0.78	7167.9	410.00
7	14645.06	25.65	0.959	0.50 ( 0.39)	0.78	7695.5	200.00
8	14642.39	26.25	0.947	0.50 ( 0.39)	0.78	7880.4	50800.00
9	14640.91	26.48	0.943	0.50 ( 0.39)	0.78	7949.7	230.00
10	14640.02	26.58	0.941	0.50 ( 0.39)	0.78	7978.8	50600.00
11	14680.31	26.99	0.933	0.50 ( 0.39)	0.78	8117.5	50500.00
12	14687.36	27.61	0.921	0.50 ( 0.39)	0.78	8328.9	220.50
13	14699.37	28.75	0.899	0.50 ( 0.39)	0.78	8710.6	50700.00
14	14736.53	33.35	0.831	0.50 ( 0.39)	0.78	10216.0	120.00
15	14697.76	34.30	0.819	0.50 ( 0.39)	0.78	10596.2	110.00
16	14580.95	37.06	0.784	0.50 ( 0.39)	0.79	11731.8	100.00
17	14499.89	38.82	0.761	0.50 ( 0.40)	0.79	12445.2	100.00
18	14355.84	41.66	0.732	0.50 ( 0.40)	0.80	13580.9	100.00
19	14265.18	43.14	0.720	0.50 ( 0.40)	0.80	14173.3	130.00
20	13883.16	49.76	0.665	0.50 ( 0.41)	0.82	16825.6	10100.00
21	13278.49	59.75	0.604	0.50 ( 0.42)	0.84	20708.5	31100.00
22	13194.40	61.41	0.597	0.50 ( 0.42)	0.85	21340.5	20100.00
23	12791.38	68.87	0.571	0.50 ( 0.43)	0.86	24043.4	13600.00
24	12460.02	75.75	0.547	0.50 ( 0.43)	0.87	26505.0	11801.00
25	12252.95	80.89	0.530	0.50 ( 0.44)	0.87	28408.2	13200.00
26	11960.60	87.25	0.508	0.50 ( 0.44)	0.88	30529.7	11500.00
27	11370.10	99.44	0.479	0.50 ( 0.45)	0.89	35209.8	11000.00
28	10759.34	113.60	0.452	0.50 ( 0.45)	0.91	41778.9	13000.00
29	10535.73	118.39	0.442	0.50 ( 0.46)	0.91	43947.8	13010.00
30	9641.26	131.51	0.425	0.50 ( 0.46)	0.92	49321.8	11130.00
31	9294.27	136.88	0.419	0.50 ( 0.46)	0.92	51063.7	13510.00
32	8885.21	143.42	0.411	0.50 ( 0.46)	0.93	53099.5	11620.00
33	7747.64	159.91	0.392	0.50 ( 0.47)	0.93	57675.9	12400.00
34	7472.59	163.50	0.388	0.50 ( 0.47)	0.93	58387.0	13500.00
35	6856.36	171.72	0.378	0.50 ( 0.47)	0.93	59993.1	12201.00
36	6215.19	181.37	0.367	0.50 ( 0.47)	0.93	61283.8	12111.00
37	5255.36	197.67	0.358	0.50 ( 0.47)	0.93	63206.7	12261.00
38	4769.70	207.33	0.353	0.50 ( 0.47)	0.94	64017.8	10200.00
39	4177.61	223.21	0.344	0.50 ( 0.47)	0.94	65255.7	10300.00
40	3935.89	230.29	0.341	0.50 ( 0.47)	0.94	65607.9	12010.00
41	3431.41	251.26	0.329	0.50 ( 0.47)	0.94	65936.3	12000.00
42	2355.86	321.22	0.291	0.50 ( 0.47)	0.94	66607.1	10100.00

=====  
END OF RATIONAL METHOD ANALYSIS  
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\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S36- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV36.DAT  
TIME/DATE OF STUDY: 11:33 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.604
- 2) 10.00; 1.741
- 3) 15.00; 1.296
- 4) 20.00; 1.108
- 5) 25.00; 0.968
- 6) 30.00; 0.871
- 7) 40.00; 0.743
- 8) 50.00; 0.660
- 9) 60.00; 0.598
- 10) 90.00; 0.495
- 11) 120.00; 0.435
- 12) 180.00; 0.364
- 13) 360.00; 0.267
- 14) 1200.00; 0.116

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61  
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.652  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	-	3.39	0.50	1.000	0	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 3.52  
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 3.52

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32  
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.489  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.45	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.84  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.79  
AVERAGE FLOW DEPTH(FEET) = 0.78 TRAVEL TIME(MIN.) = 1.84  
Tc(MIN.) = 12.83  
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 6.63  
EFFECTIVE AREA(ACRES) = 10.84 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 10.8 PEAK FLOW RATE(CFS) = 9.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.88 FLOW VELOCITY(FEET/SEC.) = 4.15  
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13601.00 = 906.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13601.00 TO NODE 13602.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 707.32 DOWNSTREAM(FEET) = 657.12
CHANNEL LENGTH THRU SUBAREA(FEET) = 777.60 CHANNEL SLOPE = 0.0646
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.267

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various soil types and areas.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.38

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.41

AVERAGE FLOW DEPTH(FEET) = 1.24 TRAVEL TIME(MIN.) = 2.94

Tc(MIN.) = 15.77

SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 21.37

EFFECTIVE AREA(ACRES) = 41.80 AREA-AVERAGED Fm(INCH/HR) = 0.50

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 41.8 PEAK FLOW RATE(CFS) = 28.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.41 FLOW VELOCITY(FEET/SEC.) = 4.81

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13602.00 = 1684.51 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13602.00 TO NODE 13603.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 657.12 DOWNSTREAM(FEET) = 584.58
CHANNEL LENGTH THRU SUBAREA(FEET) = 1186.54 CHANNEL SLOPE = 0.0611
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.118

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various soil types and areas.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 35.35

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.98

AVERAGE FLOW DEPTH(FEET) = 1.54 TRAVEL TIME(MIN.) = 3.97

Tc(MIN.) = 19.74

SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 12.98

EFFECTIVE AREA(ACRES) = 65.16 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 65.2 PEAK FLOW RATE(CFS) = 36.22

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.55 FLOW VELOCITY(FEET/SEC.) = 5.00

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13603.00 = 2871.05 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 584.58 DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 860.98 CHANNEL SLOPE = 0.0461
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.029

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various soil types and areas.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41.27

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.64

AVERAGE FLOW DEPTH(FEET) = 1.72 TRAVEL TIME(MIN.) = 3.09

Tc(MIN.) = 22.83

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 10.10

EFFECTIVE AREA(ACRES) = 86.40 AREA-AVERAGED Fm(INCH/HR) = 0.50

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) = 41.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.72 FLOW VELOCITY(FEET/SEC.) = 4.63

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S35X05.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

Table with 7 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Fp(Fm) (INCH/HR), Ap (ACRES), Ae (ACRES), HEADWATER NODE.

1 100.55 73.18 0.50( 0.47) 0.95 1498.1 13510.00  
2 54.12 90.88 0.50( 0.47) 0.94 1579.8 13500.00  
TOTAL AREA (ACRES) = 1579.8

\*\*\*\*\*

FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	100.55	73.18	0.50( 0.47)	0.95	1498.1	13510.00
2	54.12	90.88	0.50( 0.47)	0.94	1579.8	13500.00
TOTAL AREA (ACRES) = 1579.8						

\*\*\*\*\*

FLOW PROCESS FROM NODE 13522.00 TO NODE 13620.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 632.19 DOWNSTREAM(FEET) = 544.91

CHANNEL LENGTH THRU SUBAREA(FEET) = 2062.96 CHANNEL SLOPE = 0.0423

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.537

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	17.68	0.50	1.000	-
USER-DEFINED	-	2.36	0.50	1.000	-
USER-DEFINED	-	0.60	0.50	1.000	-
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	2.22	0.50	1.000	-
USER-DEFINED	-	3.42	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 101.00

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.63

AVERAGE FLOW DEPTH(FEET) = 2.10 TRAVEL TIME(MIN.) = 4.51

Tc(MIN.) = 77.69

SUBAREA AREA(ACRES) = 26.50 SUBAREA RUNOFF(CFS) = 0.88

EFFECTIVE AREA(ACRES) = 1524.58 AREA-AVERAGED Fm(INCH/HR) = 0.47

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 1606.3 PEAK FLOW RATE(CFS) = 100.55

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.10 FLOW VELOCITY(FEET/SEC.) = 7.64

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 77.69

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.537

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.44	0.50	1.000	-
USER-DEFINED	-	0.01	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 0.05

EFFECTIVE AREA(ACRES) = 1526.03 AREA-AVERAGED Fm(INCH/HR) = 0.47

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 100.55

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	100.55	77.69	0.537	0.50( 0.47)	0.95	1526.0	13510.00
2	54.12	96.14	0.483	0.50( 0.47)	0.95	1607.8	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	41.10	22.83	1.029	0.50( 0.50)	1.00	86.4	13600.00

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	141.65	22.83	1.029	0.50( 0.48)	0.96	534.9	13600.00
2	103.43	77.69	0.537	0.50( 0.48)	0.95	1612.4	13510.00
3	54.12	96.14	0.483	0.50( 0.47)	0.95	1694.2	13500.00

TOTAL AREA(ACRES) = 1694.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 141.65 Tc(MIN.) = 22.831

EFFECTIVE AREA(ACRES) = 534.85 AREA-AVERAGED Fm(INCH/HR) = 0.48

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 1694.2

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13620.00 TO NODE 13640.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 544.91 DOWNSTREAM(FEET) = 489.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1384.37 CHANNEL SLOPE = 0.0404

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000



MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.956  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.39	0.50	1.000	-
USER-DEFINED	-	16.30	0.50	1.000	-
USER-DEFINED	-	4.08	0.50	1.000	-
USER-DEFINED	-	12.36	0.50	1.000	-
USER-DEFINED	-	11.23	0.50	1.000	-
USER-DEFINED	-	5.16	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 152.83  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.31  
 AVERAGE FLOW DEPTH (FEET) = 2.48 TRAVEL TIME (MIN.) = 2.78  
 Tc (MIN.) = 25.61  
 SUBAREA AREA (ACRES) = 54.52 SUBAREA RUNOFF (CFS) = 22.37  
 EFFECTIVE AREA (ACRES) = 589.37 AREA-AVERAGED Fm (INCH/HR) = 0.48  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 1748.7 PEAK FLOW RATE (CFS) = 252.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.99 FLOW VELOCITY (FEET/SEC.) = 9.42  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 25.61  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.956  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.93	0.50	1.000	-
USER-DEFINED	-	0.45	0.50	1.000	-
USER-DEFINED	-	3.98	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 58.36 SUBAREA RUNOFF (CFS) = 23.95  
 EFFECTIVE AREA (ACRES) = 647.73 AREA-AVERAGED Fm (INCH/HR) = 0.48  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 1807.1 PEAK FLOW RATE (CFS) = 276.24

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P201XX05.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	73.57	19.49	0.50 (0.43)	0.85	133.8	20100.00

TOTAL AREA (ACRES) = 133.8

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	276.24	25.61	0.956	0.50 (0.48)	0.96	647.7	13600.00
2	103.43	80.74	0.527	0.50 (0.48)	0.95	1725.3	13510.00
3	54.12	99.73	0.476	0.50 (0.48)	0.95	1807.1	13500.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	73.57	19.49	1.127	0.50 (0.43)	0.85	133.8	20100.00

LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 13640.00 = 5247.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	349.80	19.49	1.127	0.50 (0.47)	0.94	626.8	20100.00
2	331.83	25.61	0.956	0.50 (0.47)	0.95	781.5	13600.00
3	113.89	80.74	0.527	0.50 (0.47)	0.95	1859.1	13510.00
4	61.40	99.73	0.476	0.50 (0.47)	0.94	1940.9	13500.00

TOTAL AREA (ACRES) = 1940.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 349.80 Tc (MIN.) = 19.493  
 EFFECTIVE AREA (ACRES) = 626.82 AREA-AVERAGED Fm (INCH/HR) = 0.47  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA (ACRES) = 1940.9  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 489.00 DOWNSTREAM (FEET) = 436.89  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2994.52 CHANNEL SLOPE = 0.0174  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.946

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.96	0.50	1.000	-
USER-DEFINED	-	0.01	0.50	1.000	-
USER-DEFINED	-	1.56	0.50	1.000	-
USER-DEFINED	-	10.45	0.50	1.000	-
USER-DEFINED	-	44.94	0.50	1.000	-
USER-DEFINED	-	9.66	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 363.38  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.53  
 AVERAGE FLOW DEPTH(FEET) = 4.01 TRAVEL TIME(MIN.) = 6.63  
 Tc(MIN.) = 26.12  
 SUBAREA AREA(ACRES) = 67.58 SUBAREA RUNOFF(CFS) = 27.13  
 EFFECTIVE AREA(ACRES) = 694.40 AREA-AVERAGED Fm(INCH/HR) = 0.47  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA(ACRES) = 2008.4 PEAK FLOW RATE(CFS) = 349.80  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 3.95 FLOW VELOCITY(FEET/SEC.) = 7.45  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13641.00 = 25056.61 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 26.12  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.946  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	16.49	0.50	1.000	-
USER-DEFINED	-	20.39	0.50	1.000	-
USER-DEFINED	-	7.02	0.50	1.000	-
USER-DEFINED	-	12.58	0.50	1.000	-
USER-DEFINED	-	42.49	0.50	1.000	-
USER-DEFINED	-	5.73	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 104.70 SUBAREA RUNOFF(CFS) = 42.04  
 EFFECTIVE AREA(ACRES) = 799.10 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA(ACRES) = 2113.1 PEAK FLOW RATE(CFS) = 349.80  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 26.12  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.946  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.78	0.50	1.000	-
USER-DEFINED	-	6.25	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 8.03 SUBAREA RUNOFF(CFS) = 3.22  
 EFFECTIVE AREA(ACRES) = 807.13 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA(ACRES) = 2121.2 PEAK FLOW RATE(CFS) = 349.80  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 436.89 DOWNSTREAM(FEET) = 394.80  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2814.16 CHANNEL SLOPE = 0.0150  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.837

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.50	1.000	-
USER-DEFINED	-	24.24	0.50	1.000	-
USER-DEFINED	-	1.34	0.50	1.000	-
USER-DEFINED	-	74.98	0.50	1.000	-
USER-DEFINED	-	101.12	0.50	1.000	-
USER-DEFINED	-	16.90	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 383.14  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.21  
 AVERAGE FLOW DEPTH(FEET) = 4.21 TRAVEL TIME(MIN.) = 6.50  
 Tc(MIN.) = 32.62  
 SUBAREA AREA(ACRES) = 219.25 SUBAREA RUNOFF(CFS) = 66.54  
 EFFECTIVE AREA(ACRES) = 1026.38 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA(ACRES) = 2340.4 PEAK FLOW RATE(CFS) = 349.80  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 4.07 FLOW VELOCITY(FEET/SEC.) = 7.04  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13642.00 = 27870.77 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 32.62  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.837  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	9.95	0.50	1.000	-
USER-DEFINED	-	10.02	0.50	1.000	-
USER-DEFINED	-	4.45	0.50	1.000	-
USER-DEFINED	-	179.37	0.50	1.000	-
USER-DEFINED	-	11.47	0.50	1.000	-
USER-DEFINED	-	0.17	0.50	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 215.43 SUBAREA RUNOFF(CFS) = 65.39  
 EFFECTIVE AREA(ACRES) = 1241.81 AREA-AVERAGED Fm(INCH/HR) = 0.49  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 2555.8 PEAK FLOW RATE(CFS) = 393.60

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*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 32.62
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.837
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -         0.03     0.50     0.850    -
USER-DEFINED            -         5.14     0.50     1.000    -
USER-DEFINED            -        11.22     0.50     1.000    -
USER-DEFINED            -         0.33     0.50     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 16.72      SUBAREA RUNOFF(CFS) = 5.08
EFFECTIVE AREA(ACRES) = 1258.53  AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 2572.6      PEAK FLOW RATE(CFS) = 398.68
*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 394.80  DOWNSTREAM(FEET) = 342.39
CHANNEL LENGTH THRU SUBAREA(FEET) = 2913.57  CHANNEL SLOPE = 0.0180
CHANNEL BASE(FEET) = 0.00  "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040  MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.759
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -         0.22     0.50     1.000    -
USER-DEFINED            -         2.17     0.50     1.000    -
USER-DEFINED            -         9.19     0.50     1.000    -
USER-DEFINED            -        67.57     0.50     1.000    -
USER-DEFINED            -        35.19     0.50     1.000    -
USER-DEFINED            -        30.67     0.50     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 415.55
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.88
AVERAGE FLOW DEPTH(FEET) = 4.19  TRAVEL TIME(MIN.) = 6.16
Tc(MIN.) = 38.79
SUBAREA AREA(ACRES) = 145.01      SUBAREA RUNOFF(CFS) = 33.71
EFFECTIVE AREA(ACRES) = 1403.54  AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 2717.6      PEAK FLOW RATE(CFS) = 398.68
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 4.13  FLOW VELOCITY(FEET/SEC.) = 7.79
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

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*****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 38.79
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.759
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -         0.89     0.50     1.000    -
USER-DEFINED            -        20.65     0.50     1.000    -
USER-DEFINED            -         2.69     0.50     1.000    -
USER-DEFINED            -         8.45     0.50     1.000    -
USER-DEFINED            -        96.93     0.50     1.000    -
USER-DEFINED            -        13.19     0.50     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 142.80      SUBAREA RUNOFF(CFS) = 33.20
EFFECTIVE AREA(ACRES) = 1546.34  AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 2860.4      PEAK FLOW RATE(CFS) = 398.68
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
*****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 38.79
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.759
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -        42.54     0.50     1.000    -
USER-DEFINED            -        16.96     0.50     1.000    -
USER-DEFINED            -        80.60     0.50     1.000    -
USER-DEFINED            -         1.56     0.50     1.000    -
USER-DEFINED            -         2.00     0.50     1.000    -
USER-DEFINED            -         3.11     0.50     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 146.77      SUBAREA RUNOFF(CFS) = 34.12
EFFECTIVE AREA(ACRES) = 1693.11  AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.50  AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3007.1      PEAK FLOW RATE(CFS) = 410.34
*****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 51
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 342.39  DOWNSTREAM(FEET) = 300.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23  CHANNEL SLOPE = 0.0266
CHANNEL BASE(FEET) = 0.00  "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040  MAXIMUM DEPTH(FEET) = 20.00
* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.729

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SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.50	1.000	-
USER-DEFINED	-	23.73	0.50	1.000	-
USER-DEFINED	-	0.27	0.50	1.000	-
USER-DEFINED	-	19.87	0.50	1.000	-
USER-DEFINED	-	6.40	0.50	1.000	-
USER-DEFINED	-	3.14	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 415.93  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.14  
AVERAGE FLOW DEPTH(FEET) = 3.90 TRAVEL TIME(MIN.) = 2.90  
Tc(MIN.) = 41.69  
SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 11.18  
EFFECTIVE AREA(ACRES) = 1747.41 AREA-AVERAGED Fm(INCH/HR) = 0.49  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.98  
TOTAL AREA(ACRES) = 3061.4 PEAK FLOW RATE(CFS) = 410.34  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 3.88 FLOW VELOCITY(FEET/SEC.) = 9.09  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc(MIN.) = 41.69  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.729  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.50	1.000	-
USER-DEFINED	-	9.52	0.50	1.000	-
USER-DEFINED	-	0.71	0.50	1.000	-
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	39.42	0.50	1.000	-
USER-DEFINED	-	0.62	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 51.16 SUBAREA RUNOFF(CFS) = 10.53  
EFFECTIVE AREA(ACRES) = 1798.57 AREA-AVERAGED Fm(INCH/HR) = 0.49  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.98  
TOTAL AREA(ACRES) = 3112.6 PEAK FLOW RATE(CFS) = 410.34  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc(MIN.) = 41.69  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.729  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.11	0.50	1.000	-
USER-DEFINED	-	0.77	0.50	1.000	-
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	2.69	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 3.79 SUBAREA RUNOFF(CFS) = 0.78  
EFFECTIVE AREA(ACRES) = 1802.36 AREA-AVERAGED Fm(INCH/HR) = 0.49  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.98  
TOTAL AREA(ACRES) = 3116.4 PEAK FLOW RATE(CFS) = 410.34  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

-----  
PEAK FLOWRATE TABLE FILE NAME: 2P05EVAA.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	233.64	16.39	0.50( 0.18)	0.36	170.4	110.00
2	231.85	19.13	0.50( 0.19)	0.37	201.2	100.00
3	223.62	20.82	0.50( 0.19)	0.38	212.8	100.00
4	190.12	24.85	0.50( 0.20)	0.40	221.1	130.00
TOTAL AREA(ACRES) =		221.1				

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31  
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 338.00 DOWNSTREAM(FEET) = 300.00  
FLOW LENGTH(FEET) = 881.07 MANNING'S N = 0.013  
DEPTH OF FLOW IN 57.0 INCH PIPE IS 43.0 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 28.64  
ESTIMATED PIPE DIAMETER(INCH) = 57.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 410.34  
PIPE TRAVEL TIME(MIN.) = 0.51 Tc(MIN.) = 42.20  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11  
-----

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

-----  
\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	410.34	42.20	0.725	0.50 ( 0.49)	0.98	1802.4	20100.00
2	348.87	48.93	0.669	0.50 ( 0.49)	0.98	1957.1	13600.00
3	113.89	111.68	0.452	0.50 ( 0.48)	0.97	3034.7	13510.00
4	61.40	135.77	0.416	0.50 ( 0.48)	0.97	3116.4	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	233.64	16.39	1.244	0.50 ( 0.18)	0.36	170.4	110.00
2	231.85	19.13	1.141	0.50 ( 0.19)	0.37	201.2	100.00
3	223.62	20.82	1.085	0.50 ( 0.19)	0.38	212.8	100.00
4	190.12	24.85	0.972	0.50 ( 0.20)	0.40	221.1	130.00

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	643.98	16.39	1.244	0.50 ( 0.43)	0.86	870.6	110.00
2	642.18	19.13	1.141	0.50 ( 0.43)	0.86	1018.1	100.00
3	633.96	20.82	1.085	0.50 ( 0.43)	0.86	1101.9	100.00
4	600.45	24.85	0.972	0.50 ( 0.44)	0.88	1282.3	130.00
5	539.46	42.20	0.725	0.50 ( 0.46)	0.92	2023.5	20100.00
6	464.24	48.93	0.669	0.50 ( 0.46)	0.92	2178.2	13600.00
7	180.53	111.68	0.452	0.50 ( 0.46)	0.93	3255.8	13510.00
8	122.83	135.77	0.416	0.50 ( 0.46)	0.93	3337.5	13500.00

TOTAL AREA (ACRES) = 3337.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 643.98 Tc (MIN.) = 16.395  
EFFECTIVE AREA (ACRES) = 870.58 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3337.5  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 16.39

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.244

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.11	0.50	1.000	-
USER-DEFINED	-	0.44	0.50	1.000	-
USER-DEFINED	-	1.49	0.50	1.000	-
USER-DEFINED	-	1.70	0.50	1.000	-
USER-DEFINED	-	1.09	0.50	1.000	-
USER-DEFINED	-	18.57	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 24.40 SUBAREA RUNOFF (CFS) = 16.32

EFFECTIVE AREA (ACRES) = 894.98 AREA-AVERAGED Fm (INCH/HR) = 0.43

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.86

TOTAL AREA (ACRES) = 3361.9 PEAK FLOW RATE (CFS) = 654.34

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	654.34	16.39	1.244	0.50 ( 0.43)	0.86	895.0	110.00
2	665.60	19.13	1.141	0.50 ( 0.43)	0.86	1042.5	100.00
3	660.79	20.82	1.085	0.50 ( 0.43)	0.87	1126.3	100.00
4	624.56	24.85	0.972	0.50 ( 0.44)	0.88	1306.7	130.00
5	539.46	42.20	0.725	0.50 ( 0.46)	0.92	2047.9	20100.00
6	464.24	48.93	0.669	0.50 ( 0.46)	0.92	2202.6	13600.00
7	180.53	111.68	0.452	0.50 ( 0.47)	0.93	3280.2	13510.00
8	122.83	135.77	0.416	0.50 ( 0.46)	0.93	3361.9	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 665.60 Tc (MIN.) = 19.13  
AREA-AVERAGED Fm (INCH/HR) = 0.43 AREA-AVERAGED Fp (INCH/HR) = 0.50  
AREA-AVERAGED Ap = 0.86 EFFECTIVE AREA (ACRES) = 1042.49

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 19.13

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.141

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.39	0.50	1.000	-
USER-DEFINED	-	2.30	0.50	1.000	-
USER-DEFINED	-	5.19	0.50	1.000	-
USER-DEFINED	-	28.71	0.50	1.000	-
USER-DEFINED	-	0.17	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 48.76 SUBAREA RUNOFF (CFS) = 28.11

EFFECTIVE AREA (ACRES) = 1091.25 AREA-AVERAGED Fm (INCH/HR) = 0.43

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.87

TOTAL AREA (ACRES) = 3410.7 PEAK FLOW RATE (CFS) = 693.71

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 300.00 DOWNSTREAM (FEET) = 288.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 933.89 CHANNEL SLOPE = 0.0128

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.077

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	9.23	0.50	1.000	-
USER-DEFINED	-	0.54	0.50	1.000	-
USER-DEFINED	-	5.66	0.50	1.000	-
USER-DEFINED	-	3.66	0.50	1.000	-
USER-DEFINED	-	0.67	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 698.90  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 7.91  
 AVERAGE FLOW DEPTH( FEET) = 5.43 TRAVEL TIME(MIN.) = 1.97  
 Tc(MIN.) = 21.10  
 SUBAREA AREA(ACRES) = 19.98 SUBAREA RUNOFF(CFS) = 10.38  
 EFFECTIVE AREA(ACRES) = 1111.23 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.87  
 TOTAL AREA(ACRES) = 3430.6 PEAK FLOW RATE(CFS) = 693.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH( FEET) = 5.41 FLOW VELOCITY( FEET/SEC.) = 7.89  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 21.10  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.077  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.56	0.50	1.000	-
USER-DEFINED	-	9.40	0.50	1.000	-
USER-DEFINED	-	2.76	0.50	1.000	-
USER-DEFINED	-	17.38	0.50	1.000	-
USER-DEFINED	-	2.46	0.50	1.000	-
USER-DEFINED	-	5.56	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 39.12 SUBAREA RUNOFF(CFS) = 20.32  
 EFFECTIVE AREA(ACRES) = 1150.35 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 3469.8 PEAK FLOW RATE(CFS) = 693.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 21.10  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.077  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.65	0.50	1.000	-
USER-DEFINED	-	1.70	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 2.35 SUBAREA RUNOFF(CFS) = 1.22  
 EFFECTIVE AREA(ACRES) = 1152.70 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 3472.1 PEAK FLOW RATE(CFS) = 693.71

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 21.10  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.077  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.29	0.50	1.000	-
USER-DEFINED	-	31.25	0.50	1.000	-
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	6.26	0.50	1.000	-
USER-DEFINED	-	0.07	0.50	1.000	-
USER-DEFINED	-	0.22	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 43.31 SUBAREA RUNOFF(CFS) = 22.49  
 EFFECTIVE AREA(ACRES) = 1196.01 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 3515.4 PEAK FLOW RATE(CFS) = 693.71  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 21.10  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.077  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.47	0.50	0.850	-
USER-DEFINED	-	3.06	0.50	0.850	-
USER-DEFINED	-	17.76	0.50	0.500	-
USER-DEFINED	-	7.31	0.50	0.500	-
USER-DEFINED	-	0.34	0.50	1.000	-
USER-DEFINED	-	8.22	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.659  
 SUBAREA AREA(ACRES) = 39.16 SUBAREA RUNOFF(CFS) = 26.36  
 EFFECTIVE AREA(ACRES) = 1235.17 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.87  
 TOTAL AREA(ACRES) = 3554.6 PEAK FLOW RATE(CFS) = 712.14

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (ACRES)	Ae (ACRES)	HEADWATER NODE
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1	716.62	18.37	1.169	0.50	( 0.44)	0.87	1087.7	110.00
2	712.14	21.10	1.077	0.50	( 0.44)	0.87	1235.2	100.00
3	702.65	22.79	1.030	0.50	( 0.44)	0.88	1318.9	100.00
4	658.25	26.85	0.932	0.50	( 0.44)	0.89	1499.4	130.00
5	539.46	44.30	0.707	0.50	( 0.46)	0.92	2240.5	20100.00
6	464.24	51.11	0.653	0.50	( 0.46)	0.92	2395.3	13600.00
7	180.53	114.44	0.446	0.50	( 0.47)	0.93	3472.8	13510.00
8	122.83	138.81	0.413	0.50	( 0.46)	0.93	3554.6	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 716.62 Tc(MIN.) = 18.37  
 AREA-AVERAGED Fm(INCH/HR) = 0.44 AREA-AVERAGED Fp(INCH/HR) = 0.50  
 AREA-AVERAGED Ap = 0.87 EFFECTIVE AREA(ACRES) = 1087.66

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 18.37  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.169  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.53	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 0.32  
 EFFECTIVE AREA(ACRES) = 1088.19 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.87  
 TOTAL AREA(ACRES) = 3555.1 PEAK FLOW RATE(CFS) = 716.94

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13680.00 TO NODE 13682.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.00 DOWNSTREAM(FEET) = 242.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.77 CHANNEL SLOPE = 0.0161  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.000  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	5.28	0.50	1.000	-
USER-DEFINED	-	0.52	0.50	1.000	-
USER-DEFINED	-	3.61	0.50	1.000	-
USER-DEFINED	-	0.67	0.50	1.000	-
USER-DEFINED	-	1.37	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 719.57  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.66  
 AVERAGE FLOW DEPTH(FEET) = 5.26 TRAVEL TIME(MIN.) = 5.50  
 Tc(MIN.) = 23.87  
 SUBAREA AREA(ACRES) = 11.67 SUBAREA RUNOFF(CFS) = 5.25

EFFECTIVE AREA(ACRES) = 1099.86 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 3566.8 PEAK FLOW RATE(CFS) = 716.94  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.25 FLOW VELOCITY(FEET/SEC.) = 8.66  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 23.87  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.000  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	6.90	0.50	1.000	-
USER-DEFINED	-	23.04	0.50	1.000	-
USER-DEFINED	-	1.18	0.50	1.000	-
USER-DEFINED	-	1.56	0.50	1.000	-
USER-DEFINED	-	53.20	0.50	1.000	-
USER-DEFINED	-	2.08	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 87.96 SUBAREA RUNOFF(CFS) = 39.53  
 EFFECTIVE AREA(ACRES) = 1187.82 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 3654.7 PEAK FLOW RATE(CFS) = 716.94  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 23.87  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.000  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	0.01	0.50	1.000	-
USER-DEFINED	-	0.18	0.50	1.000	-
USER-DEFINED	-	0.38	0.50	1.000	-
USER-DEFINED	-	0.22	0.50	1.000	-
USER-DEFINED	-	7.73	0.50	1.000	-
USER-DEFINED	-	4.37	0.50	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 12.89 SUBAREA RUNOFF(CFS) = 5.79  
 EFFECTIVE AREA(ACRES) = 1200.71 AREA-AVERAGED Fm(INCH/HR) = 0.44  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.89  
 TOTAL AREA(ACRES) = 3667.6 PEAK FLOW RATE(CFS) = 716.94  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 23.87

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.000

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.57	0.50	1.000	-
USER-DEFINED	-	1.97	0.50	1.000	-
USER-DEFINED	-	1.00	0.50	1.000	-
USER-DEFINED	-	2.98	0.50	1.000	-
USER-DEFINED	-	2.39	0.50	1.000	-
USER-DEFINED	-	1.67	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 12.58 SUBAREA RUNOFF (CFS) = 5.65

EFFECTIVE AREA (ACRES) = 1213.29 AREA-AVERAGED Fm (INCH/HR) = 0.44

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.89

TOTAL AREA (ACRES) = 3680.2 PEAK FLOW RATE (CFS) = 716.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 23.87

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.000

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.44	0.50	1.000	-
USER-DEFINED	-	2.65	0.50	0.850	-
USER-DEFINED	-	1.16	0.50	0.850	-
USER-DEFINED	-	0.47	0.50	0.500	-
USER-DEFINED	-	0.25	0.50	0.500	-
USER-DEFINED	-	20.24	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.963

SUBAREA AREA (ACRES) = 25.21 SUBAREA RUNOFF (CFS) = 11.75

EFFECTIVE AREA (ACRES) = 1238.50 AREA-AVERAGED Fm (INCH/HR) = 0.44

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.89

TOTAL AREA (ACRES) = 3705.4 PEAK FLOW RATE (CFS) = 716.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 23.87

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.000

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.08	0.50	1.000	-

USER-DEFINED - 6.75 0.50 1.000 -  
USER-DEFINED - 0.02 0.50 1.000 -  
USER-DEFINED - 0.93 0.50 1.000 -

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 14.78 SUBAREA RUNOFF (CFS) = 6.64

EFFECTIVE AREA (ACRES) = 1253.28 AREA-AVERAGED Fm (INCH/HR) = 0.45

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.89

TOTAL AREA (ACRES) = 3720.2 PEAK FLOW RATE (CFS) = 716.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 242.00 DOWNSTREAM (FEET) = 208.53

CHANNEL LENGTH THRU SUBAREA (FEET) = 2526.22 CHANNEL SLOPE = 0.0132

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.889

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.50	1.000	-
USER-DEFINED	-	13.31	0.50	1.000	-
USER-DEFINED	-	0.87	0.50	1.000	-
USER-DEFINED	-	20.26	0.50	1.000	-
USER-DEFINED	-	1.21	0.50	1.000	-
USER-DEFINED	-	0.05	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 724.67

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.08

AVERAGE FLOW DEPTH (FEET) = 5.47 TRAVEL TIME (MIN.) = 5.21

Tc (MIN.) = 29.08

SUBAREA AREA (ACRES) = 44.19 SUBAREA RUNOFF (CFS) = 15.46

EFFECTIVE AREA (ACRES) = 1297.47 AREA-AVERAGED Fm (INCH/HR) = 0.45

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.89

TOTAL AREA (ACRES) = 3764.4 PEAK FLOW RATE (CFS) = 716.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 5.45 FLOW VELOCITY (FEET/SEC.) = 8.05

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

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FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 29.08

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.889

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.56	0.50	1.000	-



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USER-DEFINED      -      0.81      0.50      1.000      -
USER-DEFINED      -      0.01      0.50      1.000      -
USER-DEFINED      -      1.11      0.50      1.000      -
USER-DEFINED      -      0.59      0.50      1.000      -
USER-DEFINED      -      3.04      0.50      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 18.12      SUBAREA RUNOFF (CFS) = 6.34
EFFECTIVE AREA (ACRES) = 1315.59      AREA-AVERAGED Fm (INCH/HR) = 0.45
AREA-AVERAGED Fp (INCH/HR) = 0.50      AREA-AVERAGED Ap = 0.90
TOTAL AREA (ACRES) = 3782.5      PEAK FLOW RATE (CFS) = 716.94
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc (MIN.) = 29.08
* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.889
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      0.10      0.50      0.400      -
USER-DEFINED      -      1.30      0.50      0.850      -
USER-DEFINED      -      0.10      0.50      0.400      -
USER-DEFINED      -      1.70      0.50      0.850      -
USER-DEFINED      -      0.10      0.50      0.850      -
USER-DEFINED      -      2.90      0.50      0.850      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835
SUBAREA AREA (ACRES) = 6.20      SUBAREA RUNOFF (CFS) = 2.63
EFFECTIVE AREA (ACRES) = 1321.79      AREA-AVERAGED Fm (INCH/HR) = 0.45
AREA-AVERAGED Fp (INCH/HR) = 0.50      AREA-AVERAGED Ap = 0.89
TOTAL AREA (ACRES) = 3788.7      PEAK FLOW RATE (CFS) = 716.94
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc (MIN.) = 29.08
* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.889
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      0.10      0.50      0.500      -
USER-DEFINED      -      0.10      0.50      0.350      -
USER-DEFINED      -      6.90      0.50      0.850      -
USER-DEFINED      -      0.40      0.50      0.850      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839
SUBAREA AREA (ACRES) = 7.50      SUBAREA RUNOFF (CFS) = 3.17
EFFECTIVE AREA (ACRES) = 1329.29      AREA-AVERAGED Fm (INCH/HR) = 0.45
AREA-AVERAGED Fp (INCH/HR) = 0.50      AREA-AVERAGED Ap = 0.89
TOTAL AREA (ACRES) = 3796.2      PEAK FLOW RATE (CFS) = 716.94
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 3 <<<<
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***MEMORY BANK # 3 IS EMPTY - PROCESS IGNORED.***
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*****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
-----

```

```

MAINLINE Tc (MIN.) = 29.08
* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.889
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      2.55      0.50      1.000      -
USER-DEFINED      -      0.01      0.50      1.000      -
USER-DEFINED      -      1.35      0.50      1.000      -
USER-DEFINED      -      0.44      0.50      1.000      -
USER-DEFINED      -      0.67      0.50      1.000      -
USER-DEFINED      -      1.06      0.50      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 6.08      SUBAREA RUNOFF (CFS) = 2.13
EFFECTIVE AREA (ACRES) = 1335.37      AREA-AVERAGED Fm (INCH/HR) = 0.45
AREA-AVERAGED Fp (INCH/HR) = 0.50      AREA-AVERAGED Ap = 0.90
TOTAL AREA (ACRES) = 3802.3      PEAK FLOW RATE (CFS) = 716.94
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc (MIN.) = 29.08
* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.889
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)      (INCH/HR)      (DECIMAL)      CN
USER-DEFINED      -      2.16      0.50      1.000      -
USER-DEFINED      -      2.45      0.50      1.000      -
USER-DEFINED      -      6.15      0.50      1.000      -
USER-DEFINED      -      1.34      0.50      1.000      -
USER-DEFINED      -      18.46      0.50      1.000      -
USER-DEFINED      -      4.13      0.50      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 34.69      SUBAREA RUNOFF (CFS) = 12.13
EFFECTIVE AREA (ACRES) = 1370.06      AREA-AVERAGED Fm (INCH/HR) = 0.45
AREA-AVERAGED Fp (INCH/HR) = 0.50      AREA-AVERAGED Ap = 0.90
TOTAL AREA (ACRES) = 3837.0      PEAK FLOW RATE (CFS) = 716.94
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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*****
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81
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=====  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 29.08  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.889  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 8.69 0.50 1.000 -  
USER-DEFINED - 0.73 0.50 1.000 -  
USER-DEFINED - 0.41 0.50 1.000 -  
USER-DEFINED - 1.37 0.50 1.000 -  
USER-DEFINED - 3.11 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 14.31 SUBAREA RUNOFF(CFS) = 5.01  
EFFECTIVE AREA(ACRES) = 1384.37 AREA-AVERAGED Fm(INCH/HR) = 0.45  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.90  
TOTAL AREA(ACRES) = 3851.3 PEAK FLOW RATE(CFS) = 716.94  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13683.00 TO NODE 13685.00 IS CODE = 51  
=====

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 208.53 DOWNSTREAM(FEET) = 194.24  
CHANNEL LENGTH THRU SUBAREA(FEET) = 289.01 CHANNEL SLOPE = 0.0494  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA(CFS) = 716.94  
FLOW VELOCITY(FEET/SEC.) = 13.20 FLOW DEPTH(FEET) = 4.25  
TRAVEL TIME(MIN.) = 0.36 Tc(MIN.) = 29.45  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13685.00 = 39866.53 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13685.00 TO NODE 13410.00 IS CODE = 51  
=====

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.820  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.23 0.50 1.000 -  
USER-DEFINED - 1.52 0.50 1.000 -  
USER-DEFINED - 0.06 0.50 1.000 -  
USER-DEFINED - 0.13 0.50 1.000 -  
USER-DEFINED - 6.45 0.50 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 718.15

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.80  
AVERAGE FLOW DEPTH(FEET) = 5.93 TRAVEL TIME(MIN.) = 4.52  
Tc(MIN.) = 33.96  
SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 2.42  
EFFECTIVE AREA(ACRES) = 1392.76 AREA-AVERAGED Fm(INCH/HR) = 0.45  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.90  
TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 716.94  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.93 FLOW VELOCITY(FEET/SEC.) = 6.79  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.  
=====

END OF STUDY SUMMARY:  
TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 33.96  
EFFECTIVE AREA(ACRES) = 1392.76 AREA-AVERAGED Fm(INCH/HR) = 0.45  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.899  
PEAK FLOW RATE(CFS) = 716.94

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	716.94	33.96	0.820	0.50( 0.45)	0.90	1392.8	110.00
2	712.41	36.72	0.785	0.50( 0.45)	0.90	1540.3	100.00
3	702.91	38.48	0.762	0.50( 0.45)	0.90	1624.0	100.00
4	658.46	42.79	0.720	0.50( 0.45)	0.91	1804.5	130.00
5	539.46	61.06	0.594	0.50( 0.46)	0.93	2545.6	20100.00
6	464.24	68.52	0.569	0.50( 0.46)	0.93	2700.4	13600.00
7	180.53	136.50	0.415	0.50( 0.47)	0.93	3777.9	13510.00
8	122.83	163.10	0.384	0.50( 0.47)	0.93	3859.7	13500.00

=====  
END OF RATIONAL METHOD ANALYSIS  
=====



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S37- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV37.DAT  
TIME/DATE OF STUDY: 11:33 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.596
- 2) 10.00; 1.737
- 3) 15.00; 1.294
- 4) 20.00; 1.106
- 5) 25.00; 0.966
- 6) 30.00; 0.870
- 7) 40.00; 0.742
- 8) 50.00; 0.660
- 9) 60.00; 0.598
- 10) 90.00; 0.494
- 11) 120.00; 0.434
- 12) 180.00; 0.363
- 13) 360.00; 0.266
- 14) 1200.00; 0.116

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES: LIP (FT)	MANNING HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

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

>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU05EV34.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14279.58	14.07	0.50 ( 0.39)	0.78	4050.7	400.00
2	14736.53	33.35	0.50 ( 0.39)	0.78	10216.0	120.00
3	14355.84	41.66	0.50 ( 0.40)	0.80	13580.9	100.00
4	13883.16	49.76	0.50 ( 0.41)	0.82	16825.6	10100.00
5	13278.49	59.75	0.50 ( 0.42)	0.84	20708.5	31100.00
6	12791.38	68.87	0.50 ( 0.43)	0.86	24043.4	13600.00
7	11960.60	87.25	0.50 ( 0.44)	0.88	30529.7	11500.00
8	11370.10	99.44	0.50 ( 0.45)	0.89	35209.8	11000.00
9	10759.34	113.60	0.50 ( 0.45)	0.91	41778.9	13000.00
10	9641.26	131.51	0.50 ( 0.46)	0.92	49321.8	11130.00
11	8885.21	143.42	0.50 ( 0.46)	0.93	53099.5	11620.00
12	7747.64	159.91	0.50 ( 0.47)	0.93	57675.9	12400.00
13	6856.36	171.72	0.50 ( 0.47)	0.93	59993.1	12201.00
14	6215.19	181.37	0.50 ( 0.47)	0.93	61283.8	12111.00
15	5255.36	197.67	0.50 ( 0.47)	0.93	63206.7	12261.00
16	4769.70	207.33	0.50 ( 0.47)	0.94	64017.8	10200.00
17	4177.61	223.21	0.50 ( 0.47)	0.94	65255.7	10300.00
18	3935.89	230.29	0.50 ( 0.47)	0.94	65607.9	12010.00
19	3431.41	251.26	0.50 ( 0.47)	0.94	65936.3	12000.00
20	2355.86	321.22	0.50 ( 0.47)	0.94	66607.1	10100.00
TOTAL AREA(ACRES) =						66607.1

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 3 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14279.58	14.07	0.50 ( 0.39)	0.78	4050.7	400.00
2	14736.53	33.35	0.50 ( 0.39)	0.78	10216.0	120.00
3	14355.84	41.66	0.50 ( 0.40)	0.80	13580.9	100.00
4	13883.16	49.76	0.50 ( 0.41)	0.82	16825.6	10100.00
5	13278.49	59.75	0.50 ( 0.42)	0.84	20708.5	31100.00
6	12791.38	68.87	0.50 ( 0.43)	0.86	24043.4	13600.00
7	11960.60	87.25	0.50 ( 0.44)	0.88	30529.7	11500.00
8	11370.10	99.44	0.50 ( 0.45)	0.89	35209.8	11000.00
9	10759.34	113.60	0.50 ( 0.45)	0.91	41778.9	13000.00
10	9641.26	131.51	0.50 ( 0.46)	0.92	49321.8	11130.00
11	8885.21	143.42	0.50 ( 0.46)	0.93	53099.5	11620.00
12	7747.64	159.91	0.50 ( 0.47)	0.93	57675.9	12400.00
13	6856.36	171.72	0.50 ( 0.47)	0.93	59993.1	12201.00

14	6215.19	181.37	0.50	( 0.47)	0.93	61283.8	12111.00
15	5255.36	197.67	0.50	( 0.47)	0.93	63206.7	12261.00
16	4769.70	207.33	0.50	( 0.47)	0.94	64017.8	10200.00
17	4177.61	223.21	0.50	( 0.47)	0.94	65255.7	10300.00
18	3935.89	230.29	0.50	( 0.47)	0.94	65607.9	12010.00
19	3431.41	251.26	0.50	( 0.47)	0.94	65936.3	12000.00
20	2355.86	321.22	0.50	( 0.47)	0.94	66607.1	10100.00

TOTAL AREA (ACRES) = 66607.1

\*\*\*\*\*

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 170.00 DOWNSTREAM(FEET) = 165.51  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.83 CHANNEL SLOPE = 0.0024  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
 CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
 ALLOWABLE DEPTH).  
 AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
 ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA(CFS) = 14736.53  
 FLOW VELOCITY(FEET/SEC.) = 12.28 FLOW DEPTH(FEET) = 20.00  
 TRAVEL TIME(MIN.) = 2.57 Tc(MIN.) = 35.92  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506102f.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	108.74	17.82	0.50 ( 0.48)	0.96	196.1	10230.00
2	89.60	26.01	0.50 ( 0.48)	0.95	235.1	10250.00
3	84.70	27.80	0.50 ( 0.48)	0.95	241.6	10200.00
4	70.42	32.34	0.50 ( 0.48)	0.95	246.3	10220.00

TOTAL AREA (ACRES) = 246.3

\*\*\*\*\*

FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14279.58	16.72	1.229	0.50 ( 0.39)	0.78	4050.7	400.00
2	14736.53	35.92	0.794	0.50 ( 0.39)	0.78	10216.0	120.00
3	14355.84	44.30	0.707	0.50 ( 0.40)	0.80	13580.9	100.00
4	13883.16	52.48	0.645	0.50 ( 0.41)	0.82	16825.6	10100.00
5	13278.49	62.60	0.589	0.50 ( 0.42)	0.84	20708.5	31100.00
6	12791.38	71.79	0.557	0.50 ( 0.43)	0.86	24043.4	13600.00
7	11960.60	90.22	0.494	0.50 ( 0.44)	0.88	30529.7	11500.00
8	11370.10	102.45	0.469	0.50 ( 0.45)	0.89	35209.8	11000.00
9	10759.34	116.66	0.441	0.50 ( 0.45)	0.91	41778.9	13000.00
10	9641.26	134.65	0.417	0.50 ( 0.46)	0.92	49321.8	11130.00
11	8885.21	146.62	0.402	0.50 ( 0.46)	0.93	53099.5	11620.00
12	7747.64	163.23	0.383	0.50 ( 0.47)	0.93	57675.9	12400.00
13	6856.36	175.14	0.369	0.50 ( 0.47)	0.93	59993.1	12201.00
14	6215.19	184.88	0.360	0.50 ( 0.47)	0.93	61283.8	12111.00
15	5255.36	201.33	0.352	0.50 ( 0.47)	0.93	63206.7	12261.00
16	4769.70	211.07	0.346	0.50 ( 0.47)	0.94	64017.8	10200.00
17	4177.61	227.08	0.338	0.50 ( 0.47)	0.94	65255.7	10300.00
18	3935.89	234.22	0.334	0.50 ( 0.47)	0.94	65607.9	12010.00
19	3431.41	255.33	0.322	0.50 ( 0.47)	0.94	65936.3	12000.00
20	2355.86	325.69	0.284	0.50 ( 0.47)	0.94	66607.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	108.74	17.82	1.188	0.50 ( 0.48)	0.96	196.1	10230.00
2	89.60	26.01	0.947	0.50 ( 0.48)	0.95	235.1	10250.00
3	84.70	27.80	0.912	0.50 ( 0.48)	0.95	241.6	10200.00
4	70.42	32.34	0.840	0.50 ( 0.48)	0.95	246.3	10220.00

LONGEST FLOWPATH FROM NODE 10200.00 TO NODE 13720.00 = 9099.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14387.57	16.72	1.229	0.50 ( 0.39)	0.79	4234.6	400.00
2	14414.66	17.82	1.188	0.50 ( 0.39)	0.79	4602.2	10230.00
3	14590.46	26.01	0.947	0.50 ( 0.39)	0.79	7271.3	10250.00
4	14628.08	27.80	0.912	0.50 ( 0.39)	0.79	7851.6	10200.00
5	14721.88	32.34	0.840	0.50 ( 0.39)	0.79	9314.5	10220.00
6	14798.07	35.92	0.794	0.50 ( 0.39)	0.79	10462.2	120.00
7	14400.41	44.30	0.707	0.50 ( 0.40)	0.80	13827.1	100.00
8	13915.67	52.48	0.645	0.50 ( 0.41)	0.82	17071.8	10100.00
9	13300.20	62.60	0.589	0.50 ( 0.42)	0.84	20954.8	31100.00
10	12806.91	71.79	0.557	0.50 ( 0.43)	0.86	24289.7	13600.00
11	11965.03	90.22	0.494	0.50 ( 0.44)	0.88	30776.0	11500.00
12	11374.31	102.45	0.469	0.50 ( 0.45)	0.89	35456.1	11000.00
13	10763.30	116.66	0.441	0.50 ( 0.45)	0.91	42025.1	13000.00
14	9645.00	134.65	0.417	0.50 ( 0.46)	0.92	49568.1	11130.00
15	8888.82	146.62	0.402	0.50 ( 0.46)	0.93	53345.8	11620.00
16	7751.07	163.23	0.383	0.50 ( 0.47)	0.93	57922.2	12400.00
17	6859.67	175.14	0.369	0.50 ( 0.47)	0.93	60239.4	12201.00
18	6218.42	184.88	0.360	0.50 ( 0.47)	0.93	61530.0	12111.00
19	5258.51	201.33	0.352	0.50 ( 0.47)	0.93	63452.9	12261.00
20	4772.80	211.07	0.346	0.50 ( 0.47)	0.94	64264.1	10200.00
21	4180.64	227.08	0.338	0.50 ( 0.47)	0.94	65502.0	10300.00

22 3938.88 234.22 0.334 0.50( 0.47) 0.94 65854.2 12010.00  
 23 3434.30 255.33 0.322 0.50( 0.47) 0.94 66182.6 12000.00  
 24 2358.41 325.69 0.284 0.50( 0.47) 0.94 66853.3 10100.00  
 TOTAL AREA(ACRES) = 66853.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14798.07 Tc(MIN.) = 35.919  
 EFFECTIVE AREA(ACRES) = 10462.22 AREA-AVERAGED Fm(INCH/HR) = 0.39  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 66853.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 165.51 DOWNSTREAM(FEET) = 161.03  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2067.54 CHANNEL SLOPE = 0.0022  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
 CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
 ALLOWABLE DEPTH).  
 AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
 ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

CHANNEL FLOW THRU SUBAREA(CFS) = 14798.07  
 FLOW VELOCITY(FEET/SEC.) = 12.33 FLOW DEPTH(FEET) = 20.00  
 TRAVEL TIME(MIN.) = 2.79 Tc(MIN.) = 38.71  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<

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PEAK FLOWRATE TABLE FILE NAME: 0506103f.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	252.52	21.48	0.50( 0.38)	0.76	404.4	10300.00
2	251.96	21.77	0.50( 0.38)	0.76	408.5	10380.00
3	235.57	25.33	0.50( 0.38)	0.76	442.2	10320.00
4	219.91	27.75	0.50( 0.38)	0.76	453.9	10360.00
5	202.40	30.24	0.50( 0.38)	0.76	460.8	10340.00
TOTAL AREA(ACRES) =						460.8

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 11

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 >>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<  
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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14387.57	19.59	1.121	0.50( 0.39)	0.79	4234.6	400.00
2	14414.66	20.69	1.087	0.50( 0.39)	0.79	4602.2	10230.00
3	14590.46	28.85	0.892	0.50( 0.39)	0.79	7271.3	10250.00
4	14628.08	30.63	0.862	0.50( 0.39)	0.79	7851.6	10200.00
5	14721.88	35.15	0.804	0.50( 0.39)	0.79	9314.5	10220.00
6	14798.07	38.71	0.758	0.50( 0.39)	0.79	10462.2	120.00
7	14400.41	47.17	0.683	0.50( 0.40)	0.80	13827.1	100.00
8	13915.67	55.46	0.626	0.50( 0.41)	0.82	17071.8	10100.00
9	13300.20	65.71	0.578	0.50( 0.42)	0.84	20954.8	31100.00
10	12806.91	75.02	0.546	0.50( 0.43)	0.86	24289.7	13600.00
11	11965.03	93.59	0.487	0.50( 0.44)	0.88	30776.0	11500.00
12	11374.31	105.86	0.462	0.50( 0.45)	0.89	35456.1	11000.00
13	10763.30	120.11	0.434	0.50( 0.45)	0.91	42025.1	13000.00
14	9645.00	138.20	0.412	0.50( 0.46)	0.92	49568.1	11130.00
15	8888.82	150.25	0.398	0.50( 0.46)	0.93	53345.8	11620.00
16	7751.07	166.98	0.378	0.50( 0.47)	0.93	57922.2	12400.00
17	6859.67	179.01	0.364	0.50( 0.47)	0.93	60239.4	12201.00
18	6218.42	188.84	0.358	0.50( 0.47)	0.93	61530.0	12111.00
19	5258.51	205.46	0.349	0.50( 0.47)	0.93	63452.9	12261.00
20	4772.80	215.31	0.344	0.50( 0.47)	0.94	64264.1	10200.00
21	4180.64	231.46	0.335	0.50( 0.47)	0.94	65502.0	10300.00
22	3938.88	238.66	0.331	0.50( 0.47)	0.94	65854.2	12010.00
23	3434.30	259.92	0.320	0.50( 0.47)	0.94	66182.6	12000.00
24	2358.41	330.74	0.282	0.50( 0.47)	0.94	66853.3	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 =							128511.34 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	252.52	21.48	1.065	0.50( 0.38)	0.76	404.4	10300.00
2	251.96	21.77	1.057	0.50( 0.38)	0.76	408.5	10380.00
3	235.57	25.33	0.960	0.50( 0.38)	0.76	442.2	10320.00
4	219.91	27.75	0.913	0.50( 0.38)	0.76	453.9	10360.00
5	202.40	30.24	0.867	0.50( 0.38)	0.76	460.8	10340.00
LONGEST FLOWPATH FROM NODE 10320.00 TO NODE 13740.00 =							8457.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14636.97	19.59	1.121	0.50( 0.39)	0.79	4603.4	400.00
2	14665.74	20.69	1.087	0.50( 0.39)	0.79	4991.7	10230.00
3	14684.16	21.48	1.065	0.50( 0.39)	0.79	5264.3	10300.00
4	14689.77	21.77	1.057	0.50( 0.39)	0.79	5362.1	10380.00
5	14750.27	25.33	0.960	0.50( 0.39)	0.79	6563.3	10320.00
6	14786.69	27.75	0.913	0.50( 0.39)	0.79	7365.8	10360.00
7	14802.63	28.85	0.892	0.50( 0.39)	0.79	7728.2	10250.00
8	14822.21	30.24	0.867	0.50( 0.39)	0.79	8184.9	10340.00
9	14828.39	30.63	0.862	0.50( 0.39)	0.79	8312.4	10200.00
10	14898.03	35.15	0.804	0.50( 0.39)	0.79	9775.3	10220.00
11	14955.20	38.71	0.758	0.50( 0.39)	0.79	10923.0	120.00
12	14526.12	47.17	0.683	0.50( 0.40)	0.80	14287.9	100.00

13	14017.58	55.46	0.626	0.50 ( 0.41)	0.82	17532.6	10100.00
14	13382.09	65.71	0.578	0.50 ( 0.42)	0.84	21415.6	31100.00
15	12875.33	75.02	0.546	0.50 ( 0.43)	0.86	24750.5	13600.00
16	12013.04	93.59	0.487	0.50 ( 0.44)	0.88	31236.8	11500.00
17	11419.91	105.86	0.462	0.50 ( 0.45)	0.89	35916.9	11000.00
18	10806.09	120.11	0.434	0.50 ( 0.45)	0.91	42485.9	13000.00
19	9685.69	138.20	0.412	0.50 ( 0.46)	0.92	50028.9	11130.00
20	8928.10	150.25	0.398	0.50 ( 0.46)	0.92	53806.6	11620.00
21	7788.39	166.98	0.378	0.50 ( 0.46)	0.93	58383.0	12400.00
22	6895.59	179.01	0.364	0.50 ( 0.47)	0.93	60700.2	12201.00
23	6253.75	188.84	0.358	0.50 ( 0.47)	0.93	61990.8	12111.00
24	5292.96	205.46	0.349	0.50 ( 0.47)	0.93	63913.7	12261.00
25	4806.73	215.31	0.344	0.50 ( 0.47)	0.93	64724.9	10200.00
26	4213.71	231.46	0.335	0.50 ( 0.47)	0.94	65962.8	10300.00
27	3971.57	238.66	0.331	0.50 ( 0.47)	0.94	66315.0	12010.00
28	3465.86	259.92	0.320	0.50 ( 0.47)	0.94	66643.4	12000.00
29	2386.20	330.74	0.282	0.50 ( 0.47)	0.94	67314.1	10100.00

TOTAL AREA (ACRES) = 67314.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 14955.20 Tc (MIN.) = 38.713  
EFFECTIVE AREA (ACRES) = 10923.02 AREA-AVERAGED Fm (INCH/HR) = 0.39  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 67314.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
=====

ELEVATION DATA: UPSTREAM (FEET) = 161.03 DOWNSTREAM (FEET) = 141.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 364.08 CHANNEL SLOPE = 0.0550  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 14955.20  
FLOW VELOCITY (FEET/SEC.) = 36.42 FLOW DEPTH (FEET) = 11.70  
TRAVEL TIME (MIN.) = 0.17 Tc (MIN.) = 38.88  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 3 <<<<<  
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\*\*\*\*\*  
FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<  
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PEAK FLOWRATE TABLE FILE NAME: 0506104f.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.86	23.27	0.50 ( 0.40)	0.80	44.3	10400.00

TOTAL AREA (ACRES) = 44.3

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14636.97	19.76	1.115	0.50 ( 0.39)	0.79	4603.4	400.00
2	14665.74	20.86	1.082	0.50 ( 0.39)	0.79	4991.7	10230.00
3	14684.16	21.65	1.060	0.50 ( 0.39)	0.79	5264.3	10300.00
4	14689.77	21.93	1.052	0.50 ( 0.39)	0.79	5362.1	10380.00
5	14750.27	25.50	0.956	0.50 ( 0.39)	0.79	6563.3	10320.00
6	14786.69	27.92	0.910	0.50 ( 0.39)	0.79	7365.8	10360.00
7	14802.63	29.02	0.889	0.50 ( 0.39)	0.79	7728.2	10250.00
8	14822.21	30.40	0.865	0.50 ( 0.39)	0.79	8184.9	10340.00
9	14828.39	30.80	0.860	0.50 ( 0.39)	0.79	8312.4	10200.00
10	14898.03	35.32	0.802	0.50 ( 0.39)	0.79	9775.3	10220.00
11	14955.20	38.88	0.756	0.50 ( 0.39)	0.79	10923.0	120.00
12	14526.12	47.34	0.682	0.50 ( 0.40)	0.80	14287.9	100.00
13	14017.58	55.63	0.625	0.50 ( 0.41)	0.82	17532.6	10100.00
14	13382.09	65.88	0.578	0.50 ( 0.42)	0.84	21415.6	31100.00
15	12875.33	75.20	0.545	0.50 ( 0.43)	0.86	24750.5	13600.00
16	12013.04	93.76	0.486	0.50 ( 0.44)	0.88	31236.8	11500.00
17	11419.91	106.04	0.462	0.50 ( 0.45)	0.89	35916.9	11000.00
18	10806.09	120.29	0.434	0.50 ( 0.45)	0.91	42485.9	13000.00
19	9685.69	138.39	0.412	0.50 ( 0.46)	0.92	50028.9	11130.00
20	8928.10	150.44	0.398	0.50 ( 0.46)	0.92	53806.6	11620.00
21	7788.39	167.18	0.378	0.50 ( 0.46)	0.93	58383.0	12400.00
22	6895.59	179.21	0.364	0.50 ( 0.47)	0.93	60700.2	12201.00
23	6253.75	189.05	0.358	0.50 ( 0.47)	0.93	61990.8	12111.00
24	5292.96	205.67	0.349	0.50 ( 0.47)	0.93	63913.7	12261.00
25	4806.73	215.53	0.344	0.50 ( 0.47)	0.93	64724.9	10200.00
26	4213.71	231.69	0.335	0.50 ( 0.47)	0.94	65962.8	10300.00
27	3971.57	238.89	0.331	0.50 ( 0.47)	0.94	66315.0	12010.00
28	3465.86	260.16	0.320	0.50 ( 0.47)	0.94	66643.4	12000.00
29	2386.20	331.00	0.282	0.50 ( 0.47)	0.94	67314.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22.86	23.27	1.014	0.50 ( 0.40)	0.80	44.3	10400.00

LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 = 6237.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14659.56	19.76	1.115	0.50 ( 0.39)	0.79	4641.0	400.00
2	14688.49	20.86	1.082	0.50 ( 0.39)	0.79	5031.4	10230.00
3	14707.00	21.65	1.060	0.50 ( 0.39)	0.79	5305.5	10300.00
4	14712.63	21.93	1.052	0.50 ( 0.39)	0.79	5403.8	10380.00
5	14735.39	23.27	1.014	0.50 ( 0.39)	0.79	5858.1	10400.00
6	14770.98	25.50	0.956	0.50 ( 0.39)	0.79	6607.6	10320.00
7	14805.68	27.92	0.910	0.50 ( 0.39)	0.79	7410.1	10360.00
8	14820.83	29.02	0.889	0.50 ( 0.39)	0.79	7772.5	10250.00

Node	Elevation	Area	Q	Tc	Fp	Fm	Ap	Ae	Headwater
9	14839.52	30.40	0.865	0.50	0.39	0.79	8229.2	10340.00	
10	14845.51	30.80	0.860	0.50	0.39	0.79	8356.7	10200.00	
11	14912.99	35.32	0.802	0.50	0.39	0.79	9819.6	10220.00	
12	14968.47	38.88	0.756	0.50	0.39	0.79	10967.3	120.00	
13	14536.63	47.34	0.682	0.50	0.40	0.80	14332.2	100.00	
14	14025.97	55.63	0.625	0.50	0.41	0.82	17576.9	10100.00	
15	13388.71	65.88	0.578	0.50	0.42	0.84	21459.9	31100.00	
16	12880.75	75.20	0.545	0.50	0.43	0.86	24794.8	13600.00	
17	12016.69	93.76	0.486	0.50	0.44	0.88	31281.1	11500.00	
18	11423.37	106.04	0.462	0.50	0.45	0.89	35961.2	11000.00	
19	10809.34	120.29	0.434	0.50	0.45	0.91	42530.2	13000.00	
20	9688.78	138.39	0.412	0.50	0.46	0.92	50073.2	11130.00	
21	8931.08	150.44	0.398	0.50	0.46	0.92	53850.9	11620.00	
22	7791.23	167.18	0.378	0.50	0.46	0.93	58427.3	12400.00	
23	6898.32	179.21	0.364	0.50	0.47	0.93	60744.5	12201.00	
24	6256.44	189.05	0.358	0.50	0.47	0.93	62035.1	12111.00	
25	5295.58	205.67	0.349	0.50	0.47	0.93	63958.0	12261.00	
26	4809.31	215.53	0.344	0.50	0.47	0.93	64769.2	10200.00	
27	4216.22	231.69	0.335	0.50	0.47	0.94	66007.1	10300.00	
28	3974.05	238.89	0.331	0.50	0.47	0.94	66359.3	12010.00	
29	3468.25	260.16	0.320	0.50	0.47	0.94	66687.6	12000.00	
30	2388.31	331.00	0.282	0.50	0.47	0.94	67358.4	10100.00	

TOTAL AREA (ACRES) = 67358.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 14968.47 Tc (MIN.) = 38.880  
EFFECTIVE AREA (ACRES) = 10967.32 AREA-AVERAGED Fm (INCH/HR) = 0.39  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 67358.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

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FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 141.00 DOWNSTREAM (FEET) = 135.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1533.41 CHANNEL SLOPE = 0.0039  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 14968.47  
FLOW VELOCITY (FEET/SEC.) = 13.52 FLOW DEPTH (FEET) = 19.21  
TRAVEL TIME (MIN.) = 1.89 Tc (MIN.) = 40.77  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<

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PEAK FLOWRATE TABLE FILE NAME: 0506105m.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	119.37	16.20	0.50	0.45	0.90	187.4	10520.00
2	91.55	39.09	0.50	0.46	0.93	403.6	10500.00

TOTAL AREA (ACRES) = 403.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14659.56	21.66	1.060	0.50	0.39	0.79	4641.0 400.00
2	14688.49	22.76	1.029	0.50	0.39	0.79	5031.4 10230.00
3	14707.00	23.55	1.007	0.50	0.39	0.79	5305.5 10300.00
4	14712.63	23.83	0.999	0.50	0.39	0.79	5403.8 10380.00
5	14735.39	25.17	0.963	0.50	0.39	0.79	5858.1 10400.00
6	14770.98	27.40	0.920	0.50	0.39	0.79	6607.6 10320.00
7	14805.68	29.81	0.874	0.50	0.39	0.79	7410.1 10360.00
8	14820.83	30.91	0.858	0.50	0.39	0.79	7772.5 10250.00
9	14839.52	32.30	0.841	0.50	0.39	0.79	8229.2 10340.00
10	14845.51	32.69	0.836	0.50	0.39	0.79	8356.7 10200.00
11	14912.99	37.21	0.778	0.50	0.39	0.79	9819.6 10220.00
12	14968.47	40.77	0.736	0.50	0.39	0.79	10967.3 120.00
13	14536.63	49.24	0.666	0.50	0.40	0.80	14332.2 100.00
14	14025.97	57.55	0.613	0.50	0.41	0.82	17576.9 10100.00
15	13388.71	67.83	0.571	0.50	0.42	0.84	21459.9 31100.00
16	12880.75	77.16	0.539	0.50	0.43	0.86	24794.8 13600.00
17	12016.69	95.76	0.482	0.50	0.44	0.88	31281.1 11500.00
18	11423.37	108.06	0.458	0.50	0.45	0.89	35961.2 11000.00
19	10809.34	122.35	0.431	0.50	0.45	0.91	42530.2 13000.00
20	9688.78	140.49	0.410	0.50	0.46	0.92	50073.2 11130.00
21	8931.08	152.59	0.395	0.50	0.46	0.92	53850.9 11620.00
22	7791.23	169.40	0.376	0.50	0.46	0.93	58427.3 12400.00
23	6898.32	181.50	0.362	0.50	0.47	0.93	60744.5 12201.00
24	6256.44	191.40	0.357	0.50	0.47	0.93	62035.1 12111.00
25	5295.58	208.13	0.348	0.50	0.47	0.93	63958.0 12261.00
26	4809.31	218.04	0.343	0.50	0.47	0.93	64769.2 10200.00
27	4216.22	234.28	0.334	0.50	0.47	0.94	66007.1 10300.00
28	3974.05	241.53	0.330	0.50	0.47	0.94	66359.3 12010.00
29	3468.25	262.89	0.318	0.50	0.47	0.94	66687.6 12000.00
30	2388.31	333.99	0.280	0.50	0.47	0.94	67358.4 10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	119.37	16.20	1.249	0.50	0.45	0.90	187.4 10520.00
2	91.55	39.09	0.754	0.50	0.46	0.93	403.6 10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1	14196.96	16.20	1.249	0.50 ( 0.40)	0.79	3658.1	10520.00
2	14772.29	21.66	1.060	0.50 ( 0.40)	0.79	4880.0	400.00
3	14799.88	22.76	1.029	0.50 ( 0.40)	0.79	5280.9	10230.00
4	14817.44	23.55	1.007	0.50 ( 0.40)	0.79	5562.4	10300.00
5	14822.72	23.83	0.999	0.50 ( 0.40)	0.79	5663.3	10380.00
6	14843.85	25.17	0.963	0.50 ( 0.40)	0.79	6130.3	10400.00
7	14876.74	27.40	0.920	0.50 ( 0.40)	0.79	6900.8	10320.00
8	14908.50	29.81	0.874	0.50 ( 0.40)	0.79	7726.1	10360.00
9	14922.32	30.91	0.858	0.50 ( 0.40)	0.79	8098.9	10250.00
10	14939.32	32.30	0.841	0.50 ( 0.40)	0.79	8568.7	10340.00
11	14944.84	32.69	0.836	0.50 ( 0.40)	0.79	8699.9	10200.00
12	15006.82	37.21	0.778	0.50 ( 0.40)	0.79	10205.5	10220.00
13	15033.75	39.09	0.754	0.50 ( 0.40)	0.79	10827.4	10500.00
14	15054.33	40.77	0.736	0.50 ( 0.40)	0.79	11370.9	120.00
15	14600.57	49.24	0.666	0.50 ( 0.40)	0.80	14735.8	100.00
16	14073.18	57.55	0.613	0.50 ( 0.41)	0.82	17980.5	10100.00
17	13422.56	67.83	0.571	0.50 ( 0.42)	0.84	21863.5	31100.00
18	12904.39	77.16	0.539	0.50 ( 0.43)	0.86	25198.4	13600.00
19	12027.83	95.76	0.482	0.50 ( 0.44)	0.88	31684.7	11500.00
20	11433.94	108.06	0.458	0.50 ( 0.45)	0.89	36364.8	11000.00
21	10819.29	122.35	0.431	0.50 ( 0.45)	0.91	42933.8	13000.00
22	9698.23	140.49	0.410	0.50 ( 0.46)	0.92	50476.8	11130.00
23	8940.21	152.59	0.395	0.50 ( 0.46)	0.92	54254.5	11620.00
24	7799.90	169.40	0.376	0.50 ( 0.46)	0.93	58830.9	12400.00
25	6906.68	181.50	0.362	0.50 ( 0.47)	0.93	61148.1	12201.00
26	6264.67	191.40	0.357	0.50 ( 0.47)	0.93	62438.7	12111.00
27	5303.61	208.13	0.348	0.50 ( 0.47)	0.93	64361.6	12261.00
28	4817.21	218.04	0.343	0.50 ( 0.47)	0.93	65172.8	10200.00
29	4223.92	234.28	0.334	0.50 ( 0.47)	0.94	66410.7	10300.00
30	3981.67	241.53	0.330	0.50 ( 0.47)	0.94	66762.9	12010.00
31	3475.60	262.89	0.318	0.50 ( 0.47)	0.94	67091.2	12000.00
32	2394.77	333.99	0.280	0.50 ( 0.47)	0.94	67762.0	10100.00

TOTAL AREA (ACRES) = 67762.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 15054.33 Tc (MIN.) = 40.770  
EFFECTIVE AREA (ACRES) = 11370.92 AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 67762.0  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

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FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 135.00 DOWNSTREAM (FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 207.23 CHANNEL SLOPE = 0.0097  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00  
CHANNEL FLOW THRU SUBAREA (CFS) = 15054.33  
FLOW VELOCITY (FEET/SEC.) = 18.99 FLOW DEPTH (FEET) = 16.26  
TRAVEL TIME (MIN.) = 0.18 Tc (MIN.) = 40.95  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0506106f.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.96	18.98	0.50 ( 0.34)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =			36.9			

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

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

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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14196.96	16.38	1.242	0.50 ( 0.40)	0.79	3658.1	10520.00
2	14772.29	21.84	1.054	0.50 ( 0.40)	0.79	4880.0	400.00
3	14799.88	22.94	1.024	0.50 ( 0.40)	0.79	5280.9	10230.00
4	14817.44	23.73	1.002	0.50 ( 0.40)	0.79	5562.4	10300.00
5	14822.72	24.01	0.994	0.50 ( 0.40)	0.79	5663.3	10380.00
6	14843.85	25.35	0.959	0.50 ( 0.40)	0.79	6130.3	10400.00
7	14876.74	27.58	0.916	0.50 ( 0.40)	0.79	6900.8	10320.00
8	14908.50	30.00	0.870	0.50 ( 0.40)	0.79	7726.1	10360.00
9	14922.32	31.09	0.856	0.50 ( 0.40)	0.79	8098.9	10250.00
10	14939.32	32.48	0.838	0.50 ( 0.40)	0.79	8568.7	10340.00
11	14944.84	32.87	0.833	0.50 ( 0.40)	0.79	8699.9	10200.00
12	15006.82	37.39	0.775	0.50 ( 0.40)	0.79	10205.5	10220.00
13	15033.75	39.27	0.751	0.50 ( 0.40)	0.79	10827.4	10500.00
14	15054.33	40.95	0.734	0.50 ( 0.40)	0.79	11370.9	120.00
15	14600.57	49.42	0.665	0.50 ( 0.40)	0.80	14735.8	100.00
16	14073.18	57.73	0.612	0.50 ( 0.41)	0.82	17980.5	10100.00
17	13422.56	68.01	0.570	0.50 ( 0.42)	0.84	21863.5	31100.00
18	12904.39	77.35	0.538	0.50 ( 0.43)	0.86	25198.4	13600.00
19	12027.83	95.95	0.482	0.50 ( 0.44)	0.88	31684.7	11500.00
20	11433.94	108.26	0.457	0.50 ( 0.45)	0.89	36364.8	11000.00
21	10819.29	122.54	0.431	0.50 ( 0.45)	0.91	42933.8	13000.00
22	9698.23	140.70	0.410	0.50 ( 0.46)	0.92	50476.8	11130.00
23	8940.21	152.79	0.395	0.50 ( 0.46)	0.92	54254.5	11620.00
24	7799.90	169.62	0.375	0.50 ( 0.46)	0.93	58830.9	12400.00
25	6906.68	181.73	0.362	0.50 ( 0.47)	0.93	61148.1	12201.00
26	6264.67	191.62	0.357	0.50 ( 0.47)	0.93	62438.7	12111.00
27	5303.61	208.36	0.348	0.50 ( 0.47)	0.93	64361.6	12261.00
28	4817.21	218.28	0.342	0.50 ( 0.47)	0.93	65172.8	10200.00
29	4223.92	234.53	0.334	0.50 ( 0.47)	0.94	66410.7	10300.00
30	3981.67	241.78	0.330	0.50 ( 0.47)	0.94	66762.9	12010.00
31	3475.60	263.15	0.318	0.50 ( 0.47)	0.94	67091.2	12000.00
32	2394.77	334.28	0.280	0.50 ( 0.47)	0.94	67762.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23.96	18.98	1.144	0.50 ( 0.34)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14220.13	16.38	1.242	0.50 ( 0.40)	0.79	3689.9	10520.00
2	14495.24	18.98	1.144	0.50 ( 0.40)	0.79	4277.6	10600.00
3	14793.59	21.84	1.054	0.50 ( 0.40)	0.79	4916.9	400.00
4	14820.27	22.94	1.024	0.50 ( 0.40)	0.79	5317.8	10230.00
5	14837.17	23.73	1.002	0.50 ( 0.40)	0.79	5599.3	10300.00
6	14842.22	24.01	0.994	0.50 ( 0.40)	0.79	5700.2	10380.00
7	14862.33	25.35	0.959	0.50 ( 0.40)	0.79	6167.2	10400.00
8	14893.95	27.58	0.916	0.50 ( 0.40)	0.79	6937.7	10320.00
9	14924.34	30.00	0.870	0.50 ( 0.40)	0.79	7763.0	10360.00
10	14937.74	31.09	0.856	0.50 ( 0.40)	0.79	8135.8	10250.00
11	14954.22	32.48	0.838	0.50 ( 0.40)	0.79	8605.6	10340.00
12	14959.58	32.87	0.833	0.50 ( 0.40)	0.79	8736.8	10200.00
13	15019.86	37.39	0.775	0.50 ( 0.40)	0.79	10242.4	10220.00
14	15046.07	39.27	0.751	0.50 ( 0.40)	0.79	10864.3	10500.00
15	15066.15	40.95	0.734	0.50 ( 0.40)	0.79	11407.8	120.00
16	14610.33	49.42	0.665	0.50 ( 0.40)	0.80	14772.7	100.00
17	14081.38	57.73	0.612	0.50 ( 0.41)	0.82	18017.4	10100.00
18	13429.52	68.01	0.570	0.50 ( 0.42)	0.84	21900.4	31100.00
19	12910.39	77.35	0.538	0.50 ( 0.43)	0.86	25235.3	13600.00
20	12032.54	95.95	0.482	0.50 ( 0.44)	0.88	31721.6	11500.00
21	11438.41	108.26	0.457	0.50 ( 0.45)	0.89	36401.7	11000.00
22	10823.50	122.54	0.431	0.50 ( 0.45)	0.91	42970.7	13000.00
23	9702.23	140.70	0.410	0.50 ( 0.46)	0.92	50513.7	11130.00
24	8944.07	152.79	0.395	0.50 ( 0.46)	0.92	54291.4	11620.00
25	7803.56	169.62	0.375	0.50 ( 0.46)	0.93	58867.8	12400.00
26	6910.21	181.73	0.362	0.50 ( 0.47)	0.93	61185.0	12201.00
27	6268.16	191.62	0.357	0.50 ( 0.47)	0.93	62475.6	12111.00
28	5307.00	208.36	0.348	0.50 ( 0.47)	0.93	64398.5	12261.00
29	4820.56	218.28	0.342	0.50 ( 0.47)	0.93	65209.7	10200.00
30	4227.18	234.53	0.334	0.50 ( 0.47)	0.94	66447.6	10300.00
31	3984.89	241.78	0.330	0.50 ( 0.47)	0.94	66799.8	12010.00
32	3478.71	263.15	0.318	0.50 ( 0.47)	0.94	67128.1	12000.00
33	2397.51	334.28	0.280	0.50 ( 0.47)	0.94	67798.9	10100.00

TOTAL AREA (ACRES) = 67798.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15066.15 Tc(MIN.) = 40.952  
 EFFECTIVE AREA(ACRES) = 11407.82 AREA-AVERAGED Fm(INCH/HR) = 0.40  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 67798.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

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 END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 67798.9 TC(MIN.) = 40.95  
 EFFECTIVE AREA(ACRES) = 11407.82 AREA-AVERAGED Fm(INCH/HR) = 0.40  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.791  
 PEAK FLOW RATE(CFS) = 15066.15

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14220.13	16.38	1.242	0.50 ( 0.40)	0.79	3689.9	10520.00
2	14495.24	18.98	1.144	0.50 ( 0.40)	0.79	4277.6	10600.00
3	14793.59	21.84	1.054	0.50 ( 0.40)	0.79	4916.9	400.00
4	14820.27	22.94	1.024	0.50 ( 0.40)	0.79	5317.8	10230.00
5	14837.17	23.73	1.002	0.50 ( 0.40)	0.79	5599.3	10300.00
6	14842.22	24.01	0.994	0.50 ( 0.40)	0.79	5700.2	10380.00
7	14862.33	25.35	0.959	0.50 ( 0.40)	0.79	6167.2	10400.00
8	14893.95	27.58	0.916	0.50 ( 0.40)	0.79	6937.7	10320.00
9	14924.34	30.00	0.870	0.50 ( 0.40)	0.79	7763.0	10360.00
10	14937.74	31.09	0.856	0.50 ( 0.40)	0.79	8135.8	10250.00
11	14954.22	32.48	0.838	0.50 ( 0.40)	0.79	8605.6	10340.00
12	14959.58	32.87	0.833	0.50 ( 0.40)	0.79	8736.8	10200.00
13	15019.86	37.39	0.775	0.50 ( 0.40)	0.79	10242.4	10220.00
14	15046.07	39.27	0.751	0.50 ( 0.40)	0.79	10864.3	10500.00
15	15066.15	40.95	0.734	0.50 ( 0.40)	0.79	11407.8	120.00
16	14610.33	49.42	0.665	0.50 ( 0.40)	0.80	14772.7	100.00
17	14081.38	57.73	0.612	0.50 ( 0.41)	0.82	18017.4	10100.00
18	13429.52	68.01	0.570	0.50 ( 0.42)	0.84	21900.4	31100.00
19	12910.39	77.35	0.538	0.50 ( 0.43)	0.86	25235.3	13600.00
20	12032.54	95.95	0.482	0.50 ( 0.44)	0.88	31721.6	11500.00
21	11438.41	108.26	0.457	0.50 ( 0.45)	0.89	36401.7	11000.00
22	10823.50	122.54	0.431	0.50 ( 0.45)	0.91	42970.7	13000.00
23	9702.23	140.70	0.410	0.50 ( 0.46)	0.92	50513.7	11130.00
24	8944.07	152.79	0.395	0.50 ( 0.46)	0.92	54291.4	11620.00
25	7803.56	169.62	0.375	0.50 ( 0.46)	0.93	58867.8	12400.00
26	6910.21	181.73	0.362	0.50 ( 0.47)	0.93	61185.0	12201.00
27	6268.16	191.62	0.357	0.50 ( 0.47)	0.93	62475.6	12111.00
28	5307.00	208.36	0.348	0.50 ( 0.47)	0.93	64398.5	12261.00
29	4820.56	218.28	0.342	0.50 ( 0.47)	0.93	65209.7	10200.00
30	4227.18	234.53	0.334	0.50 ( 0.47)	0.94	66447.6	10300.00
31	3984.89	241.78	0.330	0.50 ( 0.47)	0.94	66799.8	12010.00
32	3478.71	263.15	0.318	0.50 ( 0.47)	0.94	67128.1	12000.00
33	2397.51	334.28	0.280	0.50 ( 0.47)	0.94	67798.9	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S38- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV NOVEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV38.DAT  
TIME/DATE OF STUDY: 11:33 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.589
- 2) 10.00; 1.733
- 3) 15.00; 1.292
- 4) 20.00; 1.105
- 5) 25.00; 0.965
- 6) 30.00; 0.869
- 7) 40.00; 0.741
- 8) 50.00; 0.659
- 9) 60.00; 0.597
- 10) 90.00; 0.493
- 11) 120.00; 0.433
- 12) 180.00; 0.362
- 13) 360.00; 0.265
- 14) 1200.00; 0.115

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RU05EV37.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14495.24	18.98	0.50 ( 0.40)	0.79	4277.6	10600.00
2	14959.58	32.87	0.50 ( 0.40)	0.79	8736.8	10200.00
3	15066.15	40.95	0.50 ( 0.40)	0.79	11407.8	120.00
4	14610.33	49.42	0.50 ( 0.40)	0.80	14772.7	100.00
5	14081.38	57.73	0.50 ( 0.41)	0.82	18017.4	10100.00
6	13429.52	68.01	0.50 ( 0.42)	0.84	21900.4	31100.00
7	12910.39	77.35	0.50 ( 0.43)	0.86	25235.3	13600.00
8	12032.54	95.95	0.50 ( 0.44)	0.88	31721.6	11500.00
9	11438.41	108.26	0.50 ( 0.45)	0.89	36401.7	11000.00
10	10823.50	122.54	0.50 ( 0.45)	0.91	42970.7	13000.00
11	9702.23	140.70	0.50 ( 0.46)	0.92	50513.7	11130.00
12	8944.07	152.79	0.50 ( 0.46)	0.92	54291.4	11620.00
13	7803.56	169.62	0.50 ( 0.46)	0.93	58867.8	12400.00
14	6910.21	181.73	0.50 ( 0.47)	0.93	61185.0	12201.00
15	6268.16	191.62	0.50 ( 0.47)	0.93	62475.6	12111.00
16	5307.00	208.36	0.50 ( 0.47)	0.93	64398.5	12261.00
17	4820.56	218.28	0.50 ( 0.47)	0.93	65209.7	10200.00
18	4227.18	234.53	0.50 ( 0.47)	0.94	66447.6	10300.00
19	3478.71	263.15	0.50 ( 0.47)	0.94	67128.1	12000.00
20	2397.51	334.28	0.50 ( 0.47)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14495.24	18.98	0.50 ( 0.40)	0.79	4277.6	10600.00
2	14959.58	32.87	0.50 ( 0.40)	0.79	8736.8	10200.00
3	15066.15	40.95	0.50 ( 0.40)	0.79	11407.8	120.00
4	14610.33	49.42	0.50 ( 0.40)	0.80	14772.7	100.00
5	14081.38	57.73	0.50 ( 0.41)	0.82	18017.4	10100.00
6	13429.52	68.01	0.50 ( 0.42)	0.84	21900.4	31100.00
7	12910.39	77.35	0.50 ( 0.43)	0.86	25235.3	13600.00
8	12032.54	95.95	0.50 ( 0.44)	0.88	31721.6	11500.00
9	11438.41	108.26	0.50 ( 0.45)	0.89	36401.7	11000.00
10	10823.50	122.54	0.50 ( 0.45)	0.91	42970.7	13000.00
11	9702.23	140.70	0.50 ( 0.46)	0.92	50513.7	11130.00
12	8944.07	152.79	0.50 ( 0.46)	0.92	54291.4	11620.00
13	7803.56	169.62	0.50 ( 0.46)	0.93	58867.8	12400.00

14	6910.21	181.73	0.50	( 0.47)	0.93	61185.0	12201.00
15	6268.16	191.62	0.50	( 0.47)	0.93	62475.6	12111.00
16	5307.00	208.36	0.50	( 0.47)	0.93	64398.5	12261.00
17	4820.56	218.28	0.50	( 0.47)	0.93	65209.7	10200.00
18	4227.18	234.53	0.50	( 0.47)	0.94	66447.6	10300.00
19	3478.71	263.15	0.50	( 0.47)	0.94	67128.1	12000.00
20	2397.51	334.28	0.50	( 0.47)	0.94	67798.9	10100.00

TOTAL AREA (ACRES) = 67798.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 140.00 DOWNSTREAM(FEET) = 137.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 926.91 CHANNEL SLOPE = 0.0032  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.723

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.44	0.50	0.983	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.983  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15069.42  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.61  
AVERAGE FLOW DEPTH(FEET) = 19.96 TRAVEL TIME (MIN.) = 1.22  
Tc (MIN.) = 42.18  
SUBAREA AREA (ACRES) = 31.44 SUBAREA RUNOFF (CFS) = 6.55  
EFFECTIVE AREA (ACRES) = 11439.26 AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 67830.4 PEAK FLOW RATE (CFS) = 15066.15  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 19.96 FLOW VELOCITY (FEET/SEC.) = 12.61  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION (MIN.) = 42.18  
RAINFALL INTENSITY (INCH/HR) = 0.72  
AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50  
AREA-AVERAGED Ap = 0.79  
EFFECTIVE STREAM AREA (ACRES) = 11439.26  
TOTAL STREAM AREA (ACRES) = 67830.38  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 15066.15

\*\*\*\*\*

FLOW PROCESS FROM NODE 13810.00 TO NODE 13811.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 648.54  
ELEVATION DATA: UPSTREAM (FEET) = 756.46 DOWNSTREAM (FEET) = 586.02

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.293  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.531

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
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NATURAL FAIR COVER						
"CHAPARRAL, BROADLEAF"	-	5.58	0.50	1.000	0	12.29

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF (CFS) = 5.18  
TOTAL AREA (ACRES) = 5.58 PEAK FLOW RATE (CFS) = 5.18

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 586.02 DOWNSTREAM(FEET) = 437.69  
CHANNEL LENGTH THRU SUBAREA(FEET) = 696.28 CHANNEL SLOPE = 0.2130  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.358

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.79	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.91  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.93  
AVERAGE FLOW DEPTH(FEET) = 0.78 TRAVEL TIME (MIN.) = 1.96  
Tc (MIN.) = 14.25  
SUBAREA AREA (ACRES) = 14.79 SUBAREA RUNOFF (CFS) = 11.42  
EFFECTIVE AREA (ACRES) = 20.37 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 20.4 PEAK FLOW RATE (CFS) = 15.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 0.90 FLOW VELOCITY (FEET/SEC.) = 6.51  
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 437.69 DOWNSTREAM(FEET) = 402.36  
CHANNEL LENGTH THRU SUBAREA(FEET) = 681.04 CHANNEL SLOPE = 0.0519

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.217  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 18.41 0.50 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 21.68  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.13  
 AVERAGE FLOW DEPTH (FEET) = 1.32 TRAVEL TIME (MIN.) = 2.75  
 Tc (MIN.) = 17.00  
 SUBAREA AREA (ACRES) = 18.41 SUBAREA RUNOFF (CFS) = 11.88  
 EFFECTIVE AREA (ACRES) = 38.78 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 38.8 PEAK FLOW RATE (CFS) = 25.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.39 FLOW VELOCITY (FEET/SEC.) = 4.30  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13812.00 = 2025.86 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 51  
 -----

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW <<<<<  
 >>>> TRAVEL TIME THRU SUBAREA (EXISTING ELEMENT) <<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM (FEET) = 402.36 DOWNSTREAM (FEET) = 259.72  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1282.56 CHANNEL SLOPE = 0.1112  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.091  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 27.87 0.50 0.858 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.858  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 33.34  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.12  
 AVERAGE FLOW DEPTH (FEET) = 1.35 TRAVEL TIME (MIN.) = 3.49  
 Tc (MIN.) = 20.49  
 SUBAREA AREA (ACRES) = 27.87 SUBAREA RUNOFF (CFS) = 16.61  
 EFFECTIVE AREA (ACRES) = 66.65 AREA-AVERAGED Fm (INCH/HR) = 0.47  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA (ACRES) = 66.7 PEAK FLOW RATE (CFS) = 37.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.41 FLOW VELOCITY (FEET/SEC.) = 6.27  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31  
 -----

>>>> COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA <<<<<  
 >>>> USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW) <<<<<

ELEVATION DATA: UPSTREAM (FEET) = 259.72 DOWNSTREAM (FEET) = 137.00  
 FLOW LENGTH (FEET) = 2412.88 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 12.6 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 16.98  
 ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 37.24  
 PIPE TRAVEL TIME (MIN.) = 2.37 Tc (MIN.) = 22.86  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81  
 -----

>>>> ADDITION OF SUBAREA TO MAINLINE PEAK FLOW <<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 22.86  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.025  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 83.64 0.50 0.570 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570  
 SUBAREA AREA (ACRES) = 83.64 SUBAREA RUNOFF (CFS) = 55.70  
 EFFECTIVE AREA (ACRES) = 150.29 AREA-AVERAGED Fm (INCH/HR) = 0.37  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 150.3 PEAK FLOW RATE (CFS) = 88.96

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1  
 -----

>>>> DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE <<<<<  
 >>>> AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES <<<<<

\*\*\*\*\*  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 22.86  
 RAINFALL INTENSITY (INCH/HR) = 1.03  
 AREA-AVERAGED Fm (INCH/HR) = 0.37  
 AREA-AVERAGED Fp (INCH/HR) = 0.50  
 AREA-AVERAGED Ap = 0.73  
 EFFECTIVE STREAM AREA (ACRES) = 150.29  
 TOTAL STREAM AREA (ACRES) = 150.29  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 88.96

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14495.24	20.22	1.099	0.50 (0.40)	0.79	4309.1	10600.00
1	14959.58	34.10	0.817	0.50 (0.40)	0.79	8768.2	10200.00
1	15066.15	42.18	0.723	0.50 (0.40)	0.79	11439.3	120.00
1	14610.33	50.66	0.655	0.50 (0.40)	0.80	14804.2	100.00
1	14081.38	58.98	0.603	0.50 (0.41)	0.82	18048.9	10100.00
1	13429.52	69.27	0.565	0.50 (0.42)	0.84	21931.8	31100.00
1	12910.39	78.62	0.532	0.50 (0.43)	0.86	25266.7	13600.00
1	12032.54	97.25	0.479	0.50 (0.44)	0.88	31753.0	11500.00
1	11438.41	109.57	0.454	0.50 (0.45)	0.89	36433.1	11000.00
1	10823.50	123.87	0.428	0.50 (0.45)	0.91	43002.2	13000.00

1	9702.23	142.06	0.407	0.50	( 0.46)	0.92	50545.1	11130.00
1	8944.07	154.19	0.393	0.50	( 0.46)	0.92	54322.8	11620.00
1	7803.56	171.06	0.373	0.50	( 0.46)	0.93	58899.2	12400.00
1	6910.21	183.21	0.360	0.50	( 0.47)	0.93	61216.4	12201.00
1	6268.16	193.15	0.355	0.50	( 0.47)	0.93	62507.1	12111.00
1	5307.00	209.95	0.346	0.50	( 0.47)	0.93	64430.0	12261.00
1	4820.56	219.91	0.340	0.50	( 0.47)	0.93	65241.1	10200.00
1	4227.18	236.22	0.332	0.50	( 0.47)	0.94	66479.0	10300.00
1	3478.71	264.92	0.316	0.50	( 0.47)	0.94	67159.6	12000.00
1	2397.51	336.22	0.278	0.50	( 0.47)	0.94	67830.4	10100.00
2	88.96	22.86	1.025	0.50	( 0.37)	0.73	150.3	13810.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14582.77	20.22	1.099	0.50 ( 0.40)	0.79	4442.0	10600.00
2	14672.41	22.86	1.025	0.50 ( 0.40)	0.79	5306.5	13810.00
3	15020.34	34.10	0.817	0.50 ( 0.40)	0.79	8918.5	10200.00
4	15114.28	42.18	0.723	0.50 ( 0.40)	0.79	11589.5	120.00
5	14649.23	50.66	0.655	0.50 ( 0.40)	0.80	14954.4	100.00
6	14113.31	58.98	0.603	0.50 ( 0.41)	0.82	18199.2	10100.00
7	13456.24	69.27	0.565	0.50 ( 0.42)	0.84	22082.1	31100.00
8	12932.73	78.62	0.532	0.50 ( 0.43)	0.86	25417.0	13600.00
9	12049.73	97.25	0.479	0.50 ( 0.44)	0.88	31903.3	11500.00
10	11454.71	109.57	0.454	0.50 ( 0.45)	0.89	36583.4	11000.00
11	10838.90	123.87	0.428	0.50 ( 0.45)	0.91	43152.5	13000.00
12	9716.85	142.06	0.407	0.50 ( 0.46)	0.92	50695.4	11130.00
13	8958.17	154.19	0.393	0.50 ( 0.46)	0.92	54473.1	11620.00
14	7816.95	171.06	0.373	0.50 ( 0.46)	0.93	59049.5	12400.00
15	6923.16	183.21	0.360	0.50 ( 0.47)	0.93	61366.7	12201.00
16	6280.91	193.15	0.355	0.50 ( 0.47)	0.93	62657.4	12111.00
17	5319.43	209.95	0.346	0.50 ( 0.47)	0.93	64580.2	12261.00
18	4832.79	219.91	0.340	0.50 ( 0.47)	0.93	65391.4	10200.00
19	4239.10	236.22	0.332	0.50 ( 0.47)	0.94	66629.3	10300.00
20	3490.07	264.92	0.316	0.50 ( 0.47)	0.94	67309.9	12000.00
21	2407.49	336.22	0.278	0.50 ( 0.47)	0.94	67980.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15114.28 Tc (MIN.) = 42.18  
EFFECTIVE AREA(ACRES) = 11589.55 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA(ACRES) = 67980.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.709  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 31.60 0.50 0.683 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15119.51  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.60  
AVERAGE FLOW DEPTH(FEET) = 20.00 TRAVEL TIME(MIN.) = 1.67  
Tc(MIN.) = 43.85  
SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 10.46  
EFFECTIVE AREA(ACRES) = 11621.15 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.79  
TOTAL AREA(ACRES) = 68012.3 PEAK FLOW RATE(CFS) = 15114.28  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 20.00 FLOW VELOCITY(FEET/SEC.) = 12.60

==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 43.85  
RAINFALL INTENSITY(INCH/HR) = 0.71  
AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50  
AREA-AVERAGED Ap = 0.79  
EFFECTIVE STREAM AREA(ACRES) = 11621.15  
TOTAL STREAM AREA(ACRES) = 68012.27  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 15114.28

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====
INITIAL SUBAREA FLOW-LENGTH (FEET) = 744.71
ELEVATION DATA: UPSTREAM (FEET) = 1100.95 DOWNSTREAM (FEET) = 959.21

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.858
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.393
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" - 5.06 0.50 1.000 0 13.86
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 4.06
TOTAL AREA (ACRES) = 5.06 PEAK FLOW RATE (CFS) = 4.06

\*\*\*\*\*
FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 51

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW <<<<<
>>>> TRAVEL TIME THRU SUBAREA (EXISTING ELEMENT) <<<<<

=====
ELEVATION DATA: UPSTREAM (FEET) = 959.21 DOWNSTREAM (FEET) = 832.83
CHANNEL LENGTH THRU SUBAREA (FEET) = 1076.71 CHANNEL SLOPE = 0.1174
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.202
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.57 0.50 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 14.43
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.07
AVERAGE FLOW DEPTH (FEET) = 0.97 TRAVEL TIME (MIN.) = 3.54
Tc (MIN.) = 17.39
SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 20.58
EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.50
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 23.78

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.17 FLOW VELOCITY (FEET/SEC.) = 5.77
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 51

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW <<<<<
>>>> TRAVEL TIME THRU SUBAREA (EXISTING ELEMENT) <<<<<

=====
ELEVATION DATA: UPSTREAM (FEET) = 832.83 DOWNSTREAM (FEET) = 572.49
CHANNEL LENGTH THRU SUBAREA (FEET) = 1883.58 CHANNEL SLOPE = 0.1382
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.044

SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.23 0.50 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 31.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.56
AVERAGE FLOW DEPTH (FEET) = 1.27 TRAVEL TIME (MIN.) = 4.79
Tc (MIN.) = 22.18
SUBAREA AREA (ACRES) = 32.23 SUBAREA RUNOFF (CFS) = 15.77
EFFECTIVE AREA (ACRES) = 69.86 AREA-AVERAGED Fm (INCH/HR) = 0.50
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 69.9 PEAK FLOW RATE (CFS) = 34.19

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.31 FLOW VELOCITY (FEET/SEC.) = 6.67
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 51

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW <<<<<
>>>> TRAVEL TIME THRU SUBAREA (EXISTING ELEMENT) <<<<<

=====
ELEVATION DATA: UPSTREAM (FEET) = 572.49 DOWNSTREAM (FEET) = 471.65
CHANNEL LENGTH THRU SUBAREA (FEET) = 943.78 CHANNEL SLOPE = 0.1068
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.974
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 27.51 0.50 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 40.06
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.31
AVERAGE FLOW DEPTH (FEET) = 1.45 TRAVEL TIME (MIN.) = 2.49
Tc (MIN.) = 24.67
SUBAREA AREA (ACRES) = 27.51 SUBAREA RUNOFF (CFS) = 11.73
EFFECTIVE AREA (ACRES) = 97.37 AREA-AVERAGED Fm (INCH/HR) = 0.50
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 97.4 PEAK FLOW RATE (CFS) = 41.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.48 FLOW VELOCITY (FEET/SEC.) = 6.36
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 51

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW <<<<<
>>>> TRAVEL TIME THRU SUBAREA (EXISTING ELEMENT) <<<<<

=====
ELEVATION DATA: UPSTREAM (FEET) = 471.65 DOWNSTREAM (FEET) = 347.06
CHANNEL LENGTH THRU SUBAREA (FEET) = 1647.45 CHANNEL SLOPE = 0.0756
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000



MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.885  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	94.21	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 57.90  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.09  
 AVERAGE FLOW DEPTH (FEET) = 1.78 TRAVEL TIME (MIN.) = 4.51  
 Tc (MIN.) = 29.18  
 SUBAREA AREA (ACRES) = 94.21 SUBAREA RUNOFF (CFS) = 32.60  
 EFFECTIVE AREA (ACRES) = 191.58 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 191.6 PEAK FLOW RATE (CFS) = 66.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.87 FLOW VELOCITY (FEET/SEC.) = 6.29  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 51

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>> TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 347.06 DOWNSTREAM (FEET) = 269.29  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1696.71 CHANNEL SLOPE = 0.0458  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.817  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	233.25	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 99.64  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.77  
 AVERAGE FLOW DEPTH (FEET) = 2.40 TRAVEL TIME (MIN.) = 4.90  
 Tc (MIN.) = 34.08  
 SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 66.45  
 EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.50  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 121.04

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.58 FLOW VELOCITY (FEET/SEC.) = 6.05  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 51

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>> TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87

CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306  
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.725  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.70	0.50	0.880	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.880  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 138.34  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.39  
 AVERAGE FLOW DEPTH (FEET) = 2.92 TRAVEL TIME (MIN.) = 7.82  
 Tc (MIN.) = 41.90  
 SUBAREA AREA (ACRES) = 134.70 SUBAREA RUNOFF (CFS) = 34.58  
 EFFECTIVE AREA (ACRES) = 559.53 AREA-AVERAGED Fm (INCH/HR) = 0.49  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 559.5 PEAK FLOW RATE (CFS) = 121.04  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.78 FLOW VELOCITY (FEET/SEC.) = 5.21  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13837.00 = 10522.15 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 31

>>>> COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>> USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 191.87 DOWNSTREAM (FEET) = 133.00  
 FLOW LENGTH (FEET) = 1151.02 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 25.4 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 22.71  
 ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 121.04  
 PIPE TRAVEL TIME (MIN.) = 0.84 Tc (MIN.) = 42.75  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81

>>>> ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 42.75  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.718  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.97	0.50	0.622	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.622  
 SUBAREA AREA (ACRES) = 5.97 SUBAREA RUNOFF (CFS) = 2.19  
 EFFECTIVE AREA (ACRES) = 565.50 AREA-AVERAGED Fm (INCH/HR) = 0.48  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 565.5 PEAK FLOW RATE (CFS) = 121.04  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<  
 =====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 42.75  
 RAINFALL INTENSITY(INCH/HR) = 0.72  
 AREA-AVERAGED Fm(INCH/HR) = 0.48  
 AREA-AVERAGED Fp(INCH/HR) = 0.50  
 AREA-AVERAGED Ap = 0.97  
 EFFECTIVE STREAM AREA(ACRES) = 565.50  
 TOTAL STREAM AREA(ACRES) = 565.50  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 121.04

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14582.77	21.91	1.051	0.50( 0.39)	0.79	4473.6	10600.00
1	14672.41	24.55	0.978	0.50( 0.39)	0.79	5338.1	13810.00
1	15020.34	35.78	0.795	0.50( 0.40)	0.79	8950.1	10200.00
1	15114.28	43.85	0.709	0.50( 0.40)	0.79	11621.1	120.00
1	14649.23	52.35	0.644	0.50( 0.40)	0.80	14986.0	100.00
1	14113.31	60.68	0.595	0.50( 0.41)	0.82	18230.8	10100.00
1	13456.24	71.00	0.559	0.50( 0.42)	0.84	22113.7	31100.00
1	12932.73	80.37	0.526	0.50( 0.43)	0.86	25448.6	13600.00
1	12049.73	99.02	0.475	0.50( 0.44)	0.88	31934.9	11500.00
1	11454.71	111.37	0.450	0.50( 0.45)	0.89	36615.0	11000.00
1	10838.90	125.70	0.426	0.50( 0.45)	0.91	43184.1	13000.00
1	9716.85	143.94	0.405	0.50( 0.46)	0.92	50727.0	11130.00
1	8958.17	156.10	0.390	0.50( 0.46)	0.92	54504.7	11620.00
1	7816.95	173.04	0.370	0.50( 0.46)	0.93	59081.1	12400.00
1	6923.16	185.25	0.359	0.50( 0.47)	0.93	61398.3	12201.00
1	6280.91	195.24	0.354	0.50( 0.47)	0.93	62689.0	12111.00
1	5319.43	212.13	0.345	0.50( 0.47)	0.93	64611.9	12261.00
1	4832.79	222.14	0.339	0.50( 0.47)	0.93	65423.0	10200.00
1	4239.10	238.52	0.330	0.50( 0.47)	0.93	66660.9	10300.00
1	3490.07	267.34	0.315	0.50( 0.47)	0.94	67341.5	12000.00
1	2407.49	338.88	0.276	0.50( 0.47)	0.94	68012.3	10100.00
2	121.04	42.75	0.718	0.50( 0.48)	0.97	565.5	13830.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14703.81	21.91	1.051	0.50( 0.40)	0.80	4763.5	10600.00
2	14793.45	24.55	0.978	0.50( 0.40)	0.80	5662.8	13810.00
3	15141.38	35.78	0.795	0.50( 0.40)	0.80	9423.4	10200.00
4	15222.51	42.75	0.718	0.50( 0.40)	0.80	11822.7	13830.00
5	15230.66	43.85	0.709	0.50( 0.40)	0.80	12186.6	120.00
6	14732.06	52.35	0.644	0.50( 0.40)	0.81	15551.5	100.00
7	14170.43	60.68	0.595	0.50( 0.41)	0.82	18796.3	10100.00
8	13494.91	71.00	0.559	0.50( 0.42)	0.85	22679.2	31100.00
9	12954.65	80.37	0.526	0.50( 0.43)	0.86	26014.1	13600.00

10	12057.71	99.02	0.475	0.50( 0.44)	0.88	32500.4	11500.00
11	11462.28	111.37	0.450	0.50( 0.45)	0.89	37180.5	11000.00
12	10846.06	125.70	0.426	0.50( 0.45)	0.91	43749.6	13000.00
13	9723.65	143.94	0.405	0.50( 0.46)	0.92	51292.5	11130.00
14	8964.73	156.10	0.390	0.50( 0.46)	0.92	55070.2	11620.00
15	7823.17	173.04	0.370	0.50( 0.46)	0.93	59646.6	12400.00
16	6929.19	185.25	0.359	0.50( 0.47)	0.93	61963.8	12201.00
17	6286.86	195.24	0.354	0.50( 0.47)	0.93	63254.5	12111.00
18	5325.22	212.13	0.345	0.50( 0.47)	0.93	65177.4	12261.00
19	4838.50	222.14	0.339	0.50( 0.47)	0.93	65988.5	10200.00
20	4244.65	238.52	0.330	0.50( 0.47)	0.94	67226.4	10300.00
21	3495.37	267.34	0.315	0.50( 0.47)	0.94	67907.0	12000.00
22	2412.14	338.88	0.276	0.50( 0.47)	0.94	68577.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15230.66 Tc(MIN.) = 43.85  
 EFFECTIVE AREA(ACRES) = 12186.65 AREA-AVERAGED Fm(INCH/HR) = 0.40  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 68577.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.703  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.61 0.50 0.975 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15231.30  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.41  
 AVERAGE FLOW DEPTH(FEET) = 18.77 TRAVEL TIME(MIN.) = 0.76  
 Tc(MIN.) = 44.60  
 SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 1.28  
 EFFECTIVE AREA(ACRES) = 12193.26 AREA-AVERAGED Fm(INCH/HR) = 0.40  
 AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 68584.4 PEAK FLOW RATE(CFS) = 15230.66  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 18.77 FLOW VELOCITY(FEET/SEC.) = 14.41  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 =====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 44.60
RAINFALL INTENSITY(INCH/HR) = 0.70
AREA-AVERAGED Fm(INCH/HR) = 0.40
AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.80
EFFECTIVE STREAM AREA(ACRES) = 12193.26
TOTAL STREAM AREA(ACRES) = 68584.38
PEAK FLOW RATE(CFS) AT CONFLUENCE = 15230.66

\*\*\*\*\*
FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 617.57
ELEVATION DATA: UPSTREAM(FEET) = 646.95 DOWNSTREAM(FEET) = 490.10

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.137
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.544
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" - 4.95 0.50 1.000 0 12.14
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 4.65
TOTAL AREA(ACRES) = 4.95 PEAK FLOW RATE(CFS) = 4.65

\*\*\*\*\*
FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 490.10 DOWNSTREAM(FEET) = 440.98
CHANNEL LENGTH THRU SUBAREA(FEET) = 351.14 CHANNEL SLOPE = 0.1399
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.428
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 4.02 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.33
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.42
AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 1.33
Tc(MIN.) = 13.46
SUBAREA AREA(ACRES) = 4.02 SUBAREA RUNOFF(CFS) = 3.36
EFFECTIVE AREA(ACRES) = 8.97 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 7.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 4.59
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 440.98 DOWNSTREAM(FEET) = 395.76
CHANNEL LENGTH THRU SUBAREA(FEET) = 512.91 CHANNEL SLOPE = 0.0882
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.272
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 7.17 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 9.98
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.15
AVERAGE FLOW DEPTH(FEET) = 0.90 TRAVEL TIME(MIN.) = 2.06
Tc(MIN.) = 15.52
SUBAREA AREA(ACRES) = 7.17 SUBAREA RUNOFF(CFS) = 4.98
EFFECTIVE AREA(ACRES) = 16.14 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 16.1 PEAK FLOW RATE(CFS) = 11.22

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.94 FLOW VELOCITY(FEET/SEC.) = 4.27
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 395.76 DOWNSTREAM(FEET) = 354.94
CHANNEL LENGTH THRU SUBAREA(FEET) = 443.69 CHANNEL SLOPE = 0.0920
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.212
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 6.76 0.50 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 13.38
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.56
AVERAGE FLOW DEPTH(FEET) = 0.99 TRAVEL TIME(MIN.) = 1.62
Tc(MIN.) = 17.14
SUBAREA AREA(ACRES) = 6.76 SUBAREA RUNOFF(CFS) = 4.33
EFFECTIVE AREA(ACRES) = 22.90 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 22.9 PEAK FLOW RATE (CFS) = 14.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.03 FLOW VELOCITY (FEET/SEC.) = 4.65  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13853.00 = 1925.31 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13853.00 TO NODE 13854.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 354.94 DOWNSTREAM (FEET) = 263.57  
CHANNEL LENGTH THRU SUBAREA (FEET) = 962.09 CHANNEL SLOPE = 0.0950  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.096  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	18.16	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 19.54  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.07  
AVERAGE FLOW DEPTH (FEET) = 1.13 TRAVEL TIME (MIN.) = 3.16  
Tc (MIN.) = 20.31  
SUBAREA AREA (ACRES) = 18.16 SUBAREA RUNOFF (CFS) = 9.74  
EFFECTIVE AREA (ACRES) = 41.06 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 41.1 PEAK FLOW RATE (CFS) = 22.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.19 FLOW VELOCITY (FEET/SEC.) = 5.21  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13854.00 = 2887.40 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13854.00 TO NODE 13855.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 263.57 DOWNSTREAM (FEET) = 188.74  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1228.77 CHANNEL SLOPE = 0.0609  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.977  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	38.75	0.50	0.879	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.879  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 31.42  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.81  
AVERAGE FLOW DEPTH (FEET) = 1.48 TRAVEL TIME (MIN.) = 4.26  
Tc (MIN.) = 24.57  
SUBAREA AREA (ACRES) = 38.75 SUBAREA RUNOFF (CFS) = 18.75

EFFECTIVE AREA (ACRES) = 79.81 AREA-AVERAGED Fm (INCH/HR) = 0.47  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 79.8 PEAK FLOW RATE (CFS) = 36.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.56 FLOW VELOCITY (FEET/SEC.) = 4.99  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13855.00 = 4116.17 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 188.74 DOWNSTREAM (FEET) = 130.00  
FLOW LENGTH (FEET) = 2092.67 MANNING'S N = 0.013  
ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000  
DEPTH OF FLOW IN 36.0 INCH PIPE IS 14.5 INCHES  
PIPE-FLOW VELOCITY (FEET/SEC.) = 13.60  
ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
PIPE-FLOW (CFS) = 36.37  
PIPE TRAVEL TIME (MIN.) = 2.57 Tc (MIN.) = 27.13  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13860.00 = 6208.84 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 27.13  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.924  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.41	0.50	0.707	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707  
SUBAREA AREA (ACRES) = 43.41 SUBAREA RUNOFF (CFS) = 22.29  
EFFECTIVE AREA (ACRES) = 123.22 AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 123.2 PEAK FLOW RATE (CFS) = 54.85

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
TIME OF CONCENTRATION (MIN.) = 27.13  
RAINFALL INTENSITY (INCH/HR) = 0.92  
AREA-AVERAGED Fm (INCH/HR) = 0.43  
AREA-AVERAGED Fp (INCH/HR) = 0.50  
AREA-AVERAGED Ap = 0.86  
EFFECTIVE STREAM AREA (ACRES) = 123.22  
TOTAL STREAM AREA (ACRES) = 123.22  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 54.85

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14703.81	22.68	1.030	0.50 ( 0.40)	0.80	4770.1	10600.00
1	14793.45	25.31	0.959	0.50 ( 0.40)	0.80	5669.4	13810.00
1	15141.38	36.54	0.785	0.50 ( 0.40)	0.80	9430.0	10200.00
1	15222.51	43.50	0.712	0.50 ( 0.40)	0.80	11829.3	13830.00
1	15230.66	44.60	0.703	0.50 ( 0.40)	0.80	12193.3	120.00
1	14732.06	53.11	0.640	0.50 ( 0.40)	0.81	15558.2	100.00
1	14170.43	61.46	0.592	0.50 ( 0.41)	0.82	18802.9	10100.00
1	13494.91	71.78	0.556	0.50 ( 0.42)	0.85	22685.8	31100.00
1	12954.65	81.15	0.524	0.50 ( 0.43)	0.86	26020.7	13600.00
1	12057.71	99.83	0.473	0.50 ( 0.44)	0.88	32507.0	11500.00
1	11462.28	112.18	0.449	0.50 ( 0.45)	0.89	37187.1	11000.00
1	10846.06	126.52	0.425	0.50 ( 0.45)	0.91	43756.2	13000.00
1	9723.65	144.79	0.404	0.50 ( 0.46)	0.92	51299.1	11130.00
1	8964.73	156.97	0.389	0.50 ( 0.46)	0.92	55076.8	11620.00
1	7823.17	173.94	0.369	0.50 ( 0.46)	0.93	59653.2	12400.00
1	6929.19	186.18	0.359	0.50 ( 0.47)	0.93	61970.4	12201.00
1	6286.86	196.18	0.353	0.50 ( 0.47)	0.93	63261.1	12111.00
1	5325.22	213.12	0.344	0.50 ( 0.47)	0.93	65184.0	12261.00
1	4838.50	223.15	0.339	0.50 ( 0.47)	0.93	65995.1	10200.00
1	4244.65	239.56	0.330	0.50 ( 0.47)	0.94	67233.0	10300.00
1	3495.37	268.43	0.314	0.50 ( 0.47)	0.94	67913.6	12000.00
1	2412.14	340.08	0.276	0.50 ( 0.47)	0.94	68584.4	10100.00
2	54.85	27.13	0.924	0.50 ( 0.43)	0.86	123.2	13850.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14758.66	22.68	1.030	0.50 ( 0.40)	0.80	4873.1	10600.00
2	14848.23	25.31	0.959	0.50 ( 0.40)	0.80	5784.4	13810.00
3	14904.71	27.13	0.924	0.50 ( 0.40)	0.80	6402.4	13850.00
4	15180.84	36.54	0.785	0.50 ( 0.40)	0.80	9553.3	10200.00
5	15253.87	43.50	0.712	0.50 ( 0.40)	0.80	11952.5	13830.00
6	15261.02	44.60	0.703	0.50 ( 0.40)	0.80	12316.5	120.00
7	14755.37	53.11	0.640	0.50 ( 0.40)	0.81	15681.4	100.00
8	14188.45	61.46	0.592	0.50 ( 0.41)	0.82	18926.1	10100.00
9	13508.95	71.78	0.556	0.50 ( 0.42)	0.85	22809.0	31100.00
10	12965.09	81.15	0.524	0.50 ( 0.43)	0.86	26143.9	13600.00
11	12065.13	99.83	0.473	0.50 ( 0.44)	0.88	32630.3	11500.00
12	11469.31	112.18	0.449	0.50 ( 0.45)	0.89	37310.3	11000.00
13	10852.73	126.52	0.425	0.50 ( 0.45)	0.91	43879.4	13000.00
14	9729.98	144.79	0.404	0.50 ( 0.46)	0.92	51422.3	11130.00
15	8970.83	156.97	0.389	0.50 ( 0.46)	0.92	55200.0	11620.00
16	7828.96	173.94	0.369	0.50 ( 0.46)	0.93	59776.4	12400.00
17	6934.81	186.18	0.359	0.50 ( 0.47)	0.93	62093.6	12201.00
18	6292.39	196.18	0.353	0.50 ( 0.47)	0.93	63384.3	12111.00
19	5330.62	213.12	0.344	0.50 ( 0.47)	0.93	65307.2	12261.00
20	4843.80	223.15	0.339	0.50 ( 0.47)	0.93	66118.3	10200.00
21	4249.82	239.56	0.330	0.50 ( 0.47)	0.94	67356.2	10300.00
22	3500.29	268.43	0.314	0.50 ( 0.47)	0.94	68036.8	12000.00
23	2416.46	340.08	0.276	0.50 ( 0.47)	0.94	68707.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15261.02 Tc (MIN.) = 44.60  
EFFECTIVE AREA(ACRES) = 12316.48 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 68707.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 130.00 DOWNSTREAM(FEET) = 120.57

CHANNEL LENGTH THRU SUBAREA(FEET) = 610.77 CHANNEL SLOPE = 0.0154

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.700

SUBAREA LOSS RATE DATA(AMC II):

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

USER-DEFINED	-	4.89	0.50	1.000	-
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15261.45

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 22.74

AVERAGE FLOW DEPTH(FEET) = 14.96 TRAVEL TIME(MIN.) = 0.45

Tc(MIN.) = 45.05

SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 0.88

EFFECTIVE AREA(ACRES) = 12321.37 AREA-AVERAGED Fm(INCH/HR) = 0.40

AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 68712.5 PEAK FLOW RATE(CFS) = 15261.02

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 14.96 FLOW VELOCITY(FEET/SEC.) = 22.73

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 45.05

RAINFALL INTENSITY(INCH/HR) = 0.70

AREA-AVERAGED Fm(INCH/HR) = 0.40

AREA-AVERAGED Fp(INCH/HR) = 0.50

AREA-AVERAGED Ap = 0.80

EFFECTIVE STREAM AREA(ACRES) = 12321.37

TOTAL STREAM AREA(ACRES) = 68712.48

PEAK FLOW RATE(CFS) AT CONFLUENCE = 15261.02

\*\*\*\*\*

FLOW PROCESS FROM NODE 13870.00 TO NODE 13871.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 872.65
ELEVATION DATA: UPSTREAM (FEET) = 558.52 DOWNSTREAM (FEET) = 436.47

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)]\*\* 0.20

SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 15.704

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.266

SUBAREA Tc AND LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN, Tc (MIN.).

NATURAL FAIR COVER

"GRASS" - 7.32 0.50 1.000 0 15.70

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF (CFS) = 5.04

TOTAL AREA (ACRES) = 7.32 PEAK FLOW RATE (CFS) = 5.04

\*\*\*\*\* FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 436.47 DOWNSTREAM (FEET) = 337.62

CHANNEL LENGTH THRU SUBAREA (FEET) = 827.95 CHANNEL SLOPE = 0.1194

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.151

SUBAREA LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN.

USER-DEFINED - 13.01 0.50 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 8.87

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.49

AVERAGE FLOW DEPTH (FEET) = 0.81 TRAVEL TIME (MIN.) = 3.07

Tc (MIN.) = 18.78

SUBAREA AREA (ACRES) = 13.01 SUBAREA RUNOFF (CFS) = 7.62

EFFECTIVE AREA (ACRES) = 20.33 AREA-AVERAGED Fm (INCH/HR) = 0.50

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 20.3 PEAK FLOW RATE (CFS) = 11.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 0.90 FLOW VELOCITY (FEET/SEC.) = 4.86

LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

\*\*\*\*\* FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 337.62 DOWNSTREAM (FEET) = 253.88

CHANNEL LENGTH THRU SUBAREA (FEET) = 1049.16 CHANNEL SLOPE = 0.0798

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.060 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.037

SUBAREA LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN.

USER-DEFINED - 32.99 0.50 0.923 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.923

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 20.46

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.79

AVERAGE FLOW DEPTH (FEET) = 1.19 TRAVEL TIME (MIN.) = 3.65

Tc (MIN.) = 22.43

SUBAREA AREA (ACRES) = 32.99 SUBAREA RUNOFF (CFS) = 17.08

EFFECTIVE AREA (ACRES) = 53.32 AREA-AVERAGED Fm (INCH/HR) = 0.48

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.95

TOTAL AREA (ACRES) = 53.3 PEAK FLOW RATE (CFS) = 26.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.32 FLOW VELOCITY (FEET/SEC.) = 5.13

LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

\*\*\*\*\* FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 253.88 DOWNSTREAM (FEET) = 160.73

CHANNEL LENGTH THRU SUBAREA (FEET) = 1518.60 CHANNEL SLOPE = 0.0613

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.941

SUBAREA LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN.

USER-DEFINED - 30.94 0.50 0.900 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 33.75

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.66

AVERAGE FLOW DEPTH (FEET) = 1.30 TRAVEL TIME (MIN.) = 3.80

Tc (MIN.) = 26.23

SUBAREA AREA (ACRES) = 30.94 SUBAREA RUNOFF (CFS) = 13.68

EFFECTIVE AREA (ACRES) = 84.26 AREA-AVERAGED Fm (INCH/HR) = 0.47

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.93

TOTAL AREA (ACRES) = 84.3 PEAK FLOW RATE (CFS) = 36.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.33 FLOW VELOCITY (FEET/SEC.) = 6.78

LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

\*\*\*\*\* FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 160.73 DOWNSTREAM (FEET) = 158.14

CHANNEL LENGTH THRU SUBAREA (FEET) = 582.74 CHANNEL SLOPE = 0.0044

CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.873  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 73.67 0.50 0.930 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 49.56  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 2.74  
 AVERAGE FLOW DEPTH (FEET) = 2.45 TRAVEL TIME (MIN.) = 3.54  
 Tc (MIN.) = 29.77  
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 27.07  
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.47  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 57.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.60 FLOW VELOCITY (FEET/SEC.) = 2.85  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57  
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 21.0 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 13.53  
 ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 57.91  
 PIPE TRAVEL TIME (MIN.) = 2.29 Tc (MIN.) = 32.05  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 32.05  
 \* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.843  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 34.90 0.50 0.743 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743  
 SUBAREA AREA (ACRES) = 34.90 SUBAREA RUNOFF (CFS) = 14.80  
 EFFECTIVE AREA (ACRES) = 192.83 AREA-AVERAGED Fm (INCH/HR) = 0.45  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA (ACRES) = 192.8 PEAK FLOW RATE (CFS) = 68.34

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 32.05  
 RAINFALL INTENSITY (INCH/HR) = 0.84  
 AREA-AVERAGED Fm (INCH/HR) = 0.45  
 AREA-AVERAGED Fp (INCH/HR) = 0.50  
 AREA-AVERAGED Ap = 0.90  
 EFFECTIVE STREAM AREA (ACRES) = 192.83  
 TOTAL STREAM AREA (ACRES) = 192.83  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 68.34

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14758.66	23.13	1.017	0.50 ( 0.40)	0.80	4878.0	10600.00
1	14848.23	25.76	0.950	0.50 ( 0.40)	0.80	5789.3	13810.00
1	14904.71	27.58	0.915	0.50 ( 0.40)	0.80	6407.3	13850.00
1	15180.84	36.98	0.780	0.50 ( 0.40)	0.80	9558.2	10200.00
1	15253.87	43.95	0.709	0.50 ( 0.40)	0.80	11957.4	13830.00
1	15261.02	45.05	0.700	0.50 ( 0.40)	0.80	12321.4	120.00
1	14755.37	53.56	0.637	0.50 ( 0.40)	0.81	15686.3	100.00
1	14188.45	61.91	0.590	0.50 ( 0.41)	0.82	18931.0	10100.00
1	13508.95	72.24	0.555	0.50 ( 0.42)	0.85	22813.9	31100.00
1	12965.09	81.62	0.522	0.50 ( 0.43)	0.86	26148.8	13600.00
1	12065.13	100.30	0.472	0.50 ( 0.44)	0.88	32635.2	11500.00
1	11469.31	112.66	0.448	0.50 ( 0.45)	0.89	37315.2	11000.00
1	10852.73	127.01	0.425	0.50 ( 0.45)	0.91	43884.3	13000.00
1	9729.98	145.29	0.403	0.50 ( 0.46)	0.92	51427.2	11130.00
1	8970.83	157.48	0.389	0.50 ( 0.46)	0.92	55204.9	11620.00
1	7828.96	174.46	0.369	0.50 ( 0.46)	0.93	59781.3	12400.00
1	6934.81	186.72	0.358	0.50 ( 0.47)	0.93	62098.5	12201.00
1	6292.39	196.74	0.353	0.50 ( 0.47)	0.93	63389.2	12111.00
1	5330.62	213.70	0.344	0.50 ( 0.47)	0.93	65312.1	12261.00
1	4843.80	223.75	0.338	0.50 ( 0.47)	0.93	66123.2	10200.00
1	4249.82	240.18	0.330	0.50 ( 0.47)	0.94	67361.1	10300.00
1	3500.29	269.08	0.314	0.50 ( 0.47)	0.94	68041.7	12000.00
1	2416.46	340.79	0.275	0.50 ( 0.47)	0.94	68712.5	10100.00
2	68.34	32.05	0.843	0.50 ( 0.45)	0.90	192.8	13870.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14826.99	23.13	1.017	0.50 ( 0.40)	0.80	5017.2	10600.00
2	14916.57	25.76	0.950	0.50 ( 0.40)	0.80	5944.3	13810.00
3	14973.04	27.58	0.915	0.50 ( 0.40)	0.80	6573.2	13850.00
4	15104.39	32.05	0.843	0.50 ( 0.40)	0.80	8098.9	13870.00
5	15238.22	36.98	0.780	0.50 ( 0.40)	0.80	9751.0	10200.00
6	15298.93	43.95	0.709	0.50 ( 0.40)	0.80	12150.2	13830.00
7	15304.51	45.05	0.700	0.50 ( 0.40)	0.80	12514.2	120.00
8	14787.99	53.56	0.637	0.50 ( 0.40)	0.81	15879.1	100.00
9	14212.99	61.91	0.590	0.50 ( 0.41)	0.83	19123.8	10100.00

10	13527.28	72.24	0.555	0.50	( 0.42)	0.85	23006.7	31100.00
11	12977.77	81.62	0.522	0.50	( 0.43)	0.86	26341.6	13600.00
12	12073.53	100.30	0.472	0.50	( 0.44)	0.88	32828.0	11500.00
13	11477.27	112.66	0.448	0.50	( 0.45)	0.89	37508.0	11000.00
14	10860.28	127.01	0.425	0.50	( 0.45)	0.91	44077.1	13000.00
15	9737.15	145.29	0.403	0.50	( 0.46)	0.92	51620.1	11130.00
16	8977.74	157.48	0.389	0.50	( 0.46)	0.92	55397.7	11620.00
17	7835.51	174.46	0.369	0.50	( 0.46)	0.93	59974.2	12400.00
18	6941.19	186.72	0.358	0.50	( 0.47)	0.93	62291.4	12201.00
19	6298.67	196.74	0.353	0.50	( 0.47)	0.93	63582.0	12111.00
20	5336.73	213.70	0.344	0.50	( 0.47)	0.93	65504.9	12261.00
21	4849.82	223.75	0.338	0.50	( 0.47)	0.93	66316.0	10200.00
22	4255.68	240.18	0.330	0.50	( 0.47)	0.93	67554.0	10300.00
23	3505.87	269.08	0.314	0.50	( 0.47)	0.94	68234.5	12000.00
24	2421.35	340.79	0.275	0.50	( 0.47)	0.94	68905.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 15304.51 Tc (MIN.) = 45.05  
EFFECTIVE AREA (ACRES) = 12514.20 AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA (ACRES) = 68905.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 120.57 DOWNSTREAM (FEET) = 119.70  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1190.21 CHANNEL SLOPE = 0.0007  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY ( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.687  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.50	0.724	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 15321.71  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.77  
AVERAGE FLOW DEPTH (FEET) = 20.00 TRAVEL TIME (MIN.) = 1.55  
Tc (MIN.) = 46.60  
SUBAREA AREA (ACRES) = 117.69 SUBAREA RUNOFF (CFS) = 34.39  
EFFECTIVE AREA (ACRES) = 12631.89 AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA (ACRES) = 69023.0 PEAK FLOW RATE (CFS) = 15304.51  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL

CAPACITY ( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 20.00 FLOW VELOCITY (FEET/SEC.) = 12.75

==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION (MIN.) = 46.60  
RAINFALL INTENSITY (INCH/HR) = 0.69  
AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50  
AREA-AVERAGED Ap = 0.80  
EFFECTIVE STREAM AREA (ACRES) = 12631.89  
TOTAL STREAM AREA (ACRES) = 69023.00  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 15304.51

\*\*\*\*\*

FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 447.89  
ELEVATION DATA: UPSTREAM (FEET) = 564.89 DOWNSTREAM (FEET) = 421.92

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 6.976  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 2.251  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
PUBLIC PARK	-	3.03	0.50	0.960	0	6.98

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960  
SUBAREA RUNOFF (CFS) = 4.83  
TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 4.83

\*\*\*\*\*

FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64  
CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673



CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 2.009  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.12	0.50	0.986	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.986  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 10.38  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.13  
AVERAGE FLOW DEPTH (FEET) = 0.82 TRAVEL TIME (MIN.) = 1.41  
Tc (MIN.) = 8.39  
SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 11.08  
EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.49  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 15.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.95 FLOW VELOCITY (FEET/SEC.) = 5.64  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 392.64 DOWNSTREAM (FEET) = 324.46  
CHANNEL LENGTH THRU SUBAREA (FEET) = 662.40 CHANNEL SLOPE = 0.1029  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.749  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.50	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 22.29  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.29  
AVERAGE FLOW DEPTH (FEET) = 1.01 TRAVEL TIME (MIN.) = 1.52  
Tc (MIN.) = 9.91  
SUBAREA AREA (ACRES) = 12.50 SUBAREA RUNOFF (CFS) = 14.05  
EFFECTIVE AREA (ACRES) = 23.65 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 23.6 PEAK FLOW RATE (CFS) = 26.69

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.08 FLOW VELOCITY (FEET/SEC.) = 7.62  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 324.46 DOWNSTREAM (FEET) = 240.82  
CHANNEL LENGTH THRU SUBAREA (FEET) = 980.03 CHANNEL SLOPE = 0.0853  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.552  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	15.87	0.50	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 34.21  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.59  
AVERAGE FLOW DEPTH (FEET) = 1.23 TRAVEL TIME (MIN.) = 2.15  
Tc (MIN.) = 12.06  
SUBAREA AREA (ACRES) = 15.87 SUBAREA RUNOFF (CFS) = 15.02  
EFFECTIVE AREA (ACRES) = 39.52 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 39.5 PEAK FLOW RATE (CFS) = 37.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.27 FLOW VELOCITY (FEET/SEC.) = 7.74  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 51

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 240.82 DOWNSTREAM (FEET) = 163.04  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1144.35 CHANNEL SLOPE = 0.0680  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 1.330  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	28.41	0.50	0.985	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 48.23  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.60  
AVERAGE FLOW DEPTH (FEET) = 1.45 TRAVEL TIME (MIN.) = 2.51  
Tc (MIN.) = 14.57  
SUBAREA AREA (ACRES) = 28.41 SUBAREA RUNOFF (CFS) = 21.42  
EFFECTIVE AREA (ACRES) = 67.93 AREA-AVERAGED Fm (INCH/HR) = 0.50  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 67.9 PEAK FLOW RATE (CFS) = 51.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.49 FLOW VELOCITY (FEET/SEC.) = 7.66  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31

-----  
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 18.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.75
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 51.05
PIPE TRAVEL TIME(MIN.) = 2.30 Tc(MIN.) = 16.87
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 16.87
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.222
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 11.69 0.50 0.634 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.634
SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 9.52
EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 53.96

\*\*\*\*\*
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.87
RAINFALL INTENSITY(INCH/HR) = 1.22
AREA-AVERAGED Fm(INCH/HR) = 0.47
AREA-AVERAGED Fp(INCH/HR) = 0.50
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 79.62
TOTAL STREAM AREA(ACRES) = 79.62
PEAK FLOW RATE(CFS) AT CONFLUENCE = 53.96

\*\* CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 16 rows of data for stream 1.

Table with 8 columns: Stream Number, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 25 rows of data for stream 2.

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

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 25 rows of data for stream 2.

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15320.11 Tc(MIN.) = 46.60
EFFECTIVE AREA(ACRES) = 12711.51 AREA-AVERAGED Fm(INCH/HR) = 0.40
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 69102.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 69102.6 TC (MIN.) = 46.60  
 EFFECTIVE AREA (ACRES) = 12711.51 AREA-AVERAGED Fm (INCH/HR) = 0.40  
 AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.801  
 PEAK FLOW RATE (CFS) = 15320.11

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14586.43	16.87	1.222	0.50 ( 0.40)	0.81	3581.9	13889.00
2	14863.06	24.73	0.973	0.50 ( 0.40)	0.80	5214.5	10600.00
3	14948.86	27.35	0.920	0.50 ( 0.40)	0.80	6141.6	13810.00
4	15002.84	29.17	0.885	0.50 ( 0.40)	0.80	6770.5	13850.00
5	15129.72	33.63	0.823	0.50 ( 0.40)	0.80	8296.2	13870.00
6	15259.04	38.54	0.760	0.50 ( 0.40)	0.80	9948.3	10200.00
7	15315.17	45.51	0.696	0.50 ( 0.40)	0.80	12347.5	13830.00
8	15320.11	46.60	0.687	0.50 ( 0.40)	0.80	12711.5	120.00
9	14799.30	55.17	0.627	0.50 ( 0.40)	0.81	16076.4	100.00
10	14221.26	63.59	0.585	0.50 ( 0.41)	0.83	19321.1	10100.00
11	13532.96	74.00	0.548	0.50 ( 0.42)	0.85	23204.1	31100.00
12	12981.11	83.45	0.516	0.50 ( 0.43)	0.86	26538.9	13600.00
13	12075.61	102.27	0.468	0.50 ( 0.44)	0.88	33025.3	11500.00
14	11479.25	114.73	0.444	0.50 ( 0.45)	0.89	37705.4	11000.00
15	10862.16	129.20	0.422	0.50 ( 0.45)	0.91	44274.4	13000.00
16	9738.93	147.73	0.400	0.50 ( 0.46)	0.92	51817.4	11130.00
17	8979.46	160.13	0.386	0.50 ( 0.46)	0.92	55595.1	11620.00
18	7837.13	177.50	0.365	0.50 ( 0.46)	0.93	60171.5	12400.00
19	6942.77	190.06	0.357	0.50 ( 0.47)	0.93	62488.7	12201.00
20	6300.23	200.16	0.351	0.50 ( 0.47)	0.93	63779.3	12111.00
21	5338.25	217.26	0.342	0.50 ( 0.47)	0.93	65702.2	12261.00
22	4851.32	227.39	0.336	0.50 ( 0.47)	0.93	66513.3	10200.00
23	4257.14	243.95	0.328	0.50 ( 0.47)	0.93	67751.3	10300.00
24	3507.26	273.04	0.312	0.50 ( 0.47)	0.94	68431.8	12000.00
25	2422.57	345.12	0.273	0.50 ( 0.47)	0.94	69102.6	10100.00

=====

END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S39- FREE DRAINING - ULTIMATE CONDITION \*  
\* 5-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU05EV39.DAT  
TIME/DATE OF STUDY: 11:33 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 5.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 2.586
- 2) 10.00; 1.731
- 3) 15.00; 1.292
- 4) 20.00; 1.104
- 5) 25.00; 0.965
- 6) 30.00; 0.869
- 7) 40.00; 0.741
- 8) 50.00; 0.658
- 9) 60.00; 0.596
- 10) 90.00; 0.493
- 11) 120.00; 0.433
- 12) 180.00; 0.362
- 13) 360.00; 0.264
- 14) 1200.00; 0.115

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	MANNING LIP (FT)	HIKE FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167 0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13900.00 TO NODE 13901.00 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65  
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.656  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
AGRICULTURAL POOR COVER "FALLOW"	-	4.00	0.50	1.000	0	10.86

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 4.16  
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 4.16

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 385.16 DOWNSTREAM(FEET) = 288.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.42 CHANNEL SLOPE = 0.1497  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.509  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.47	0.50	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.01  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.45  
AVERAGE FLOW DEPTH(FEET) = 0.64 TRAVEL TIME(MIN.) = 1.67  
Tc(MIN.) = 12.53  
SUBAREA AREA(ACRES) = 8.47 SUBAREA RUNOFF(CFS) = 7.69  
EFFECTIVE AREA(ACRES) = 12.47 AREA-AVERAGED Fm(INCH/HR) = 0.50  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) = 11.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.73 FLOW VELOCITY(FEET/SEC.) = 7.09  
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13902.00 = 1248.07 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13902.00 TO NODE 13903.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.21 DOWNSTREAM(FEET) = 184.89
CHANNEL LENGTH THRU SUBAREA(FEET) = 669.27 CHANNEL SLOPE = 0.1544
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 20.00
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.392
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 23.85 0.50 0.982 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.982
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 21.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.40
AVERAGE FLOW DEPTH(FEET) = 0.91 TRAVEL TIME(MIN.) = 1.33
Tc(MIN.) = 13.86
SUBAREA AREA(ACRES) = 23.85 SUBAREA RUNOFF(CFS) = 19.34
EFFECTIVE AREA(ACRES) = 36.32 AREA-AVERAGED Fm(INCH/HR) = 0.49
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 36.3 PEAK FLOW RATE(CFS) = 29.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.03 FLOW VELOCITY(FEET/SEC.) = 9.14
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13903.00 = 1917.34 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 184.89 DOWNSTREAM(FEET) = 155.08
FLOW LENGTH(FEET) = 876.66 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 12.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 13.74
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 29.35
PIPE TRAVEL TIME(MIN.) = 1.06 Tc(MIN.) = 14.92
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13904.00 = 2794.00 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 14.92
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.299
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 21.29 0.50 0.996 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996

SUBAREA AREA(ACRES) = 21.29 SUBAREA RUNOFF(CFS) = 15.34
EFFECTIVE AREA(ACRES) = 57.61 AREA-AVERAGED Fm(INCH/HR) = 0.50
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 57.6 PEAK FLOW RATE(CFS) = 41.63

\*\*\*\*\*
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 155.08 DOWNSTREAM(FEET) = 118.00
FLOW LENGTH(FEET) = 1961.38 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 17.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 12.17
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 41.63
PIPE TRAVEL TIME(MIN.) = 2.69 Tc(MIN.) = 17.61
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 17.61
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 1.194
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 43.53 0.50 0.649 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.649
SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 34.06
EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.42
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 70.25

\*\*\*\*\*
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU05EV38.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (ACRES) NODE
1 14586.43 16.87 0.50( 0.40) 0.81 3581.9 13889.00
2 15259.04 38.54 0.50( 0.40) 0.80 9948.3 10200.00
3 15320.11 46.60 0.50( 0.40) 0.80 12711.5 120.00
4 14799.30 55.17 0.50( 0.40) 0.81 16076.4 100.00

5	14221.26	63.59	0.50	( 0.41)	0.83	19321.1	10100.00
6	13532.96	74.00	0.50	( 0.42)	0.85	23204.1	31100.00
7	12981.11	83.45	0.50	( 0.43)	0.86	26538.9	13600.00
8	12075.61	102.27	0.50	( 0.44)	0.88	33025.3	11500.00
9	11479.25	114.73	0.50	( 0.45)	0.89	37705.4	11000.00
10	10862.16	129.20	0.50	( 0.45)	0.91	44274.4	13000.00
11	9738.93	147.73	0.50	( 0.46)	0.92	51817.4	11130.00
12	8979.46	160.13	0.50	( 0.46)	0.92	55595.1	11620.00
13	7837.13	177.50	0.50	( 0.46)	0.93	60171.5	12400.00
14	6942.77	190.06	0.50	( 0.47)	0.93	62488.7	12201.00
15	6300.23	200.16	0.50	( 0.47)	0.93	63779.3	12111.00
16	5338.25	217.26	0.50	( 0.47)	0.93	65702.2	12261.00
17	4851.32	227.39	0.50	( 0.47)	0.93	66513.3	10200.00
18	4257.14	243.95	0.50	( 0.47)	0.93	67751.3	10300.00
19	3507.26	273.04	0.50	( 0.47)	0.94	68431.8	12000.00
20	2422.57	345.12	0.50	( 0.47)	0.94	69102.6	10100.00

TOTAL AREA (ACRES) = 69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<  
=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14586.43	16.87	0.50 ( 0.40)	0.81	3581.9	13889.00
2	15259.04	38.54	0.50 ( 0.40)	0.80	9948.3	10200.00
3	15320.11	46.60	0.50 ( 0.40)	0.80	12711.5	120.00
4	14799.30	55.17	0.50 ( 0.40)	0.81	16076.4	100.00
5	14221.26	63.59	0.50 ( 0.41)	0.83	19321.1	10100.00
6	13532.96	74.00	0.50 ( 0.42)	0.85	23204.1	31100.00
7	12981.11	83.45	0.50 ( 0.43)	0.86	26538.9	13600.00
8	12075.61	102.27	0.50 ( 0.44)	0.88	33025.3	11500.00
9	11479.25	114.73	0.50 ( 0.45)	0.89	37705.4	11000.00
10	10862.16	129.20	0.50 ( 0.45)	0.91	44274.4	13000.00
11	9738.93	147.73	0.50 ( 0.46)	0.92	51817.4	11130.00
12	8979.46	160.13	0.50 ( 0.46)	0.92	55595.1	11620.00
13	7837.13	177.50	0.50 ( 0.46)	0.93	60171.5	12400.00
14	6942.77	190.06	0.50 ( 0.47)	0.93	62488.7	12201.00
15	6300.23	200.16	0.50 ( 0.47)	0.93	63779.3	12111.00
16	5338.25	217.26	0.50 ( 0.47)	0.93	65702.2	12261.00
17	4851.32	227.39	0.50 ( 0.47)	0.93	66513.3	10200.00
18	4257.14	243.95	0.50 ( 0.47)	0.93	67751.3	10300.00
19	3507.26	273.04	0.50 ( 0.47)	0.94	68431.8	12000.00
20	2422.57	345.12	0.50 ( 0.47)	0.94	69102.6	10100.00

TOTAL AREA (ACRES) = 69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<  
=====

ELEVATION DATA: UPSTREAM (FEET) = 119.70 DOWNSTREAM (FEET) = 118.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1376.26 CHANNEL SLOPE = 0.0012  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 20.00

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY ( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

\* 5 YEAR RAINFALL INTENSITY (INCH/HR) = 0.671  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 96.09 0.50 0.535 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 15337.57  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.78  
AVERAGE FLOW DEPTH (FEET) = 20.00 TRAVEL TIME (MIN.) = 1.79  
Tc (MIN.) = 48.40  
SUBAREA AREA (ACRES) = 96.09 SUBAREA RUNOFF (CFS) = 34.91  
EFFECTIVE AREA (ACRES) = 12807.60 AREA-AVERAGED Fm (INCH/HR) = 0.40  
AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA (ACRES) = 69198.7 PEAK FLOW RATE (CFS) = 15320.11  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

==>>WARNING: FLOW IN CHANNEL EXCEEDS CHANNEL  
CAPACITY ( NORMAL DEPTH EQUAL TO SPECIFIED MAXIMUM  
ALLOWABLE DEPTH).  
AS AN APPROXIMATION, FLOWDEPTH IS SET AT MAXIMUM  
ALLOWABLE DEPTH AND IS USED FOR TRAVELTIME CALCULATIONS.

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 20.00 FLOW VELOCITY (FEET/SEC.) = 12.77

==>FLOWDEPTH EXCEEDS MAXIMUM ALLOWABLE DEPTH

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<  
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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14586.43	18.75	1.151	0.50 ( 0.40)	0.80	3678.0	13889.00
2	15259.04	40.35	0.738	0.50 ( 0.40)	0.80	10044.4	10200.00
3	15320.11	48.40	0.671	0.50 ( 0.40)	0.80	12807.6	120.00
4	14799.30	57.03	0.614	0.50 ( 0.40)	0.81	16172.5	100.00
5	14221.26	65.52	0.577	0.50 ( 0.41)	0.82	19417.2	10100.00
6	13532.96	76.04	0.541	0.50 ( 0.42)	0.84	23300.1	31100.00
7	12981.11	85.57	0.508	0.50 ( 0.43)	0.86	26635.0	13600.00
8	12075.61	104.55	0.464	0.50 ( 0.44)	0.88	33121.4	11500.00
9	11479.25	117.13	0.439	0.50 ( 0.45)	0.89	37801.4	11000.00
10	10862.16	131.73	0.419	0.50 ( 0.45)	0.90	44370.5	13000.00

11	9738.93	150.55	0.397	0.50( 0.46)	0.92	51913.5	11130.00
12	8979.46	163.10	0.382	0.50( 0.46)	0.92	55691.1	11620.00
13	7837.13	180.57	0.362	0.50( 0.46)	0.93	60267.6	12400.00
14	6942.77	193.22	0.355	0.50( 0.46)	0.93	62584.8	12201.00
15	6300.23	203.40	0.349	0.50( 0.47)	0.93	63875.4	12111.00
16	5338.25	220.64	0.340	0.50( 0.47)	0.93	65798.3	12261.00
17	4851.32	230.86	0.334	0.50( 0.47)	0.93	66609.4	10200.00
18	4257.14	247.53	0.325	0.50( 0.47)	0.93	67847.4	10300.00
19	3507.26	276.79	0.309	0.50( 0.47)	0.93	68527.9	12000.00
20	2422.57	349.24	0.270	0.50( 0.47)	0.94	69198.7	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	70.25	17.61	1.194	0.50( 0.42)	0.84	101.1	13900.00

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14550.95	17.61	1.194	0.50( 0.40)	0.80	3555.3	13900.00
2	14652.78	18.75	1.151	0.50( 0.40)	0.80	3779.1	13889.00
3	15287.80	40.35	0.738	0.50( 0.40)	0.80	10145.5	10200.00
4	15342.80	48.40	0.671	0.50( 0.40)	0.80	12908.7	120.00
5	14816.80	57.03	0.614	0.50( 0.40)	0.81	16273.6	100.00
6	14235.36	65.52	0.577	0.50( 0.41)	0.82	19518.4	10100.00
7	13543.78	76.04	0.541	0.50( 0.42)	0.84	23401.3	31100.00
8	12988.95	85.57	0.508	0.50( 0.43)	0.86	26736.2	13600.00
9	12082.20	104.55	0.464	0.50( 0.44)	0.88	33222.5	11500.00
10	11485.48	117.13	0.439	0.50( 0.45)	0.89	37902.6	11000.00
11	10868.11	131.73	0.419	0.50( 0.45)	0.90	44471.7	13000.00
12	9744.57	150.55	0.397	0.50( 0.46)	0.92	52014.6	11130.00
13	8984.89	163.10	0.382	0.50( 0.46)	0.92	55792.3	11620.00
14	7842.27	180.57	0.362	0.50( 0.46)	0.93	60368.7	12400.00
15	6947.82	193.22	0.355	0.50( 0.46)	0.93	62685.9	12201.00
16	6305.19	203.40	0.349	0.50( 0.47)	0.93	63976.5	12111.00
17	5343.08	220.64	0.340	0.50( 0.47)	0.93	65899.4	12261.00
18	4856.07	230.86	0.334	0.50( 0.47)	0.93	66710.6	10200.00
19	4261.76	247.53	0.325	0.50( 0.47)	0.93	67948.5	10300.00
20	3511.66	276.79	0.309	0.50( 0.47)	0.93	68629.1	12000.00
21	2426.40	349.24	0.270	0.50( 0.47)	0.94	69299.9	10100.00

TOTAL AREA (ACRES) = 69299.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15342.80 Tc(MIN.) = 48.399  
EFFECTIVE AREA(ACRES) = 12908.74 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA (ACRES) = 69299.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13920.00 TO NODE 13921.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 118.00 DOWNSTREAM(FEET) = 115.28

CHANNEL LENGTH THRU SUBAREA(FEET) = 335.44 CHANNEL SLOPE = 0.0081  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	134.30	0.50	0.658	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.658  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15363.32  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.88  
AVERAGE FLOW DEPTH(FEET) = 16.92 TRAVEL TIME(MIN.) = 0.31  
Tc(MIN.) = 48.71  
SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 41.04  
EFFECTIVE AREA(ACRES) = 13043.04 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 69434.1 PEAK FLOW RATE(CFS) = 15342.80  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 16.91 FLOW VELOCITY(FEET/SEC.) = 17.88  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13921.00 = 136971.41 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13921.00 TO NODE 14010.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 115.28 DOWNSTREAM(FEET) = 100.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1396.08 CHANNEL SLOPE = 0.0109

CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 20.00  
\* 5 YEAR RAINFALL INTENSITY(INCH/HR) = 0.659  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	96.27	0.50	0.723	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.50  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.723  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15355.68  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 20.01  
AVERAGE FLOW DEPTH(FEET) = 15.99 TRAVEL TIME(MIN.) = 1.16  
Tc(MIN.) = 49.87  
SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 25.77  
EFFECTIVE AREA(ACRES) = 13139.31 AREA-AVERAGED Fm(INCH/HR) = 0.40  
AREA-AVERAGED Fp(INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 69530.4 PEAK FLOW RATE(CFS) = 15342.80  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 15.99 FLOW VELOCITY(FEET/SEC.) = 20.01  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69530.4 TC(MIN.) = 49.87  
EFFECTIVE AREA(ACRES) = 13139.31 AREA-AVERAGED Fm(INCH/HR) = 0.40

AREA-AVERAGED Fp (INCH/HR) = 0.50 AREA-AVERAGED Ap = 0.797  
PEAK FLOW RATE (CFS) = 15342.80

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14550.95	19.10	1.138	0.50 ( 0.40)	0.79	3785.9	13900.00
2	14652.78	20.24	1.097	0.50 ( 0.40)	0.79	4009.7	13889.00
3	15287.80	41.82	0.726	0.50 ( 0.40)	0.80	10376.1	10200.00
4	15342.80	49.87	0.659	0.50 ( 0.40)	0.80	13139.3	120.00
5	14816.80	58.52	0.605	0.50 ( 0.40)	0.81	16504.2	100.00
6	14235.36	67.02	0.572	0.50 ( 0.41)	0.82	19748.9	10100.00
7	13543.78	77.56	0.536	0.50 ( 0.42)	0.84	23631.9	31100.00
8	12988.95	87.11	0.503	0.50 ( 0.43)	0.86	26966.7	13600.00
9	12082.20	106.12	0.461	0.50 ( 0.44)	0.88	33453.1	11500.00
10	11485.48	118.72	0.436	0.50 ( 0.45)	0.89	38133.2	11000.00
11	10868.11	133.34	0.417	0.50 ( 0.45)	0.90	44702.2	13000.00
12	9744.57	152.21	0.395	0.50 ( 0.46)	0.92	52245.2	11130.00
13	8984.89	164.79	0.380	0.50 ( 0.46)	0.92	56022.9	11620.00
14	7842.27	182.32	0.361	0.50 ( 0.46)	0.93	60599.3	12400.00
15	6947.82	195.02	0.354	0.50 ( 0.46)	0.93	62916.5	12201.00
16	6305.19	205.25	0.348	0.50 ( 0.46)	0.93	64207.1	12111.00
17	5343.08	222.56	0.339	0.50 ( 0.47)	0.93	66130.0	12261.00
18	4856.07	232.82	0.333	0.50 ( 0.47)	0.93	66941.1	10200.00
19	4261.76	249.56	0.324	0.50 ( 0.47)	0.93	68179.1	10300.00
20	3511.66	278.93	0.308	0.50 ( 0.47)	0.93	68859.6	12000.00
21	2426.40	351.59	0.269	0.50 ( 0.47)	0.93	69530.4	10100.00

=====  
=====  
END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* SAN JUAN CREEK WATERSHED STUDY - RATIONAL METHOD \*  
\* REGIONAL WATERSHED S19- FREE DRAINING \*  
\* 10-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV19.DAT  
TIME/DATE OF STUDY: 15:56 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.927
- 2) 10.00; 2.601
- 3) 15.00; 1.897
- 4) 20.00; 1.624
- 5) 25.00; 1.415
- 6) 30.00; 1.266
- 7) 40.00; 1.086
- 8) 50.00; 0.968
- 9) 60.00; 0.881
- 10) 90.00; 0.734
- 11) 120.00; 0.652
- 12) 180.00; 0.549
- 13) 360.00; 0.408
- 14) 1200.00; 0.180

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	MANNING LIP (FT)	HIKE FACTOR (FT)	MANNING (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 295.79  
ELEVATION DATA: UPSTREAM(FEET) = 2369.48 DOWNSTREAM(FEET) = 2332.92

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$   
SUBAREA ANALYSIS USED MINIMUM  $T_c$ (MIN.) = 7.203  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 3.343  
SUBAREA  $T_c$  AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	$F_p$ (INCH/HR)	$A_p$ (DECIMAL)	SCS CN	$T_c$ (MIN.)
RESIDENTIAL ".4 DWELLING/ACRE"	-	1.62	0.30	0.999	0	7.20

SUBAREA AVERAGE PERVIOUS LOSS RATE,  $F_p$ (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION,  $A_p$  = 0.999  
SUBAREA RUNOFF(CFS) = 4.44  
TOTAL AREA(ACRES) = 1.62 PEAK FLOW RATE(CFS) = 4.44

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11901.00 TO NODE 11902.00 IS CODE = 56  
-----

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

ELEVATION DATA: UPSTREAM(FEET) = 2332.92 DOWNSTREAM(FEET) = 2297.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 664.26 CHANNEL SLOPE = 0.0530  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.46  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.467  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	$F_p$ (INCH/HR)	$A_p$ (DECIMAL)	SCS CN
USER-DEFINED	-	8.35	0.30	0.906	-

SUBAREA AVERAGE PERVIOUS LOSS RATE,  $F_p$ (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION,  $A_p$  = 0.906  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.81  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.95  
AVERAGE FLOW DEPTH(FEET) = 0.40 TRAVEL TIME(MIN.) = 3.75  
 $T_c$ (MIN.) = 10.95  
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 16.50  
EFFECTIVE AREA(ACRES) = 9.97 AREA-AVERAGED  $F_m$ (INCH/HR) = 0.28  
AREA-AVERAGED  $F_p$ (INCH/HR) = 0.30 AREA-AVERAGED  $A_p$  = 0.92  
TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 19.66  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.52 FLOW VELOCITY(FEET/SEC.) = 3.41  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.00 = 960.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.00 TO NODE 11902.50 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2297.70 DOWNSTREAM(FEET) = 2263.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 928.77 CHANNEL SLOPE = 0.0369  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.03  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.931

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.48	0.30	0.904	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 45.86  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.06  
AVERAGE FLOW DEPTH(FEET) = 0.95 TRAVEL TIME(MIN.) = 3.81  
Tc(MIN.) = 14.76

SUBAREA AREA(ACRES) = 34.48 SUBAREA RUNOFF(CFS) = 51.49  
EFFECTIVE AREA(ACRES) = 44.45 AREA-AVERAGED Fm(INCH/HR) = 0.27  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA(ACRES) = 44.5 PEAK FLOW RATE(CFS) = 66.34  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.17 FLOW VELOCITY(FEET/SEC.) = 4.59  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.50 = 1888.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.50 TO NODE 11903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2263.40 DOWNSTREAM(FEET) = 2252.14  
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.50 CHANNEL SLOPE = 0.0126  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.81  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.669

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.65	0.30	0.958	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.958  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 81.06  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.38  
AVERAGE FLOW DEPTH(FEET) = 1.77 TRAVEL TIME(MIN.) = 4.42

Tc(MIN.) = 19.18  
SUBAREA AREA(ACRES) = 23.65 SUBAREA RUNOFF(CFS) = 29.40  
EFFECTIVE AREA(ACRES) = 68.10 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 68.1 PEAK FLOW RATE(CFS) = 85.26  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.82 FLOW VELOCITY(FEET/SEC.) = 3.43  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11903.00 = 2784.32 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11903.00 TO NODE 11904.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2252.14 DOWNSTREAM(FEET) = 2186.04  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1924.35 CHANNEL SLOPE = 0.0343  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.73  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.411

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	68.53	0.30	0.961	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 120.00  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.39  
AVERAGE FLOW DEPTH(FEET) = 1.67 TRAVEL TIME(MIN.) = 5.95  
Tc(MIN.) = 25.13

SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 69.26  
EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 138.74  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.81 FLOW VELOCITY(FEET/SEC.) = 5.65  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.44

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.307  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 63.15 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 167.37  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.16  
 AVERAGE FLOW DEPTH (FEET) = 1.42 TRAVEL TIME (MIN.) = 3.50  
 Tc (MIN.) = 28.63  
 SUBAREA AREA (ACRES) = 63.15 SUBAREA RUNOFF (CFS) = 57.22  
 EFFECTIVE AREA (ACRES) = 199.78 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 199.8 PEAK FLOW RATE (CFS) = 183.12  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.49  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.49 FLOW VELOCITY (FEET/SEC.) = 9.45  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 1957.34 DOWNSTREAM (FEET) = 1244.16  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2498.96 CHANNEL SLOPE = 0.2854  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.30

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.235  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 84.87 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 218.85  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.46  
 AVERAGE FLOW DEPTH (FEET) = 1.29 TRAVEL TIME (MIN.) = 3.09  
 Tc (MIN.) = 31.73  
 SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 71.42  
 EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 241.62  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.36 FLOW VELOCITY (FEET/SEC.) = 13.93  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.10  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.142

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 199.43 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 317.23  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.84  
 AVERAGE FLOW DEPTH (FEET) = 2.07 TRAVEL TIME (MIN.) = 5.18  
 Tc (MIN.) = 36.91  
 SUBAREA AREA (ACRES) = 199.43 SUBAREA RUNOFF (CFS) = 151.06  
 EFFECTIVE AREA (ACRES) = 484.08 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 484.1 PEAK FLOW RATE (CFS) = 368.78  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.25 FLOW VELOCITY (FEET/SEC.) = 11.33  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 -----

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 36.91  
 RAINFALL INTENSITY (INCH/HR) = 1.14  
 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98  
 EFFECTIVE STREAM AREA (ACRES) = 484.08  
 TOTAL STREAM AREA (ACRES) = 484.08  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 368.78

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----

INITIAL SUBAREA FLOW-LENGTH (FEET) = 517.62  
 ELEVATION DATA: UPSTREAM (FEET) = 2531.88 DOWNSTREAM (FEET) = 2441.33

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.185  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.293  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	-	3.46	0.30	1.000	0	12.19

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 6.21  
 TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 6.21

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2441.33 DOWNSTREAM(FEET) = 2382.20  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 397.30 CHANNEL SLOPE = 0.1488  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.28  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.047

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.79	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.78  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.79  
 AVERAGE FLOW DEPTH(FEET) = 0.27 TRAVEL TIME(MIN.) = 1.75  
 Tc(MIN.) = 13.93  
 SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 9.11  
 EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 14.55  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.32 FLOW VELOCITY(FEET/SEC.) = 4.23  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2382.20 DOWNSTREAM(FEET) = 2263.77  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.47 CHANNEL SLOPE = 0.0626  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.609  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	54.30	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 46.93  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.91  
 AVERAGE FLOW DEPTH(FEET) = 0.82 TRAVEL TIME(MIN.) = 6.42  
 Tc(MIN.) = 20.35  
 SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 63.98  
 EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 74.88  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.08 FLOW VELOCITY(FEET/SEC.) = 5.71  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2263.77 DOWNSTREAM(FEET) = 1845.23  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1957.31 CHANNEL SLOPE = 0.2138  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.96  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.470

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	65.14	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 109.23  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.77  
 AVERAGE FLOW DEPTH(FEET) = 0.94 TRAVEL TIME(MIN.) = 3.34  
 Tc(MIN.) = 23.69  
 SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 68.57  
 EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 135.47  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.07 FLOW VELOCITY(FEET/SEC.) = 10.48  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.32
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.374

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.52 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 173.44
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.52
AVERAGE FLOW DEPTH(FEET) = 1.31 TRAVEL TIME(MIN.) = 2.67
Tc(MIN.) = 26.37

SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 75.92
EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 200.34
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.42 FLOW VELOCITY(FEET/SEC.) = 11.02
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.91
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.267

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 70.48 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 231.03
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.84
AVERAGE FLOW DEPTH(FEET) = 1.89 TRAVEL TIME(MIN.) = 3.60
Tc(MIN.) = 29.97

SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 61.34
EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 241.68
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.94 FLOW VELOCITY(FEET/SEC.) = 8.97
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.93
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.221

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 232.20 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 337.93
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.78
AVERAGE FLOW DEPTH(FEET) = 1.91 TRAVEL TIME(MIN.) = 2.54
Tc(MIN.) = 32.50

SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 192.47
EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 422.64
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.16 FLOW VELOCITY(FEET/SEC.) = 13.65
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.77
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.150

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

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USER-DEFINED          -      110.82      0.30      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 465.04
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.83
AVERAGE FLOW DEPTH(FEET) = 2.76 TRAVEL TIME(MIN.) = 3.95
Tc(MIN.) = 36.45
SUBAREA AREA(ACRES) = 110.82 SUBAREA RUNOFF(CFS) = 84.77
EFFECTIVE AREA(ACRES) = 620.71 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 620.7 PEAK FLOW RATE(CFS) = 474.83
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.80 FLOW VELOCITY(FEET/SEC.) = 10.90
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

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*****
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1

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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

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=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 36.45
RAINFALL INTENSITY(INCH/HR) = 1.15
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 620.71
TOTAL STREAM AREA(ACRES) = 620.71
PEAK FLOW RATE(CFS) AT CONFLUENCE = 474.83

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\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	368.78	36.91	1.142	0.30( 0.30)	0.98	484.1	11900.00
2	474.83	36.45	1.150	0.30( 0.30)	1.00	620.7	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	842.56	36.45	1.150	0.30( 0.30)	0.99	1098.7	11910.00
2	838.95	36.91	1.142	0.30( 0.30)	0.99	1104.8	11900.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
PEAK FLOW RATE(CFS) = 842.56 Tc(MIN.) = 36.45  
EFFECTIVE AREA(ACRES) = 1098.72 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 1104.8  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

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*****
FLOW PROCESS FROM NODE 11920.00 TO NODE 11921.00 IS CODE = 56

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

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ELEVATION DATA: UPSTREAM(FEET) = 873.95 DOWNSTREAM(FEET) = 827.94
CHANNEL LENGTH THRU SUBAREA(FEET) = 1417.25 CHANNEL SLOPE = 0.0325
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.83
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.104
SUBAREA LOSS RATE DATA(AMC II):

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DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -      107.47   0.30   1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 881.46
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.29
AVERAGE FLOW DEPTH(FEET) = 4.83 TRAVEL TIME(MIN.) = 2.54
Tc(MIN.) = 38.99
SUBAREA AREA(ACRES) = 107.47 SUBAREA RUNOFF(CFS) = 77.79
EFFECTIVE AREA(ACRES) = 1206.19 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 1212.3 PEAK FLOW RATE(CFS) = 875.11
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.81

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 4.81 FLOW VELOCITY(FEET/SEC.) = 9.27  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

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*****
FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 56

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

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ELEVATION DATA: UPSTREAM(FEET) = 827.94 DOWNSTREAM(FEET) = 753.55
CHANNEL LENGTH THRU SUBAREA(FEET) = 1886.43 CHANNEL SLOPE = 0.0394
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.90
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.062
SUBAREA LOSS RATE DATA(AMC II):

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DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -      344.27   0.30   1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 993.16
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.30
AVERAGE FLOW DEPTH(FEET) = 4.88 TRAVEL TIME(MIN.) = 3.05
Tc(MIN.) = 42.04
SUBAREA AREA(ACRES) = 344.27 SUBAREA RUNOFF(CFS) = 236.08
EFFECTIVE AREA(ACRES) = 1550.46 AREA-AVERAGED Fm(INCH/HR) = 0.30

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AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 1556.5 PEAK FLOW RATE(CFS) = 1065.30  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.05 FLOW VELOCITY(FEET/SEC.) = 10.48  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 753.55 DOWNSTREAM(FEET) = 641.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.88 CHANNEL SLOPE = 0.0391  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.19  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.009

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1117.99

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.59

AVERAGE FLOW DEPTH(FEET) = 5.18 TRAVEL TIME(MIN.) = 4.50

Tc(MIN.) = 46.55

SUBAREA AREA(ACRES) = 165.18 SUBAREA RUNOFF(CFS) = 105.37

EFFECTIVE AREA(ACRES) = 1715.64 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 1721.7 PEAK FLOW RATE(CFS) = 1096.54

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.13 FLOW VELOCITY(FEET/SEC.) = 10.55  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11923.00 = 19034.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11923.00 TO NODE 11924.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 641.58 DOWNSTREAM(FEET) = 579.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1844.02 CHANNEL SLOPE = 0.0335  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.65

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.973

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 433.73 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1227.99  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.25  
AVERAGE FLOW DEPTH(FEET) = 5.63 TRAVEL TIME(MIN.) = 3.00  
Tc(MIN.) = 49.54  
SUBAREA AREA(ACRES) = 433.73 SUBAREA RUNOFF(CFS) = 262.88  
EFFECTIVE AREA(ACRES) = 2149.37 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2155.4 PEAK FLOW RATE(CFS) = 1304.79  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.80 FLOW VELOCITY(FEET/SEC.) = 10.41  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11924.00 = 20878.18 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11924.00 TO NODE 11925.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 579.89 DOWNSTREAM(FEET) = 494.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2756.15 CHANNEL SLOPE = 0.0311  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.08

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.933

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	265.42	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1380.42

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.29

AVERAGE FLOW DEPTH(FEET) = 6.06 TRAVEL TIME(MIN.) = 4.46

Tc(MIN.) = 54.01

SUBAREA AREA(ACRES) = 265.42 SUBAREA RUNOFF(CFS) = 151.26

EFFECTIVE AREA(ACRES) = 2414.79 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 2420.9 PEAK FLOW RATE(CFS) = 1378.20

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.06 FLOW VELOCITY(FEET/SEC.) = 10.28  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11925.00 = 23634.33 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11925.00 TO NODE 11926.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 494.12 DOWNSTREAM(FEET) = 458.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1922.70 CHANNEL SLOPE = 0.0186  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.91  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.900  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	97.46	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1404.54  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.54  
AVERAGE FLOW DEPTH(FEET) = 6.91 TRAVEL TIME(MIN.) = 3.75  
Tc(MIN.) = 57.76  
SUBAREA AREA(ACRES) = 97.46 SUBAREA RUNOFF(CFS) = 52.68  
EFFECTIVE AREA(ACRES) = 2512.25 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2518.3 PEAK FLOW RATE(CFS) = 1378.20  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.85 FLOW VELOCITY(FEET/SEC.) = 8.50  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11926.00 = 25557.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 458.40 DOWNSTREAM(FEET) = 399.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2170.13 CHANNEL SLOPE = 0.0274  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.28  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.874  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.83	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1392.11  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.84  
AVERAGE FLOW DEPTH(FEET) = 6.28 TRAVEL TIME(MIN.) = 3.68  
Tc(MIN.) = 61.44  
SUBAREA AREA(ACRES) = 53.83 SUBAREA RUNOFF(CFS) = 27.81  
EFFECTIVE AREA(ACRES) = 2566.08 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2572.1 PEAK FLOW RATE(CFS) = 1378.20  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.25 FLOW VELOCITY(FEET/SEC.) = 9.81  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 10  
-----

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: P401XX10.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	539.61	27.74	0.30( 0.30)	1.00	625.8	40130.00
2	534.97	29.62	0.30( 0.30)	1.00	654.2	40100.00
TOTAL AREA(ACRES) =						654.2

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 11  
-----

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

\*\*\*\*\*  
\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1378.20	61.44	0.874	0.30( 0.30)	1.00	2566.1	11910.00
2	1372.61	61.93	0.872	0.30( 0.30)	1.00	2572.1	11900.00
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	539.61	27.74	1.333	0.30( 0.30)	1.00	625.8	40130.00
2	534.97	29.62	1.277	0.30( 0.30)	1.00	654.2	40100.00
LONGEST FLOWPATH FROM NODE 40100.00 TO NODE 11927.00 = 10245.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1659.11	27.74	1.333	0.30( 0.30)	1.00	1784.4	40130.00
2	1665.58	29.62	1.277	0.30( 0.30)	1.00	1891.2	40100.00
3	1692.35	61.44	0.874	0.30( 0.30)	1.00	3220.3	11910.00
4	1685.45	61.93	0.872	0.30( 0.30)	1.00	3226.4	11900.00
TOTAL AREA(ACRES) =						3226.4	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
PEAK FLOW RATE(CFS) = 1692.35 Tc(MIN.) = 61.439



EFFECTIVE AREA(ACRES) = 3220.28 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3226.4  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.50 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 399.00 DOWNSTREAM(FEET) = 384.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 986.26 CHANNEL SLOPE = 0.0152  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.89  
CHANNEL FLOW THRU SUBAREA(CFS) = 1692.35  
FLOW VELOCITY(FEET/SEC.) = 8.32 FLOW DEPTH(FEET) = 7.89  
TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 63.42  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.50 = 28713.42 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 63.42  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.864  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 2.40 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 1.70 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 1.50 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.30 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.90 0.30 1.000 66  
NATURAL FAIR COVER  
"GRASS" B 0.60 0.30 1.000 69  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 8.40 SUBAREA RUNOFF(CFS) = 4.27  
EFFECTIVE AREA(ACRES) = 3228.68 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3234.8 PEAK FLOW RATE(CFS) = 1692.35  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 63.42  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.864  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.10 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 0.50 SUBAREA RUNOFF(CFS) = 0.25  
EFFECTIVE AREA(ACRES) = 3229.18 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3235.2 PEAK FLOW RATE(CFS) = 1692.35  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 63.42  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.864  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.70 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.20 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.10 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 2.00 SUBAREA RUNOFF(CFS) = 1.02  
EFFECTIVE AREA(ACRES) = 3231.18 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3237.2 PEAK FLOW RATE(CFS) = 1692.35  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11928.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 384.00 DOWNSTREAM(FEET) = 359.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 647.19 CHANNEL SLOPE = 0.0386  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.38  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.860  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	78.01	0.30	0.984	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.984  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1712.17  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.79  
 AVERAGE FLOW DEPTH (FEET) = 6.38 TRAVEL TIME (MIN.) = 0.92  
 Tc (MIN.) = 64.33  
 SUBAREA AREA (ACRES) = 78.01 SUBAREA RUNOFF (CFS) = 39.64  
 EFFECTIVE AREA (ACRES) = 3309.19 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3315.3 PEAK FLOW RATE (CFS) = 1692.35  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 6.34 FLOW VELOCITY (FEET/SEC.) = 11.76  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29360.61 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11928.00 TO NODE 11928.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 64.33  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.860  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND, GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.60	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 1.70 SUBAREA RUNOFF (CFS) = 0.86  
 EFFECTIVE AREA (ACRES) = 3310.89 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3317.0 PEAK FLOW RATE (CFS) = 1692.35  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 359.00 DOWNSTREAM (FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1322.66 CHANNEL SLOPE = 0.0131

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.17  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.846  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.18	0.30	0.890	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.890  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1694.48  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.88  
 AVERAGE FLOW DEPTH (FEET) = 8.17 TRAVEL TIME (MIN.) = 2.80  
 Tc (MIN.) = 67.13  
 SUBAREA AREA (ACRES) = 8.18 SUBAREA RUNOFF (CFS) = 4.26  
 EFFECTIVE AREA (ACRES) = 3319.07 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3325.1 PEAK FLOW RATE (CFS) = 1692.35  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 8.16 FLOW VELOCITY (FEET/SEC.) = 7.88  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 67.13  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.846  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	1.90	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.60	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 2.50 SUBAREA RUNOFF (CFS) = 1.23  
 EFFECTIVE AREA (ACRES) = 3321.57 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3327.6 PEAK FLOW RATE (CFS) = 1692.35  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X10.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11616.90	44.00	0.30 ( 0.30)	1.00	7599.6	11801.00
2	12892.03	58.27	0.30 ( 0.30)	1.00	10804.1	11530.00
3	13438.67	64.50	0.30 ( 0.30)	1.00	12758.4	11701.00
4	13628.71	66.49	0.30 ( 0.30)	1.00	13434.8	11000.00
5	15265.02	77.21	0.30 ( 0.30)	1.00	18437.6	11330.00
6	15528.32	79.96	0.30 ( 0.30)	1.00	19719.4	10800.00
7	15902.78	82.44	0.30 ( 0.30)	1.00	21039.3	11300.00
8	16140.10	85.75	0.30 ( 0.30)	1.00	22434.4	10630.00
9	15918.65	96.09	0.30 ( 0.30)	1.00	25763.3	11620.00
10	15868.02	97.88	0.30 ( 0.30)	1.00	26303.3	11600.00
11	15636.46	103.56	0.30 ( 0.30)	1.00	27777.9	11111.00
12	15531.21	106.40	0.30 ( 0.30)	1.00	28370.9	10500.00
13	15352.00	110.70	0.30 ( 0.30)	1.00	29161.8	10710.00
14	15201.33	113.32	0.30 ( 0.30)	1.00	29547.2	10410.00
15	14857.39	118.86	0.30 ( 0.30)	1.00	30260.6	10700.00
16	14446.26	125.40	0.30 ( 0.30)	1.00	31040.6	10400.00
17	14178.55	129.18	0.30 ( 0.30)	1.00	31414.4	10200.00
18	13775.63	136.31	0.30 ( 0.30)	1.00	32035.9	10320.00
19	13411.70	140.89	0.30 ( 0.30)	1.00	32196.8	10210.00
20	11422.66	173.20	0.30 ( 0.30)	1.00	32916.6	10100.00

TOTAL AREA (ACRES) = 32916.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.30 ( 0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.30 ( 0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.30 ( 0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.30 ( 0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.30 ( 0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.30 ( 0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.30 ( 0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.30 ( 0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.30 ( 0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.30 ( 0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.30 ( 0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.30 ( 0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.30 ( 0.29)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.30 ( 0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.30 ( 0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.30 ( 0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.30 ( 0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.30 ( 0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.30 ( 0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.30 ( 0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.30 ( 0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.30 ( 0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.30 ( 0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.30 ( 0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.30 ( 0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.30 ( 0.29)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

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FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.812	0.30 ( 0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.736	0.30 ( 0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.730	0.30 ( 0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.722	0.30 ( 0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.709	0.30 ( 0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.694	0.30 ( 0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.680	0.30 ( 0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.666	0.30 ( 0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.657	0.30 ( 0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.650	0.30 ( 0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.648	0.30 ( 0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.624	0.30 ( 0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.608	0.30 ( 0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11616.90	44.00	1.039	0.30 ( 0.30)	1.00	7599.6	11801.00
2	12892.03	58.27	0.896	0.30 ( 0.30)	1.00	10804.1	11530.00
3	13438.67	64.50	0.859	0.30 ( 0.30)	1.00	12758.4	11701.00
4	13628.71	66.49	0.849	0.30 ( 0.30)	1.00	13434.8	11000.00
5	15265.02	77.21	0.797	0.30 ( 0.30)	1.00	18437.6	11330.00
6	15528.32	79.96	0.783	0.30 ( 0.30)	1.00	19719.4	10800.00
7	15902.78	82.44	0.771	0.30 ( 0.30)	1.00	21039.3	11300.00
8	16140.10	85.75	0.755	0.30 ( 0.30)	1.00	22434.4	10630.00
9	15918.65	96.09	0.717	0.30 ( 0.30)	1.00	25763.3	11620.00
10	15868.02	97.88	0.712	0.30 ( 0.30)	1.00	26303.3	11600.00
11	15636.46	103.56	0.697	0.30 ( 0.30)	1.00	27777.9	11111.00
12	15531.21	106.40	0.689	0.30 ( 0.30)	1.00	28370.9	10500.00
13	15352.00	110.70	0.677	0.30 ( 0.30)	1.00	29161.8	10710.00

14	15201.33	113.32	0.670	0.30	( 0.30)	1.00	29547.2	10410.00
15	14857.39	118.86	0.655	0.30	( 0.30)	1.00	30260.6	10700.00
16	14446.26	125.40	0.643	0.30	( 0.30)	1.00	31040.6	10400.00
17	14178.55	129.18	0.636	0.30	( 0.30)	1.00	31414.4	10200.00
18	13775.63	136.31	0.624	0.30	( 0.30)	1.00	32035.9	10320.00
19	13411.70	140.89	0.616	0.30	( 0.30)	1.00	32196.8	10210.00
20	11422.66	173.20	0.561	0.30	( 0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15427.07	44.00	1.039	0.30( 0.30)	0.99	11287.3	11801.00
2	16968.09	58.27	0.896	0.30( 0.30)	0.99	15687.3	11530.00
3	17671.53	64.50	0.859	0.30( 0.30)	0.99	18163.7	11701.00
4	17916.64	66.49	0.849	0.30( 0.30)	0.99	19007.1	11000.00
5	19259.36	74.17	0.812	0.30( 0.30)	0.99	23236.5	12500.00
6	19795.97	77.21	0.797	0.30( 0.30)	0.99	25040.6	11330.00
7	20125.68	79.96	0.783	0.30( 0.30)	0.99	26674.0	10800.00
8	20559.80	82.44	0.771	0.30( 0.30)	0.99	28309.7	11300.00
9	20877.05	85.75	0.755	0.30( 0.30)	0.99	30127.8	10630.00
10	20887.39	89.61	0.736	0.30( 0.30)	0.99	31863.6	12300.00
11	20907.71	91.31	0.730	0.30( 0.30)	0.99	32717.7	12330.00
12	20928.11	94.56	0.722	0.30( 0.30)	0.99	34317.4	12410.00
13	20924.67	96.09	0.717	0.30( 0.30)	0.99	35043.8	11620.00
14	20908.49	97.88	0.712	0.30( 0.30)	0.99	35860.1	11600.00
15	20878.88	99.26	0.709	0.30( 0.30)	0.99	36427.0	12400.00
16	20749.46	103.56	0.697	0.30( 0.30)	0.99	38094.4	11111.00
17	20720.29	104.67	0.694	0.30( 0.30)	0.99	38466.4	12211.00
18	20666.45	106.40	0.689	0.30( 0.30)	0.99	39044.4	10500.00
19	20552.81	109.58	0.680	0.30( 0.30)	0.99	40028.3	12201.00
20	20487.24	110.70	0.677	0.30( 0.30)	0.99	40339.9	10710.00
21	20291.57	113.32	0.670	0.30( 0.30)	0.99	40976.1	10410.00
22	20182.47	114.70	0.666	0.30( 0.30)	0.99	41285.1	12111.00
23	19946.92	118.21	0.657	0.30( 0.30)	0.99	42116.5	12231.00
24	19897.64	118.86	0.655	0.30( 0.30)	0.99	42260.3	10700.00
25	19726.52	121.09	0.650	0.30( 0.30)	0.99	42733.2	12101.10
26	19615.75	122.44	0.648	0.30( 0.30)	0.99	43005.4	12261.00
27	19345.12	125.40	0.643	0.30( 0.30)	0.99	43528.1	10400.00
28	18969.58	129.18	0.636	0.30( 0.30)	0.99	44118.3	10200.00
29	18362.79	136.31	0.624	0.30( 0.30)	0.99	45148.8	10320.00
30	18349.32	136.43	0.624	0.30( 0.30)	0.99	45160.4	12010.00
31	17833.67	140.89	0.616	0.30( 0.30)	0.99	45374.3	10210.00
32	17382.11	145.50	0.608	0.30( 0.30)	0.99	45536.7	12000.00
33	15034.06	173.20	0.561	0.30( 0.30)	0.99	46153.7	10100.00

TOTAL AREA (ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 20928.11 Tc (MIN.) = 94.562  
EFFECTIVE AREA (ACRES) = 34317.40 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 46153.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

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

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 347.47 DOWNSTREAM (FEET) = 341.63  
CHANNEL LENGTH THRU SUBAREA (FEET) = 532.38 CHANNEL SLOPE = 0.0110  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.93

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.720

SUBAREA LOSS RATE DATA (AMC II):

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

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 20930.85

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.87

AVERAGE FLOW DEPTH (FEET) = 6.93 TRAVEL TIME (MIN.) = 0.69

Tc (MIN.) = 95.25

SUBAREA AREA (ACRES) = 14.37 SUBAREA RUNOFF (CFS) = 5.48

EFFECTIVE AREA (ACRES) = 34331.77 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 46168.0 PEAK FLOW RATE (CFS) = 20928.11

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 6.93 FLOW VELOCITY (FEET/SEC.) = 12.87

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

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

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

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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15427.07	44.77	1.030	0.30( 0.30)	0.99	11301.7	11801.00
2	16968.09	59.01	0.890	0.30( 0.30)	0.99	15701.7	11530.00
3	17671.53	65.23	0.855	0.30( 0.30)	0.99	18178.1	11701.00
4	17916.64	67.22	0.846	0.30( 0.30)	0.99	19021.5	11000.00
5	19259.36	74.88	0.808	0.30( 0.30)	0.99	23250.9	12500.00
6	19795.97	77.91	0.793	0.30( 0.30)	0.99	25055.0	11330.00
7	20125.68	80.66	0.780	0.30( 0.30)	0.99	26688.3	10800.00
8	20559.80	83.13	0.768	0.30( 0.30)	0.99	28324.0	11300.00
9	20877.05	86.44	0.751	0.30( 0.30)	0.99	30142.2	10630.00
10	20887.39	90.30	0.733	0.30( 0.30)	0.99	31878.0	12300.00
11	20907.71	92.00	0.729	0.30( 0.30)	0.99	32732.0	12330.00
12	20928.11	95.25	0.720	0.30( 0.30)	0.99	34331.8	12410.00
13	20924.67	96.78	0.715	0.30( 0.30)	0.99	35058.2	11620.00
14	20908.49	98.57	0.711	0.30( 0.30)	0.99	35874.5	11600.00
15	20878.88	99.95	0.707	0.30( 0.30)	0.99	36441.4	12400.00
16	20749.46	104.26	0.695	0.30( 0.30)	0.99	38108.8	11111.00
17	20720.29	105.36	0.692	0.30( 0.30)	0.99	38480.8	12211.00
18	20666.45	107.09	0.687	0.30( 0.30)	0.99	39058.8	10500.00

19	20552.81	110.28	0.679	0.30 ( 0.30)	0.99	40042.7	12201.00
20	20487.24	111.39	0.676	0.30 ( 0.30)	0.99	40354.2	10710.00
21	20291.57	114.02	0.668	0.30 ( 0.30)	0.99	40990.5	10410.00
22	20182.47	115.39	0.665	0.30 ( 0.30)	0.99	41299.5	12111.00
23	19946.92	118.91	0.655	0.30 ( 0.30)	0.99	42130.9	12231.00
24	19897.64	119.56	0.653	0.30 ( 0.30)	0.99	42274.7	10700.00
25	19726.52	121.79	0.649	0.30 ( 0.30)	0.99	42747.6	12101.10
26	19615.75	123.15	0.647	0.30 ( 0.30)	0.99	43019.8	12261.00
27	19345.12	126.11	0.642	0.30 ( 0.30)	0.99	43542.5	10400.00
28	18969.58	129.89	0.635	0.30 ( 0.30)	0.99	44132.7	10200.00
29	18362.79	137.03	0.623	0.30 ( 0.30)	0.99	45163.2	10320.00
30	18349.32	137.15	0.623	0.30 ( 0.30)	0.99	45174.8	12010.00
31	17833.67	141.62	0.615	0.30 ( 0.30)	0.99	45388.7	10210.00
32	17382.11	146.24	0.607	0.30 ( 0.30)	0.99	45551.1	12000.00
33	15034.06	173.97	0.559	0.30 ( 0.30)	0.99	46168.0	10100.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1659.11	33.46	1.204	0.30 ( 0.30)	1.00	1885.7	40130.00
2	1665.58	35.33	1.170	0.30 ( 0.30)	1.00	1992.5	40100.00
3	1692.35	67.13	0.846	0.30 ( 0.30)	1.00	3321.6	11910.00
4	1685.45	67.62	0.844	0.30 ( 0.30)	1.00	3327.6	11900.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15929.33	33.46	1.204	0.30 ( 0.30)	0.99	10331.7	40130.00
2	16173.79	35.33	1.170	0.30 ( 0.30)	0.99	10911.0	40100.00
3	17100.60	44.77	1.030	0.30 ( 0.30)	0.99	13688.7	11801.00
4	18653.61	59.01	0.890	0.30 ( 0.30)	0.99	18684.0	11530.00
5	19362.29	65.23	0.855	0.30 ( 0.30)	0.99	21420.3	11701.00
6	19597.81	67.13	0.846	0.30 ( 0.30)	0.99	22304.6	11910.00
7	19607.73	67.22	0.846	0.30 ( 0.30)	0.99	22344.2	11000.00
8	19672.87	67.62	0.844	0.30 ( 0.30)	0.99	22572.1	11900.00
9	20834.75	74.88	0.808	0.30 ( 0.30)	0.99	26578.5	12500.00
10	21325.43	77.91	0.793	0.30 ( 0.30)	0.99	28382.6	11330.00
11	21613.42	80.66	0.780	0.30 ( 0.30)	0.99	30016.0	10800.00
12	22010.08	83.13	0.768	0.30 ( 0.30)	0.99	31651.7	11300.00
13	22277.11	86.44	0.751	0.30 ( 0.30)	0.99	33469.8	10630.00
14	22230.94	90.30	0.733	0.30 ( 0.30)	0.99	35205.6	12300.00
15	22236.95	92.00	0.729	0.30 ( 0.30)	0.99	36059.7	12330.00
16	22229.80	95.25	0.720	0.30 ( 0.30)	0.99	37659.4	12410.00
17	22213.45	96.78	0.715	0.30 ( 0.30)	0.99	38385.8	11620.00
18	22182.07	98.57	0.711	0.30 ( 0.30)	0.99	39202.1	11600.00
19	22140.86	99.95	0.707	0.30 ( 0.30)	0.99	39769.0	12400.00
20	21974.99	104.26	0.695	0.30 ( 0.30)	0.99	41436.4	11111.00
21	21936.47	105.36	0.692	0.30 ( 0.30)	0.99	41808.4	12211.00
22	21868.00	107.09	0.687	0.30 ( 0.30)	0.99	42386.4	10500.00
23	21727.41	110.28	0.679	0.30 ( 0.30)	0.99	43370.3	12201.00
24	21652.42	111.39	0.676	0.30 ( 0.30)	0.99	43681.9	10710.00
25	21434.54	114.02	0.668	0.30 ( 0.30)	0.99	44318.1	10410.00
26	21313.77	115.39	0.665	0.30 ( 0.30)	0.99	44627.1	12111.00
27	21048.44	118.91	0.655	0.30 ( 0.30)	0.99	45458.5	12231.00
28	20993.68	119.56	0.653	0.30 ( 0.30)	0.99	45602.3	10700.00
29	20809.33	121.79	0.649	0.30 ( 0.30)	0.99	46075.2	12101.10

30	20691.36	123.15	0.647	0.30 ( 0.30)	0.99	46347.4	12261.00
31	20404.98	126.11	0.642	0.30 ( 0.30)	0.99	46870.1	10400.00
32	20009.38	129.89	0.635	0.30 ( 0.30)	0.99	47460.3	10200.00
33	19364.66	137.03	0.623	0.30 ( 0.30)	0.99	48490.9	10320.00
34	19350.52	137.15	0.623	0.30 ( 0.30)	0.99	48502.4	12010.00
35	18811.18	141.62	0.615	0.30 ( 0.30)	0.99	48716.3	10210.00
36	18335.06	146.24	0.607	0.30 ( 0.30)	0.99	48878.7	12000.00
37	15839.68	173.97	0.559	0.30 ( 0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 22277.11 Tc (MIN.) = 86.444  
EFFECTIVE AREA (ACRES) = 33469.80 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49495.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 49495.7 TC (MIN.) = 86.44  
EFFECTIVE AREA (ACRES) = 33469.80 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994  
PEAK FLOW RATE (CFS) = 22277.11

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15929.33	33.46	1.204	0.30 ( 0.30)	0.99	10331.7	40130.00
2	16173.79	35.33	1.170	0.30 ( 0.30)	0.99	10911.0	40100.00
3	17100.60	44.77	1.030	0.30 ( 0.30)	0.99	13688.7	11801.00
4	18653.61	59.01	0.890	0.30 ( 0.30)	0.99	18684.0	11530.00
5	19362.29	65.23	0.855	0.30 ( 0.30)	0.99	21420.3	11701.00
6	19597.81	67.13	0.846	0.30 ( 0.30)	0.99	22304.6	11910.00
7	19607.73	67.22	0.846	0.30 ( 0.30)	0.99	22344.2	11000.00
8	19672.87	67.62	0.844	0.30 ( 0.30)	0.99	22572.1	11900.00
9	20834.75	74.88	0.808	0.30 ( 0.30)	0.99	26578.5	12500.00
10	21325.43	77.91	0.793	0.30 ( 0.30)	0.99	28382.6	11330.00
11	21613.42	80.66	0.780	0.30 ( 0.30)	0.99	30016.0	10800.00
12	22010.08	83.13	0.768	0.30 ( 0.30)	0.99	31651.7	11300.00
13	22277.11	86.44	0.751	0.30 ( 0.30)	0.99	33469.8	10630.00
14	22230.94	90.30	0.733	0.30 ( 0.30)	0.99	35205.6	12300.00
15	22236.95	92.00	0.729	0.30 ( 0.30)	0.99	36059.7	12330.00
16	22229.80	95.25	0.720	0.30 ( 0.30)	0.99	37659.4	12410.00
17	22213.45	96.78	0.715	0.30 ( 0.30)	0.99	38385.8	11620.00
18	22182.07	98.57	0.711	0.30 ( 0.30)	0.99	39202.1	11600.00
19	22140.86	99.95	0.707	0.30 ( 0.30)	0.99	39769.0	12400.00
20	21974.99	104.26	0.695	0.30 ( 0.30)	0.99	41436.4	11111.00
21	21936.47	105.36	0.692	0.30 ( 0.30)	0.99	41808.4	12211.00
22	21868.00	107.09	0.687	0.30 ( 0.30)	0.99	42386.4	10500.00
23	21727.41	110.28	0.679	0.30 ( 0.30)	0.99	43370.3	12201.00
24	21652.42	111.39	0.676	0.30 ( 0.30)	0.99	43681.9	10710.00
25	21434.54	114.02	0.668	0.30 ( 0.30)	0.99	44318.1	10410.00
26	21313.77	115.39	0.665	0.30 ( 0.30)	0.99	44627.1	12111.00
27	21048.44	118.91	0.655	0.30 ( 0.30)	0.99	45458.5	12231.00
28	20993.68	119.56	0.653	0.30 ( 0.30)	0.99	45602.3	10700.00
29	20809.33	121.79	0.649	0.30 ( 0.30)	0.99	46075.2	12101.10
30	20691.36	123.15	0.647	0.30 ( 0.30)	0.99	46347.4	12261.00
31	20404.98	126.11	0.642	0.30 ( 0.30)	0.99	46870.1	10400.00
32	20009.38	129.89	0.635	0.30 ( 0.30)	0.99	47460.3	10200.00

33	19364.66	137.03	0.623	0.30	( 0.30)	0.99	48490.9	10320.00
34	19350.52	137.15	0.623	0.30	( 0.30)	0.99	48502.4	12010.00
35	18811.18	141.62	0.615	0.30	( 0.30)	0.99	48716.3	10210.00
36	18335.06	146.24	0.607	0.30	( 0.30)	0.99	48878.7	12000.00
37	15839.68	173.97	0.559	0.30	( 0.30)	0.99	49495.7	10100.00

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END OF RATIONAL METHOD ANALYSIS

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S26- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV26.DAT  
TIME/DATE OF STUDY: 15:56 04/01/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.913
- 2) 10.00; 2.593
- 3) 15.00; 1.893
- 4) 20.00; 1.621
- 5) 25.00; 1.412
- 6) 30.00; 1.265
- 7) 40.00; 1.084
- 8) 50.00; 0.966
- 9) 60.00; 0.879
- 10) 90.00; 0.733
- 11) 120.00; 0.650
- 12) 180.00; 0.547
- 13) 360.00; 0.406
- 14) 1200.00; 0.179

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES: LIP (FT)	MANNING HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV19.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16173.79	35.33	0.30 ( 0.30)	0.99	10911.0	40100.00
2	17100.60	44.77	0.30 ( 0.30)	0.99	13688.7	11801.00
3	18653.61	59.01	0.30 ( 0.30)	0.99	18684.0	11530.00
4	19672.87	67.62	0.30 ( 0.30)	0.99	22572.1	11900.00
5	21325.43	77.91	0.30 ( 0.30)	0.99	28382.6	11330.00
6	22010.08	83.13	0.30 ( 0.30)	0.99	31651.7	11300.00
7	22277.11	86.44	0.30 ( 0.30)	0.99	33469.8	10630.00
8	22236.95	92.00	0.30 ( 0.30)	0.99	36059.7	12330.00
9	22229.80	95.25	0.30 ( 0.30)	0.99	37659.4	12410.00
10	22182.07	98.57	0.30 ( 0.30)	0.99	39202.1	11600.00
11	21974.99	104.26	0.30 ( 0.30)	0.99	41436.4	11111.00
12	21727.41	110.28	0.30 ( 0.30)	0.99	43370.3	12201.00
13	21434.54	114.02	0.30 ( 0.30)	0.99	44318.1	10410.00
14	21048.44	118.91	0.30 ( 0.30)	0.99	45458.5	12231.00
15	20404.98	126.11	0.30 ( 0.30)	0.99	46870.1	10400.00
16	20009.38	129.89	0.30 ( 0.30)	0.99	47460.3	10200.00
17	19364.66	137.03	0.30 ( 0.30)	0.99	48490.9	10320.00
18	18811.18	141.62	0.30 ( 0.30)	0.99	48716.3	10210.00
19	18335.06	146.24	0.30 ( 0.30)	0.99	48878.7	12000.00
20	15839.68	173.97	0.30 ( 0.30)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16173.79	35.33	0.30 ( 0.30)	0.99	10911.0	40100.00
2	17100.60	44.77	0.30 ( 0.30)	0.99	13688.7	11801.00
3	18653.61	59.01	0.30 ( 0.30)	0.99	18684.0	11530.00
4	19672.87	67.62	0.30 ( 0.30)	0.99	22572.1	11900.00
5	21325.43	77.91	0.30 ( 0.30)	0.99	28382.6	11330.00
6	22010.08	83.13	0.30 ( 0.30)	0.99	31651.7	11300.00
7	22277.11	86.44	0.30 ( 0.30)	0.99	33469.8	10630.00
8	22236.95	92.00	0.30 ( 0.30)	0.99	36059.7	12330.00
9	22229.80	95.25	0.30 ( 0.30)	0.99	37659.4	12410.00
10	22182.07	98.57	0.30 ( 0.30)	0.99	39202.1	11600.00
11	21974.99	104.26	0.30 ( 0.30)	0.99	41436.4	11111.00
12	21727.41	110.28	0.30 ( 0.30)	0.99	43370.3	12201.00
13	21434.54	114.02	0.30 ( 0.30)	0.99	44318.1	10410.00

14	21048.44	118.91	0.30	( 0.30)	0.99	45458.5	12231.00
15	20404.98	126.11	0.30	( 0.30)	0.99	46870.1	10400.00
16	20009.38	129.89	0.30	( 0.30)	0.99	47460.3	10200.00
17	19364.66	137.03	0.30	( 0.30)	0.99	48490.9	10320.00
18	18811.18	141.62	0.30	( 0.30)	0.99	48716.3	10210.00
19	18335.06	146.24	0.30	( 0.30)	0.99	48878.7	12000.00
20	15839.68	173.97	0.30	( 0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 341.63 DOWNSTREAM (FEET) = 325.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1467.93 CHANNEL SLOPE = 0.0113  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.03

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.743

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.11	0.30	0.700	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 22280.49

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 16.05

AVERAGE FLOW DEPTH (FEET) = 6.03 TRAVEL TIME (MIN.) = 1.52

Tc (MIN.) = 87.97

SUBAREA AREA (ACRES) = 14.11 SUBAREA RUNOFF (CFS) = 6.77

EFFECTIVE AREA (ACRES) = 33483.91 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 49509.8 PEAK FLOW RATE (CFS) = 22277.11

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 6.03 FLOW VELOCITY (FEET/SEC.) = 16.05

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3010EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	64.13	17.31	0.30 ( 0.30)	0.98	48.4	600.00

TOTAL AREA (ACRES) = 48.4

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16173.79	37.03	1.138	0.30 ( 0.30)	0.99	10925.1	40100.00
2	17100.60	46.44	1.008	0.30 ( 0.30)	0.99	13702.8	11801.00
3	18653.61	60.63	0.876	0.30 ( 0.30)	0.99	18698.1	11530.00
4	19672.87	69.21	0.834	0.30 ( 0.30)	0.99	22586.2	11900.00
5	21325.43	79.46	0.784	0.30 ( 0.30)	0.99	28396.8	11330.00
6	22010.08	84.66	0.759	0.30 ( 0.30)	0.99	31665.8	11300.00
7	22277.11	87.97	0.743	0.30 ( 0.30)	0.99	33483.9	10630.00
8	22236.95	93.52	0.723	0.30 ( 0.30)	0.99	36073.8	12330.00
9	22229.80	96.78	0.714	0.30 ( 0.30)	0.99	37673.5	12410.00
10	22182.07	100.10	0.705	0.30 ( 0.30)	0.99	39216.2	11600.00
11	21974.99	105.79	0.689	0.30 ( 0.30)	0.99	41450.6	11111.00
12	21727.41	111.81	0.673	0.30 ( 0.30)	0.99	43384.4	12201.00
13	21434.54	115.56	0.662	0.30 ( 0.30)	0.99	44332.2	10410.00
14	21048.44	120.47	0.649	0.30 ( 0.30)	0.99	45472.7	12231.00
15	20404.98	127.69	0.637	0.30 ( 0.30)	0.99	46884.2	10400.00
16	20009.38	131.47	0.630	0.30 ( 0.30)	0.99	47474.4	10200.00
17	19364.66	138.63	0.618	0.30 ( 0.30)	0.99	48505.0	10320.00
18	18811.18	143.23	0.610	0.30 ( 0.30)	0.99	48730.4	10210.00
19	18335.06	147.87	0.602	0.30 ( 0.30)	0.99	48892.8	12000.00
20	15839.68	175.69	0.554	0.30 ( 0.30)	0.99	49509.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	64.13	17.31	1.767	0.30 ( 0.30)	0.98	48.4	600.00

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13291.33	17.31	1.767	0.30 ( 0.30)	0.99	5154.7	600.00
2	16210.49	37.03	1.138	0.30 ( 0.30)	0.99	10973.5	40100.00
3	17131.65	46.44	1.008	0.30 ( 0.30)	0.99	13751.2	11801.00
4	18678.91	60.63	0.876	0.30 ( 0.30)	0.99	18746.5	11530.00
5	19696.35	69.21	0.834	0.30 ( 0.30)	0.99	22634.6	11900.00
6	21346.74	79.46	0.784	0.30 ( 0.30)	0.99	28445.2	11330.00
7	22030.29	84.66	0.759	0.30 ( 0.30)	0.99	31714.2	11300.00
8	22296.61	87.97	0.743	0.30 ( 0.30)	0.99	33532.3	10630.00
9	22255.60	93.52	0.723	0.30 ( 0.30)	0.99	36122.2	12330.00
10	22248.05	96.78	0.714	0.30 ( 0.30)	0.99	37721.9	12410.00
11	22199.93	100.10	0.705	0.30 ( 0.30)	0.99	39264.6	11600.00
12	21992.16	105.79	0.689	0.30 ( 0.30)	0.99	41499.0	11111.00
13	21743.86	111.81	0.673	0.30 ( 0.30)	0.99	43432.8	12201.00
14	21450.53	115.56	0.662	0.30 ( 0.30)	0.99	44380.6	10410.00
15	21063.87	120.47	0.649	0.30 ( 0.30)	0.99	45521.1	12231.00
16	20419.86	127.69	0.637	0.30 ( 0.30)	0.99	46932.6	10400.00
17	20023.98	131.47	0.630	0.30 ( 0.30)	0.99	47522.8	10200.00
18	19378.72	138.63	0.618	0.30 ( 0.30)	0.99	48553.4	10320.00
19	18824.90	143.23	0.610	0.30 ( 0.30)	0.99	48778.8	10210.00
20	18348.44	147.87	0.602	0.30 ( 0.30)	0.99	48941.2	12000.00



21 15850.97 175.69 0.554 0.30( 0.30) 0.99 49558.2 10100.00  
TOTAL AREA (ACRES) = 49558.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22296.61 Tc(MIN.) = 87.968  
EFFECTIVE AREA(ACRES) = 33532.31 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49558.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 325.00 DOWNSTREAM(FEET) = 313.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1377.46 CHANNEL SLOPE = 0.0087  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.51  
CHANNEL FLOW THRU SUBAREA(CFS) = 22296.61  
FLOW VELOCITY(FEET/SEC.) = 14.73 FLOW DEPTH(FEET) = 6.51  
TRAVEL TIME(MIN.) = 1.56 Tc(MIN.) = 89.53  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12602.00 = 101245.91 FEET.

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FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 313.00 DOWNSTREAM(FEET) = 310.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 312.40 CHANNEL SLOPE = 0.0096  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.33  
CHANNEL FLOW THRU SUBAREA(CFS) = 22296.61  
FLOW VELOCITY(FEET/SEC.) = 15.21 FLOW DEPTH(FEET) = 6.33  
TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 89.87  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

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FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4E10EVRL.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	346.40	9.57	0.30( 0.16)	0.52	148.8	800.00

2 304.56 13.17 0.30( 0.17) 0.57 168.1 818.00  
3 283.29 14.35 0.30( 0.17) 0.58 171.0 810.00  
TOTAL AREA (ACRES) = 171.0

\*\*\*\*\*

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13291.33	19.59	1.643	0.30( 0.30)	0.99	5154.7	600.00
2	16210.49	39.16	1.099	0.30( 0.30)	0.99	10973.5	40100.00
3	17131.65	48.52	0.983	0.30( 0.30)	0.99	13751.2	11801.00
4	18678.91	62.65	0.866	0.30( 0.30)	0.99	18746.5	11530.00
5	19696.35	71.20	0.824	0.30( 0.30)	0.99	22634.6	11900.00
6	21346.74	81.39	0.775	0.30( 0.30)	0.99	28445.2	11330.00
7	22030.29	86.57	0.750	0.30( 0.30)	0.99	31714.2	11300.00
8	22296.61	89.87	0.734	0.30( 0.30)	0.99	33532.3	10630.00
9	22255.60	95.42	0.718	0.30( 0.30)	0.99	36122.2	12330.00
10	22248.05	98.68	0.709	0.30( 0.30)	0.99	37721.9	12410.00
11	22199.93	102.01	0.700	0.30( 0.30)	0.99	39264.6	11600.00
12	21992.16	107.70	0.684	0.30( 0.30)	0.99	41499.0	11111.00
13	21743.86	113.73	0.667	0.30( 0.30)	0.99	43432.8	12201.00
14	21450.53	117.49	0.657	0.30( 0.30)	0.99	44380.6	10410.00
15	21063.87	122.41	0.646	0.30( 0.30)	0.99	45521.1	12231.00
16	20419.86	129.65	0.633	0.30( 0.30)	0.99	46932.6	10400.00
17	20023.98	133.45	0.627	0.30( 0.30)	0.99	47522.8	10200.00
18	19378.72	140.63	0.615	0.30( 0.30)	0.99	48553.4	10320.00
19	18824.90	145.25	0.607	0.30( 0.30)	0.99	48778.8	10210.00
20	18348.44	149.90	0.599	0.30( 0.30)	0.99	48941.2	12000.00
21	15850.97	177.83	0.551	0.30( 0.30)	0.99	49558.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	346.40	9.57	2.706	0.30( 0.16)	0.52	148.8	800.00
2	304.56	13.17	2.149	0.30( 0.17)	0.57	168.1	818.00
3	283.29	14.35	1.983	0.30( 0.17)	0.58	171.0	810.00

LONGEST FLOWPATH FROM NODE 810.00 TO NODE 12603.00 = 3814.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11970.45	9.57	2.706	0.30( 0.29)	0.97	2667.7	800.00
2	12600.14	13.17	2.149	0.30( 0.29)	0.97	3634.6	818.00
3	12484.28	14.35	1.983	0.30( 0.29)	0.98	3948.7	810.00
4	13521.41	19.59	1.643	0.30( 0.29)	0.98	5325.7	600.00
5	16355.36	39.16	1.099	0.30( 0.30)	0.99	11144.5	40100.00
6	17258.39	48.52	0.983	0.30( 0.30)	0.99	13922.2	11801.00
7	18787.27	62.65	0.866	0.30( 0.30)	0.99	18917.5	11530.00
8	19798.20	71.20	0.824	0.30( 0.30)	0.99	22805.6	11900.00
9	21440.83	81.39	0.775	0.30( 0.30)	0.99	28616.2	11330.00
10	22120.43	86.57	0.750	0.30( 0.30)	0.99	31885.2	11300.00
11	22384.23	89.87	0.734	0.30( 0.30)	0.99	33703.3	10630.00

12	22340.77	95.42	0.718	0.30	( 0.30)	0.99	36293.2	12330.00
13	22331.82	98.68	0.709	0.30	( 0.30)	0.99	37892.9	12410.00
14	22282.25	102.01	0.700	0.30	( 0.30)	0.99	39435.6	11600.00
15	22072.03	107.70	0.684	0.30	( 0.30)	0.99	41670.0	11111.00
16	21821.10	113.73	0.667	0.30	( 0.30)	0.99	43603.8	12201.00
17	21526.15	117.49	0.657	0.30	( 0.30)	0.99	44551.6	10410.00
18	21137.75	122.41	0.646	0.30	( 0.30)	0.99	45692.1	12231.00
19	20491.80	129.65	0.633	0.30	( 0.30)	0.99	47103.6	10400.00
20	20094.90	133.45	0.627	0.30	( 0.30)	0.99	47693.8	10200.00
21	19447.71	140.63	0.615	0.30	( 0.30)	0.99	48724.4	10320.00
22	18892.64	145.25	0.607	0.30	( 0.30)	0.99	48949.8	10210.00
23	18414.93	149.90	0.599	0.30	( 0.30)	0.99	49112.2	12000.00
24	15909.96	177.83	0.551	0.30	( 0.30)	0.99	49729.2	10100.00
TOTAL AREA (ACRES) =		49729.2						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 22384.23 Tc (MIN.) = 89.869  
EFFECTIVE AREA (ACRES) = 33703.31 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49729.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc (MIN.) = 89.87  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.734  
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 1.30 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 12.00 0.30 1.000 66  
AGRICULTURAL FAIR COVER  
"ORCHARDS" B 1.40 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 26.90 0.30 1.000 65  
RESIDENTIAL  
".4 DWELLING/ACRE" B 1.60 0.30 0.900 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
SUBAREA AREA (ACRES) = 43.40 SUBAREA RUNOFF (CFS) = 16.98  
EFFECTIVE AREA (ACRES) = 33746.71 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49772.6 PEAK FLOW RATE (CFS) = 22384.23  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc (MIN.) = 89.87

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.734  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
PUBLIC PARK B 0.90 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
SUBAREA AREA (ACRES) = 0.90 SUBAREA RUNOFF (CFS) = 0.39  
EFFECTIVE AREA (ACRES) = 33747.61 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49773.5 PEAK FLOW RATE (CFS) = 22384.23  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc (MIN.) = 89.87  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.734  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
RESIDENTIAL  
"11+ DWELLINGS/ACRE" B 0.10 0.30 0.200 56  
RESIDENTIAL  
".4 DWELLING/ACRE" B 1.40 0.30 0.900 56  
RESIDENTIAL  
".4 DWELLING/ACRE" B 1.00 0.30 0.900 56  
NATURAL FAIR COVER  
"GRASS" B 0.60 0.30 1.000 69  
NATURAL FAIR COVER  
"GRASS" B 0.10 0.30 1.000 69  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 9.00 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.974  
SUBAREA AREA (ACRES) = 12.20 SUBAREA RUNOFF (CFS) = 4.85  
EFFECTIVE AREA (ACRES) = 33759.81 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49785.7 PEAK FLOW RATE (CFS) = 22384.23  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc (MIN.) = 89.87  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.734  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.30 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 5.60 0.30 1.000 65  
NATURAL FAIR COVER

"CHAPARRAL,NARROWLEAF" B 0.10 0.30 1.000 72  
 NATURAL FAIR COVER  
 "CHAPARRAL,NARROWLEAF" B 2.90 0.30 1.000 72  
 NATURAL FAIR COVER  
 "CHAPARRAL,NARROWLEAF" B 0.70 0.30 1.000 72  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 4.21  
 EFFECTIVE AREA(ACRES) = 33770.61 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49796.5 PEAK FLOW RATE(CFS) = 22384.23  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 89.87  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.734  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.00 0.30 1.000 66  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.80 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.20 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 4.10 SUBAREA RUNOFF(CFS) = 1.60  
 EFFECTIVE AREA(ACRES) = 33774.71 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49800.6 PEAK FLOW RATE(CFS) = 22384.23  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12603.00 TO NODE 12604.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 310.00 DOWNSTREAM(FEET) = 307.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 459.69 CHANNEL SLOPE = 0.0065  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.09  
 CHANNEL FLOW THRU SUBAREA(CFS) = 22384.23  
 FLOW VELOCITY(FEET/SEC.) = 13.41 FLOW DEPTH(FEET) = 7.09  
 TRAVEL TIME(MIN.) = 0.57 Tc(MIN.) = 90.44  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12604.00 = 102017.99 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12604.00 TO NODE 12604.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 90.44  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.732  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.20 0.30 1.000 65  
 PUBLIC PARK B 0.10 0.30 0.850 56  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.90 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.40 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.991  
 SUBAREA AREA(ACRES) = 1.60 SUBAREA RUNOFF(CFS) = 0.63  
 EFFECTIVE AREA(ACRES) = 33776.31 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49802.2 PEAK FLOW RATE(CFS) = 22384.23  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12604.00 TO NODE 12605.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 307.00 DOWNSTREAM(FEET) = 305.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 427.54 CHANNEL SLOPE = 0.0047  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.80  
 CHANNEL FLOW THRU SUBAREA(CFS) = 22384.23  
 FLOW VELOCITY(FEET/SEC.) = 12.00 FLOW DEPTH(FEET) = 7.80  
 TRAVEL TIME(MIN.) = 0.59 Tc(MIN.) = 91.03  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12605.00 = 102445.53 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 91.03  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.730  
 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 0.10 0.30 0.900 56  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 1.30 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.90 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 0.50 0.30 1.000 79

PUBLIC PARK B 6.60 0.30 0.850 56  
PUBLIC PARK B 0.20 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891  
SUBAREA AREA(ACRES) = 10.60 SUBAREA RUNOFF(CFS) = 4.42  
EFFECTIVE AREA(ACRES) = 33786.91 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49812.8 PEAK FLOW RATE(CFS) = 22384.23  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 91.03  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.730  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 3.10 0.30 1.000 65  
RESIDENTIAL  
"5-7 DWELLINGS/ACRE" B 0.30 0.30 0.500 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969  
SUBAREA AREA(ACRES) = 4.80 SUBAREA RUNOFF(CFS) = 1.90  
EFFECTIVE AREA(ACRES) = 33791.71 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49817.6 PEAK FLOW RATE(CFS) = 22384.23  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56  
-----

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

ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.51  
CHANNEL FLOW THRU SUBAREA(CFS) = 22384.23  
FLOW VELOCITY(FEET/SEC.) = 14.80 FLOW DEPTH(FEET) = 6.51  
TRAVEL TIME(MIN.) = 2.43 Tc(MIN.) = 93.47  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F10EVRL.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:  
STREAM Q Tc Fp(Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(ACRES)	NODE
1	782.65	10.18	0.30( 0.24) 0.78	372.7	940.00
2	785.60	10.40	0.30( 0.24) 0.79	379.3	930.00
3	773.34	13.38	0.30( 0.25) 0.82	458.5	910.00
4	748.41	17.31	0.30( 0.25) 0.85	549.5	920.00
5	737.13	17.93	0.30( 0.25) 0.85	553.8	950.00
6	726.65	18.32	0.30( 0.25) 0.85	553.8	900.00
TOTAL AREA(ACRES) =				553.8	

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*  
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER  
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE  
1 11970.45 14.04 2.027 0.30( 0.29) 0.97 2756.1 800.00  
2 12600.14 17.56 1.754 0.30( 0.29) 0.97 3723.0 818.00  
3 12484.28 18.76 1.688 0.30( 0.29) 0.98 4037.1 810.00  
4 13521.41 23.87 1.459 0.30( 0.29) 0.98 5414.1 600.00  
5 16355.36 43.17 1.047 0.30( 0.30) 0.99 11232.9 40100.00  
6 17258.39 52.46 0.945 0.30( 0.30) 0.99 14010.6 11801.00  
7 18787.27 66.47 0.847 0.30( 0.30) 0.99 19005.9 11530.00  
8 19798.20 74.95 0.806 0.30( 0.30) 0.99 22894.0 11900.00  
9 21440.83 85.04 0.757 0.30( 0.30) 0.99 28704.6 11330.00  
10 22120.43 90.19 0.732 0.30( 0.30) 0.99 31973.6 11300.00  
11 22384.23 93.47 0.723 0.30( 0.30) 0.99 33791.7 10630.00  
12 22340.77 99.02 0.708 0.30( 0.30) 0.99 36381.6 12330.00  
13 22331.82 102.28 0.699 0.30( 0.30) 0.99 37981.3 12410.00  
14 22282.25 105.61 0.690 0.30( 0.30) 0.99 39524.0 11600.00  
15 22072.03 111.31 0.674 0.30( 0.30) 0.99 41758.4 11111.00  
16 21821.10 117.36 0.657 0.30( 0.30) 0.99 43692.2 12201.00  
17 21526.15 121.13 0.648 0.30( 0.30) 0.99 44640.0 10410.00  
18 21137.75 126.08 0.640 0.30( 0.30) 0.99 45780.5 12231.00  
19 20491.80 133.35 0.627 0.30( 0.30) 0.99 47192.0 10400.00  
20 20094.90 137.18 0.621 0.30( 0.30) 0.99 47782.2 10200.00  
21 19447.71 144.40 0.608 0.30( 0.30) 0.99 48812.8 10320.00  
22 18892.64 149.06 0.600 0.30( 0.30) 0.99 49038.2 10210.00  
23 18414.93 153.75 0.592 0.30( 0.30) 0.99 49200.6 12000.00  
24 15909.96 181.87 0.546 0.30( 0.30) 0.99 49817.6 10100.00  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*  
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER  
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE  
1 782.65 10.18 2.568 0.30( 0.24) 0.78 372.7 940.00  
2 785.60 10.40 2.537 0.30( 0.24) 0.79 379.3 930.00  
3 773.34 13.38 2.119 0.30( 0.25) 0.82 458.5 910.00  
4 748.41 17.31 1.768 0.30( 0.25) 0.85 549.5 920.00  
5 737.13 17.93 1.734 0.30( 0.25) 0.85 553.8 950.00  
6 726.65 18.32 1.713 0.30( 0.25) 0.85 553.8 900.00  
LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

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

1	12160.70	10.18	2.568	0.30	( 0.28)	0.94	2370.1	940.00
2	12253.44	10.40	2.537	0.30	( 0.28)	0.94	2420.3	930.00
3	12743.79	13.38	2.119	0.30	( 0.28)	0.94	3085.2	910.00
4	12739.60	14.04	2.027	0.30	( 0.28)	0.95	3229.9	800.00
5	13302.50	17.31	1.768	0.30	( 0.29)	0.96	4201.8	920.00
6	13343.89	17.56	1.754	0.30	( 0.29)	0.96	4274.3	818.00
7	13302.00	17.93	1.734	0.30	( 0.29)	0.96	4372.4	950.00
8	13254.02	18.32	1.713	0.30	( 0.29)	0.96	4474.1	900.00
9	13198.86	18.76	1.688	0.30	( 0.29)	0.96	4590.9	810.00
10	14121.74	23.87	1.459	0.30	( 0.29)	0.97	5967.9	600.00
11	16750.08	43.17	1.047	0.30	( 0.29)	0.98	11786.7	40100.00
12	17602.25	52.46	0.945	0.30	( 0.29)	0.98	14564.4	11801.00
13	19082.73	66.47	0.847	0.30	( 0.30)	0.99	19559.7	11530.00
14	20073.09	74.95	0.806	0.30	( 0.30)	0.99	23447.8	11900.00
15	21691.26	85.04	0.757	0.30	( 0.30)	0.99	29258.4	11330.00
16	22358.56	90.19	0.732	0.30	( 0.30)	0.99	32527.4	11300.00
17	22617.84	93.47	0.723	0.30	( 0.30)	0.99	34345.5	10630.00
18	22566.72	99.02	0.708	0.30	( 0.30)	0.99	36935.4	12330.00
19	22553.28	102.28	0.699	0.30	( 0.30)	0.99	38535.1	12410.00
20	22499.12	105.61	0.690	0.30	( 0.30)	0.99	40077.8	11600.00
21	22281.02	111.31	0.674	0.30	( 0.30)	0.99	42312.2	11111.00
22	22021.77	117.36	0.657	0.30	( 0.30)	0.99	44246.0	12201.00
23	21722.21	121.13	0.648	0.30	( 0.30)	0.99	45193.8	10410.00
24	21329.57	126.08	0.640	0.30	( 0.30)	0.99	46334.3	12231.00
25	20677.40	133.35	0.627	0.30	( 0.30)	0.99	47745.8	10400.00
26	20277.22	137.18	0.621	0.30	( 0.30)	0.99	48336.0	10200.00
27	19623.85	144.40	0.608	0.30	( 0.30)	0.99	49366.6	10320.00
28	19064.80	149.06	0.600	0.30	( 0.30)	0.99	49592.1	10210.00
29	18583.08	153.75	0.592	0.30	( 0.30)	0.99	49754.4	12000.00
30	16054.91	181.87	0.546	0.30	( 0.30)	0.99	50371.4	10100.00
TOTAL AREA (ACRES) =		50371.4						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 22617.84 Tc (MIN.) = 93.467  
EFFECTIVE AREA (ACRES) = 34345.52 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 50371.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 93.47

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.723

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.30	0.30	1.000	63
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	11.90	0.30	1.000	66
PUBLIC PARK	B	0.80	0.30	0.850	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED" B 1.50 0.30 1.000 79  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.953  
SUBAREA AREA (ACRES) = 16.00 SUBAREA RUNOFF (CFS) = 6.30  
EFFECTIVE AREA (ACRES) = 34361.52 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 50387.4 PEAK FLOW RATE (CFS) = 22617.84  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 93.47

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.723

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.40	0.30	0.100	56
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	8.20	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	3.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.60	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978

SUBAREA AREA (ACRES) = 16.60 SUBAREA RUNOFF (CFS) = 6.42

EFFECTIVE AREA (ACRES) = 34378.12 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 50404.0 PEAK FLOW RATE (CFS) = 22617.84

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 93.47

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.723

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA (ACRES) = 1.80 SUBAREA RUNOFF (CFS) = 0.69					
EFFECTIVE AREA (ACRES) = 34379.92 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 50405.8 PEAK FLOW RATE (CFS) = 22617.84					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 50405.8 TC (MIN.) = 93.47  
 EFFECTIVE AREA (ACRES) = 34379.92 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.990  
 PEAK FLOW RATE (CFS) = 22617.84

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12160.70	10.18	2.568	0.30 ( 0.28)	0.94	2404.5	940.00
2	12253.44	10.40	2.537	0.30 ( 0.28)	0.94	2454.7	930.00
3	12743.79	13.38	2.119	0.30 ( 0.28)	0.95	3119.6	910.00
4	12739.60	14.04	2.027	0.30 ( 0.28)	0.95	3264.3	800.00
5	13302.50	17.31	1.768	0.30 ( 0.29)	0.96	4236.2	920.00
6	13343.89	17.56	1.754	0.30 ( 0.29)	0.96	4308.7	818.00
7	13302.00	17.93	1.734	0.30 ( 0.29)	0.96	4406.8	950.00
8	13254.02	18.32	1.713	0.30 ( 0.29)	0.96	4508.5	900.00
9	13198.86	18.76	1.688	0.30 ( 0.29)	0.96	4625.3	810.00
10	14121.74	23.87	1.459	0.30 ( 0.29)	0.97	6002.3	600.00
11	16750.08	43.17	1.047	0.30 ( 0.29)	0.98	11821.1	40100.00
12	17602.25	52.46	0.945	0.30 ( 0.29)	0.98	14598.8	11801.00
13	19082.73	66.47	0.847	0.30 ( 0.30)	0.99	19594.1	11530.00
14	20073.09	74.95	0.806	0.30 ( 0.30)	0.99	23482.2	11900.00
15	21691.26	85.04	0.757	0.30 ( 0.30)	0.99	29292.8	11330.00
16	22358.56	90.19	0.732	0.30 ( 0.30)	0.99	32561.8	11300.00
17	22617.84	93.47	0.723	0.30 ( 0.30)	0.99	34379.9	10630.00
18	22566.72	99.02	0.708	0.30 ( 0.30)	0.99	36969.8	12330.00
19	22553.28	102.28	0.699	0.30 ( 0.30)	0.99	38569.5	12410.00
20	22499.12	105.61	0.690	0.30 ( 0.30)	0.99	40112.2	11600.00
21	22281.02	111.31	0.674	0.30 ( 0.30)	0.99	42346.6	11111.00
22	22021.77	117.36	0.657	0.30 ( 0.30)	0.99	44280.4	12201.00
23	21722.21	121.13	0.648	0.30 ( 0.30)	0.99	45228.2	10410.00
24	21329.57	126.08	0.640	0.30 ( 0.30)	0.99	46368.7	12231.00
25	20677.40	133.35	0.627	0.30 ( 0.30)	0.99	47780.2	10400.00
26	20277.22	137.18	0.621	0.30 ( 0.30)	0.99	48370.4	10200.00
27	19623.85	144.40	0.608	0.30 ( 0.30)	0.99	49401.0	10320.00
28	19064.80	149.06	0.600	0.30 ( 0.30)	0.99	49626.5	10210.00
29	18583.08	153.75	0.592	0.30 ( 0.30)	0.99	49788.8	12000.00
30	16054.91	181.87	0.546	0.30 ( 0.30)	0.99	50405.8	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S27- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV27.DAT  
TIME/DATE OF STUDY: 15:56 04/01/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.879
- 2) 10.00; 2.574
- 3) 15.00; 1.886
- 4) 20.00; 1.614
- 5) 25.00; 1.407
- 6) 30.00; 1.261
- 7) 40.00; 1.080
- 8) 50.00; 0.962
- 9) 60.00; 0.875
- 10) 90.00; 0.728
- 11) 120.00; 0.645
- 12) 180.00; 0.542
- 13) 360.00; 0.402
- 14) 1200.00; 0.177

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

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FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV26.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12743.79	13.38	0.30 ( 0.28)	0.95	3119.6	910.00
2	13343.89	17.56	0.30 ( 0.29)	0.96	4308.7	818.00
3	14121.74	23.87	0.30 ( 0.29)	0.97	6002.3	600.00
4	16750.08	43.17	0.30 ( 0.29)	0.98	11821.1	40100.00
5	17602.25	52.46	0.30 ( 0.29)	0.98	14598.8	11801.00
6	19082.73	66.47	0.30 ( 0.30)	0.99	19594.1	11530.00
7	20073.09	74.95	0.30 ( 0.30)	0.99	23482.2	11900.00
8	21691.26	85.04	0.30 ( 0.30)	0.99	29292.8	11330.00
9	22617.84	93.47	0.30 ( 0.30)	0.99	34379.9	10630.00
10	22566.72	99.02	0.30 ( 0.30)	0.99	36969.8	12330.00
11	22499.12	105.61	0.30 ( 0.30)	0.99	40112.2	11600.00
12	22281.02	111.31	0.30 ( 0.30)	0.99	42346.6	11111.00
13	22021.77	117.36	0.30 ( 0.30)	0.99	44280.4	12201.00
14	21329.57	126.08	0.30 ( 0.30)	0.99	46368.7	12231.00
15	20677.40	133.35	0.30 ( 0.30)	0.99	47780.2	10400.00
16	20277.22	137.18	0.30 ( 0.30)	0.99	48370.4	10200.00
17	19623.85	144.40	0.30 ( 0.30)	0.99	49401.0	10320.00
18	19064.80	149.06	0.30 ( 0.30)	0.99	49626.5	10210.00
19	18583.08	153.75	0.30 ( 0.30)	0.99	49788.8	12000.00
20	16054.91	181.87	0.30 ( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =						50405.8

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12743.79	13.38	0.30 ( 0.28)	0.95	3119.6	910.00
2	13343.89	17.56	0.30 ( 0.29)	0.96	4308.7	818.00
3	14121.74	23.87	0.30 ( 0.29)	0.97	6002.3	600.00
4	16750.08	43.17	0.30 ( 0.29)	0.98	11821.1	40100.00
5	17602.25	52.46	0.30 ( 0.29)	0.98	14598.8	11801.00
6	19082.73	66.47	0.30 ( 0.30)	0.99	19594.1	11530.00
7	20073.09	74.95	0.30 ( 0.30)	0.99	23482.2	11900.00
8	21691.26	85.04	0.30 ( 0.30)	0.99	29292.8	11330.00
9	22617.84	93.47	0.30 ( 0.30)	0.99	34379.9	10630.00
10	22566.72	99.02	0.30 ( 0.30)	0.99	36969.8	12330.00
11	22499.12	105.61	0.30 ( 0.30)	0.99	40112.2	11600.00
12	22281.02	111.31	0.30 ( 0.30)	0.99	42346.6	11111.00
13	22021.77	117.36	0.30 ( 0.30)	0.99	44280.4	12201.00

14	21329.57	126.08	0.30	( 0.30)	0.99	46368.7	12231.00
15	20677.40	133.35	0.30	( 0.30)	0.99	47780.2	10400.00
16	20277.22	137.18	0.30	( 0.30)	0.99	48370.4	10200.00
17	19623.85	144.40	0.30	( 0.30)	0.99	49401.0	10320.00
18	19064.80	149.06	0.30	( 0.30)	0.99	49626.5	10210.00
19	18583.08	153.75	0.30	( 0.30)	0.99	49788.8	12000.00
20	16054.91	181.87	0.30	( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =			50405.8				

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FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 286.00 DOWNSTREAM(FEET) = 276.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.19 CHANNEL SLOPE = 0.0079  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.74

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.714

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	7.55	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22620.17

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.36

AVERAGE FLOW DEPTH(FEET) = 6.74 TRAVEL TIME(MIN.) = 1.46

Tc(MIN.) = 94.93

SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 4.65

EFFECTIVE AREA(ACRES) = 34387.47 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50413.3 PEAK FLOW RATE(CFS) = 22617.84

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 6.74 FLOW VELOCITY(FEET/SEC.) = 14.36

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 105865.19 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 94.93

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.714

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56

NATURAL FAIR COVER

"WOODLAND,GRASS" B 3.40 0.30 1.000 65

RESIDENTIAL

"5-7 DWELLINGS/ACRE"	B	0.40	0.30	0.500	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	23.00	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
NATURAL FAIR COVER					
"GRASS"	B	0.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.989

SUBAREA AREA(ACRES) = 31.40 SUBAREA RUNOFF(CFS) = 11.80

EFFECTIVE AREA(ACRES) = 34418.87 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50444.7 PEAK FLOW RATE(CFS) = 22617.84

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 94.93

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.714

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.70	0.30	1.000	65

NATURAL FAIR COVER

"WOODLAND,GRASS" B 1.70 0.30 1.000 65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 0.63

EFFECTIVE AREA(ACRES) = 34420.57 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50446.4 PEAK FLOW RATE(CFS) = 22617.84

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 276.00 DOWNSTREAM(FEET) = 275.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 147.65 CHANNEL SLOPE = 0.0068

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.06

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.714

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	1.49	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22618.15

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.62

AVERAGE FLOW DEPTH(FEET) = 7.06 TRAVEL TIME(MIN.) = 0.18

Tc(MIN.) = 95.11

SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 0.62



EFFECTIVE AREA (ACRES) = 34422.05 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA (ACRES) = 50447.9 PEAK FLOW RATE (CFS) = 22617.84  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 7.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 7.06 FLOW VELOCITY (FEET/SEC.) = 13.62  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 95.11  
 RAINFALL INTENSITY (INCH/HR) = 0.71  
 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99  
 EFFECTIVE STREAM AREA (ACRES) = 34422.05  
 TOTAL STREAM AREA (ACRES) = 50447.93  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 22617.84

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12710.00 TO NODE 12711.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 943.56  
 ELEVATION DATA: UPSTREAM (FEET) = 940.78 DOWNSTREAM (FEET) = 657.79

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.910  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.036  
 SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"GRASS"	B	6.56	0.30	1.000	69	13.91

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF (CFS) = 10.25  
 TOTAL AREA (ACRES) = 6.56 PEAK FLOW RATE (CFS) = 10.25

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12711.00 TO NODE 12712.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 657.79 DOWNSTREAM (FEET) = 585.63  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 766.00 CHANNEL SLOPE = 0.0942

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.58  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.797

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	26.94	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 28.46  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.70  
 AVERAGE FLOW DEPTH (FEET) = 0.55 TRAVEL TIME (MIN.) = 2.72  
 Tc (MIN.) = 16.63

SUBAREA AREA (ACRES) = 26.94 SUBAREA RUNOFF (CFS) = 36.31  
 EFFECTIVE AREA (ACRES) = 33.50 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 33.5 PEAK FLOW RATE (CFS) = 45.15  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.71 FLOW VELOCITY (FEET/SEC.) = 5.53  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12712.00 = 1709.56 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12712.00 TO NODE 12713.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 585.63 DOWNSTREAM (FEET) = 463.75  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1025.79 CHANNEL SLOPE = 0.1188  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.75  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.652

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	14.73	0.30	0.100	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 55.90  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.40  
 AVERAGE FLOW DEPTH (FEET) = 0.76 TRAVEL TIME (MIN.) = 2.67  
 Tc (MIN.) = 19.30

SUBAREA AREA (ACRES) = 14.73 SUBAREA RUNOFF (CFS) = 21.50  
 EFFECTIVE AREA (ACRES) = 48.23 AREA-AVERAGED Fm (INCH/HR) = 0.22  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 48.2 PEAK FLOW RATE (CFS) = 62.27  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.81 FLOW VELOCITY(FEET/SEC.) = 6.65  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12713.00 = 2735.35 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12713.00 TO NODE 12714.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 463.75 DOWNSTREAM(FEET) = 360.30  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1148.54 CHANNEL SLOPE = 0.0901  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.33  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.541

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	105.64	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 134.08

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.78

AVERAGE FLOW DEPTH(FEET) = 1.36 TRAVEL TIME(MIN.) = 2.46

Tc(MIN.) = 21.76

SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 143.68

EFFECTIVE AREA(ACRES) = 153.87 AREA-AVERAGED Fm(INCH/HR) = 0.09

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

TOTAL AREA(ACRES) = 153.9 PEAK FLOW RATE(CFS) = 201.14

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 8.84

LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12714.00 = 3883.89 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12714.00 TO NODE 12720.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 360.30 DOWNSTREAM(FEET) = 275.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1314.99 CHANNEL SLOPE = 0.0649  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.25  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.437

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	127.13	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 281.64

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.69

AVERAGE FLOW DEPTH(FEET) = 2.24 TRAVEL TIME(MIN.) = 2.52

Tc(MIN.) = 24.28

SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 160.97

EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.21

TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 347.65

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.51 FLOW VELOCITY(FEET/SEC.) = 9.24

LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 24.28

RAINFALL INTENSITY(INCH/HR) = 1.44

AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.21

EFFECTIVE STREAM AREA(ACRES) = 281.00

TOTAL STREAM AREA(ACRES) = 281.00

PEAK FLOW RATE(CFS) AT CONFLUENCE = 347.65

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12743.79	15.39	1.865	0.30( 0.28)	0.94	3161.8	910.00
1	13343.89	19.54	1.639	0.30( 0.29)	0.96	4350.8	818.00
1	14121.74	25.81	1.383	0.30( 0.29)	0.97	6044.4	600.00
1	16750.08	44.99	1.021	0.30( 0.29)	0.98	11863.2	40100.00
1	17602.25	54.25	0.925	0.30( 0.29)	0.98	14641.0	11801.00
1	19082.73	68.22	0.835	0.30( 0.30)	0.98	19636.2	11530.00
1	20073.09	76.67	0.793	0.30( 0.30)	0.99	23524.3	11900.00
1	21691.26	86.70	0.744	0.30( 0.30)	0.99	29334.9	11330.00
1	22617.84	95.11	0.714	0.30( 0.30)	0.99	34422.1	10630.00
1	22566.72	100.67	0.698	0.30( 0.30)	0.99	37011.9	12330.00
1	22499.12	107.26	0.680	0.30( 0.30)	0.99	40154.4	11600.00
1	22281.02	112.97	0.664	0.30( 0.30)	0.99	42388.7	11111.00
1	22021.77	119.02	0.648	0.30( 0.30)	0.99	44322.5	12201.00
1	21329.57	127.76	0.632	0.30( 0.30)	0.99	46410.8	12231.00
1	20677.40	135.05	0.619	0.30( 0.30)	0.99	47822.3	10400.00
1	20277.22	138.89	0.613	0.30( 0.30)	0.99	48412.6	10200.00
1	19623.85	146.13	0.600	0.30( 0.30)	0.99	49443.1	10320.00
1	19064.80	150.80	0.592	0.30( 0.30)	0.99	49668.6	10210.00
1	18583.08	155.51	0.584	0.30( 0.30)	0.99	49830.9	12000.00
1	16054.91	183.72	0.539	0.30( 0.30)	0.99	50447.9	10100.00
2	347.65	24.28	1.437	0.30( 0.06)	0.21	281.0	12710.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13032.76	15.39	1.865	0.30 ( 0.27)	0.90	3339.9	910.00
2	13664.81	19.54	1.639	0.30 ( 0.28)	0.92	4576.9	818.00
3	14279.77	24.28	1.437	0.30 ( 0.28)	0.93	5912.6	12710.00
4	14455.88	25.81	1.383	0.30 ( 0.28)	0.93	6325.4	600.00
5	16992.59	44.99	1.021	0.30 ( 0.29)	0.96	12144.2	40100.00
6	17820.46	54.25	0.925	0.30 ( 0.29)	0.97	14922.0	11801.00
7	19278.11	68.22	0.835	0.30 ( 0.29)	0.97	19917.2	11530.00
8	20258.00	76.67	0.793	0.30 ( 0.29)	0.98	23805.3	11900.00
9	21863.72	86.70	0.744	0.30 ( 0.29)	0.98	29615.9	11330.00
10	22782.65	95.11	0.714	0.30 ( 0.29)	0.98	34703.1	10630.00
11	22727.64	100.67	0.698	0.30 ( 0.30)	0.98	37292.9	12330.00
12	22655.43	107.26	0.680	0.30 ( 0.30)	0.98	40435.4	11600.00
13	22433.34	112.97	0.664	0.30 ( 0.30)	0.98	42669.7	11111.00
14	22169.84	119.02	0.648	0.30 ( 0.30)	0.98	44603.5	12201.00
15	21473.60	127.76	0.632	0.30 ( 0.30)	0.98	46691.8	12231.00
16	20818.26	135.05	0.619	0.30 ( 0.30)	0.98	48103.3	10400.00
17	20416.41	138.89	0.613	0.30 ( 0.30)	0.98	48693.6	10200.00
18	19759.90	146.13	0.600	0.30 ( 0.30)	0.98	49724.1	10320.00
19	19198.82	150.80	0.592	0.30 ( 0.30)	0.98	49949.6	10210.00
20	18715.06	155.51	0.584	0.30 ( 0.30)	0.98	50111.9	12000.00
21	16175.53	183.72	0.539	0.30 ( 0.30)	0.98	50728.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22782.65 Tc(MIN.) = 95.11  
 EFFECTIVE AREA(ACRES) = 34703.05 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50728.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

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FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 95.11

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.714

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.20	0.30	0.500	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.80	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.964

SUBAREA AREA(ACRES) = 4.50 SUBAREA RUNOFF(CFS) = 1.72

EFFECTIVE AREA(ACRES) = 34707.55 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50733.4 PEAK FLOW RATE(CFS) = 22782.65

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.22

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.705

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	62.15	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22801.52

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.39

AVERAGE FLOW DEPTH(FEET) = 7.21 TRAVEL TIME(MIN.) = 3.32

Tc(MIN.) = 98.43

SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 37.74

EFFECTIVE AREA(ACRES) = 34769.70 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50795.6 PEAK FLOW RATE(CFS) = 22782.65

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 7.21 FLOW VELOCITY(FEET/SEC.) = 13.38

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 98.43

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.705

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.10	0.30	0.100	56
NATURAL FAIR COVER					
"MEADOWS"	B	0.30	0.30	1.000	70
NATURAL FAIR COVER					
"OPEN BRUSH"	B	17.90	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
PUBLIC PARK	B	0.30	0.30	0.850	56
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.993

SUBAREA AREA(ACRES) = 19.50 SUBAREA RUNOFF(CFS) = 7.14

EFFECTIVE AREA(ACRES) = 34789.20 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 50815.1 PEAK FLOW RATE (CFS) = 22782.65  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 98.43

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.705

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.30	0.30	0.900	56
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960

SUBAREA AREA (ACRES) = 3.50 SUBAREA RUNOFF (CFS) = 1.31

EFFECTIVE AREA (ACRES) = 34792.70 AREA-AVERAGED Fm (INCH/HR) = 0.29

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

TOTAL AREA (ACRES) = 50818.6 PEAK FLOW RATE (CFS) = 22782.65

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3D10EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	562.14	20.86	0.30 (0.14)	0.48	353.8	413.00
2	563.89	27.75	0.30 (0.14)	0.48	431.2	430.00
3	541.43	29.73	0.30 (0.14)	0.48	439.5	400.00
TOTAL AREA (ACRES) =						439.5

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	13032.76	19.42	1.646	0.30 (0.27)	0.89	3429.6	910.00

2	13664.81	23.50	1.469	0.30 (0.27)	0.91	4666.6	818.00
3	14279.77	28.18	1.314	0.30 (0.28)	0.92	6002.2	12710.00
4	14455.88	29.69	1.270	0.30 (0.28)	0.92	6415.0	600.00
5	16992.59	48.66	0.978	0.30 (0.29)	0.96	12233.9	40100.00
6	17820.46	57.86	0.894	0.30 (0.29)	0.96	15011.6	11801.00
7	19278.11	71.73	0.818	0.30 (0.29)	0.97	20006.9	11530.00
8	20258.00	80.13	0.776	0.30 (0.29)	0.98	23895.0	11900.00
9	21863.72	90.07	0.728	0.30 (0.29)	0.98	29705.5	11330.00
10	22782.65	98.43	0.705	0.30 (0.29)	0.98	34792.7	10630.00
11	22727.64	104.00	0.689	0.30 (0.29)	0.98	37382.6	12330.00
12	22655.43	110.59	0.671	0.30 (0.29)	0.98	40525.0	11600.00
13	22433.34	116.31	0.655	0.30 (0.29)	0.98	42759.3	11111.00
14	22169.84	122.38	0.641	0.30 (0.29)	0.98	44693.2	12201.00
15	21473.60	131.15	0.626	0.30 (0.29)	0.98	46781.4	12231.00
16	20818.26	138.48	0.613	0.30 (0.29)	0.98	48193.0	10400.00
17	20416.41	142.34	0.607	0.30 (0.29)	0.98	48783.2	10200.00
18	19759.90	149.62	0.594	0.30 (0.29)	0.98	49813.8	10320.00
19	19198.82	154.33	0.586	0.30 (0.29)	0.98	50039.2	10210.00
20	18715.06	159.06	0.578	0.30 (0.30)	0.98	50201.6	12000.00
21	16175.53	187.46	0.536	0.30 (0.30)	0.98	50818.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	562.14	20.86	1.578	0.30 (0.14)	0.48	353.8	413.00
2	563.89	27.75	1.327	0.30 (0.14)	0.48	431.2	430.00
3	541.43	29.73	1.269	0.30 (0.14)	0.48	439.5	400.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 12720.50 = 11352.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	13580.55	19.42	1.646	0.30 (0.26)	0.85	3758.9	910.00
2	13818.49	20.86	1.578	0.30 (0.26)	0.86	4221.0	413.00
3	14227.62	23.50	1.469	0.30 (0.26)	0.88	5050.0	818.00
4	14787.29	27.75	1.327	0.30 (0.27)	0.89	6310.9	430.00
5	14838.79	28.18	1.314	0.30 (0.27)	0.89	6435.2	12710.00
6	14997.73	29.69	1.270	0.30 (0.27)	0.90	6854.4	600.00
7	15002.24	29.73	1.269	0.30 (0.27)	0.90	6865.9	400.00
8	17393.96	48.66	0.978	0.30 (0.28)	0.94	12673.4	40100.00
9	18181.34	57.86	0.894	0.30 (0.28)	0.95	15451.1	11801.00
10	19602.38	71.73	0.818	0.30 (0.29)	0.96	20446.4	11530.00
11	20562.49	80.13	0.776	0.30 (0.29)	0.97	24334.5	11900.00
12	22144.83	90.07	0.728	0.30 (0.29)	0.97	30145.0	11330.00
13	23052.63	98.43	0.705	0.30 (0.29)	0.98	35232.2	10630.00
14	22990.22	104.00	0.689	0.30 (0.29)	0.98	37822.1	12330.00
15	22909.23	110.59	0.671	0.30 (0.29)	0.98	40964.5	11600.00
16	22679.52	116.31	0.655	0.30 (0.29)	0.98	43198.8	11111.00
17	22409.15	122.38	0.641	0.30 (0.29)	0.98	45132.7	12201.00
18	21705.66	131.15	0.626	0.30 (0.29)	0.98	47220.9	12231.00
19	21044.27	138.48	0.613	0.30 (0.29)	0.98	48632.5	10400.00
20	20639.23	142.34	0.607	0.30 (0.29)	0.98	49222.7	10200.00
21	19976.71	149.62	0.594	0.30 (0.29)	0.98	50253.3	10320.00
22	19411.74	154.33	0.586	0.30 (0.29)	0.98	50478.7	10210.00
23	18924.07	159.06	0.578	0.30 (0.29)	0.98	50641.1	12000.00
24	16364.45	187.46	0.536	0.30 (0.29)	0.98	51258.1	10100.00

TOTAL AREA (ACRES) = 51258.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23052.63 Tc(MIN.) = 98.433
EFFECTIVE AREA(ACRES) = 35232.20 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 51258.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 2 <<<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 256.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 438.77 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.99
CHANNEL FLOW THRU SUBAREA(CFS) = 23052.63
FLOW VELOCITY(FEET/SEC.) = 12.02 FLOW DEPTH(FEET) = 7.99
TRAVEL TIME(MIN.) = 0.61 Tc(MIN.) = 99.04
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 FEET.

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FLOW PROCESS FROM NODE 12721.00 TO NODE 12722.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 256.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 830.42 CHANNEL SLOPE = 0.0012
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 11.64
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.698
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 11.24 0.30 0.100 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23056.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.67
AVERAGE FLOW DEPTH(FEET) = 11.64 TRAVEL TIME(MIN.) = 1.80
Tc(MIN.) = 100.85
SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 6.76
EFFECTIVE AREA(ACRES) = 35243.44 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51269.3 PEAK FLOW RATE(CFS) = 23052.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 11.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.64 FLOW VELOCITY(FEET/SEC.) = 7.67
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 FEET.

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FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 100.85
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.698
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN" B 2.10 0.30 1.000 86
NATURAL FAIR COVER
"GRASS" B 0.10 0.30 1.000 69
NATURAL FAIR COVER
"MEADOWS" B 3.60 0.30 1.000 70
NATURAL FAIR COVER
"OPEN BRUSH" B 4.10 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 3.55
EFFECTIVE AREA(ACRES) = 35253.34 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51279.2 PEAK FLOW RATE(CFS) = 23052.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 100.85
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.698
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 0.60 0.30 0.900 56
NATURAL FAIR COVER
"WOODLAND,GRASS" B 1.90 0.30 1.000 65
NATURAL FAIR COVER
"WOODLAND,GRASS" B 0.10 0.30 1.000 65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977
SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 0.95
EFFECTIVE AREA(ACRES) = 35255.94 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51281.8 PEAK FLOW RATE(CFS) = 23052.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10
CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.95
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.696

Table with 6 columns: DEVELOPMENT TYPE/LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include COMMERCIAL, NATURAL FAIR COVER "GRASS", and "WOODLAND, GRASS".

SUBAREA LOSS RATE DATA(AMC II):
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.925
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23056.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.10
AVERAGE FLOW DEPTH(FEET) = 7.95 TRAVEL TIME (MIN.) = 0.86
Tc (MIN.) = 101.70
SUBAREA AREA (ACRES) = 17.90 SUBAREA RUNOFF (CFS) = 6.74
EFFECTIVE AREA (ACRES) = 35273.84 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA (ACRES) = 51299.7 PEAK FLOW RATE (CFS) = 23052.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 7.95 FLOW VELOCITY(FEET/SEC.) = 12.10
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

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FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 101.70
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.696
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 4.70 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 6.70 0.30 1.000 66

NATURAL FAIR COVER
"OPEN BRUSH" B 12.00 0.30 1.000 66
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.80 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 20.20 0.30 1.000 63
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 44.40 SUBAREA RUNOFF (CFS) = 15.81
EFFECTIVE AREA (ACRES) = 35318.24 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA (ACRES) = 51344.1 PEAK FLOW RATE (CFS) = 23052.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION (MIN.) = 101.70
RAINFALL INTENSITY (INCH/HR) = 0.70
AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98
EFFECTIVE STREAM AREA (ACRES) = 35318.24
TOTAL STREAM AREA (ACRES) = 51344.12
PEAK FLOW RATE (CFS) AT CONFLUENCE = 23052.63

\*\*\*\*\*
FLOW PROCESS FROM NODE 12730.00 TO NODE 12731.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.823
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.048

SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 6.33 0.30 1.000 63 13.82
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 9.96
TOTAL AREA (ACRES) = 6.33 PEAK FLOW RATE (CFS) = 9.96

\*\*\*\*\*
FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.73  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.750

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	34.62	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36.78  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.41  
AVERAGE FLOW DEPTH(FEET) = 0.73 TRAVEL TIME(MIN.) = 3.67  
Tc(MIN.) = 17.49  
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 53.60  
EFFECTIVE AREA(ACRES) = 40.95 AREA-AVERAGED Fm(INCH/HR) = 0.07  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.24  
TOTAL AREA(ACRES) = 40.9 PEAK FLOW RATE(CFS) = 61.87  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.98 FLOW VELOCITY(FEET/SEC.) = 5.27  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

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FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.37

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.586

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	59.52	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 103.58  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.05  
AVERAGE FLOW DEPTH(FEET) = 1.35 TRAVEL TIME(MIN.) = 3.18  
Tc(MIN.) = 20.68  
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 83.35  
EFFECTIVE AREA(ACRES) = 100.47 AREA-AVERAGED Fm(INCH/HR) = 0.05  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.16  
TOTAL AREA(ACRES) = 100.5 PEAK FLOW RATE(CFS) = 139.16  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.59 FLOW VELOCITY(FEET/SEC.) = 6.64  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12733.00 = 2689.86 FEET.

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FLOW PROCESS FROM NODE 12733.00 TO NODE 12734.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 431.00 DOWNSTREAM(FEET) = 367.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1654.48 CHANNEL SLOPE = 0.0386  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.04

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.406

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	64.05	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 178.85  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.34  
AVERAGE FLOW DEPTH(FEET) = 2.01 TRAVEL TIME(MIN.) = 4.35  
Tc(MIN.) = 25.03  
SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 79.33  
EFFECTIVE AREA(ACRES) = 164.52 AREA-AVERAGED Fm(INCH/HR) = 0.04  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
TOTAL AREA(ACRES) = 164.5 PEAK FLOW RATE(CFS) = 202.24  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.15 FLOW VELOCITY(FEET/SEC.) = 6.56  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12734.00 = 4344.34 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12734.00 TO NODE 12740.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 367.11 DOWNSTREAM(FEET) = 252.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1880.98 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.98

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.290

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	26.02	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 217.00  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.89

AVERAGE FLOW DEPTH (FEET) = 1.97 TRAVEL TIME (MIN.) = 3.98  
 Tc (MIN.) = 29.00  
 SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 29.51  
 EFFECTIVE AREA (ACRES) = 190.54 AREA-AVERAGED Fm (INCH/HR) = 0.04  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
 TOTAL AREA (ACRES) = 190.5 PEAK FLOW RATE (CFS) = 214.56  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.96 FLOW VELOCITY (FEET/SEC.) = 7.88  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 29.00  
 RAINFALL INTENSITY (INCH/HR) = 1.29  
 AREA-AVERAGED Fm (INCH/HR) = 0.04  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.13  
 EFFECTIVE STREAM AREA (ACRES) = 190.54  
 TOTAL STREAM AREA (ACRES) = 190.54  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 214.56

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13580.55	23.32	1.477	0.30 ( 0.26)	0.85	3844.9	910.00
1	13818.49	24.74	1.418	0.30 ( 0.26)	0.86	4307.0	413.00
1	14227.62	27.33	1.339	0.30 ( 0.26)	0.88	5136.0	818.00
1	14787.29	31.54	1.233	0.30 ( 0.27)	0.89	6397.0	430.00
1	14838.79	31.97	1.225	0.30 ( 0.27)	0.89	6521.3	12710.00
1	14997.73	33.47	1.198	0.30 ( 0.27)	0.90	6940.4	600.00
1	15002.24	33.50	1.198	0.30 ( 0.27)	0.90	6951.9	400.00
1	17393.96	52.25	0.942	0.30 ( 0.28)	0.94	12759.4	40100.00
1	18181.34	61.40	0.868	0.30 ( 0.28)	0.95	15537.2	11801.00
1	19602.38	75.18	0.801	0.30 ( 0.29)	0.96	20532.4	11530.00
1	20562.49	83.52	0.760	0.30 ( 0.29)	0.97	24420.5	11900.00
1	22144.83	93.39	0.719	0.30 ( 0.29)	0.97	30231.1	11330.00
1	23052.63	101.70	0.696	0.30 ( 0.29)	0.98	35318.2	10630.00
1	22990.22	107.27	0.680	0.30 ( 0.29)	0.98	37908.1	12330.00
1	22909.23	113.87	0.662	0.30 ( 0.29)	0.98	41050.6	11600.00
1	22679.52	119.60	0.646	0.30 ( 0.29)	0.98	43284.9	11111.00
1	22409.15	125.68	0.635	0.30 ( 0.29)	0.98	45218.7	12201.00
1	21705.66	134.49	0.620	0.30 ( 0.29)	0.98	47307.0	12231.00
1	21044.27	141.85	0.607	0.30 ( 0.29)	0.98	48718.5	10400.00
1	20639.23	145.73	0.601	0.30 ( 0.29)	0.98	49308.7	10200.00
1	19976.71	153.05	0.588	0.30 ( 0.29)	0.98	50339.3	10320.00
1	19411.74	157.79	0.580	0.30 ( 0.29)	0.98	50564.8	10210.00
1	18924.07	162.55	0.572	0.30 ( 0.29)	0.98	50727.1	12000.00
1	16364.45	191.12	0.533	0.30 ( 0.29)	0.98	51344.1	10100.00

2 214.56 29.00 1.290 0.30 ( 0.04) 0.13 190.5 12730.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13778.78	23.32	1.477	0.30 ( 0.25)	0.83	3998.2	910.00
2	14020.19	24.74	1.418	0.30 ( 0.25)	0.83	4469.5	413.00
3	14437.72	27.33	1.339	0.30 ( 0.26)	0.85	5315.6	818.00
4	14663.91	29.00	1.290	0.30 ( 0.26)	0.86	5826.1	12730.00
5	14992.06	31.54	1.233	0.30 ( 0.26)	0.87	6587.5	430.00
6	15042.25	31.97	1.225	0.30 ( 0.26)	0.87	6711.8	12710.00
7	15196.53	33.47	1.198	0.30 ( 0.26)	0.88	7131.0	600.00
8	15200.93	33.50	1.198	0.30 ( 0.26)	0.88	7142.4	400.00
9	17548.89	52.25	0.942	0.30 ( 0.28)	0.93	12950.0	40100.00
10	18323.53	61.40	0.868	0.30 ( 0.28)	0.94	15727.7	11801.00
11	19732.98	75.18	0.801	0.30 ( 0.29)	0.95	20723.0	11530.00
12	20686.09	83.52	0.760	0.30 ( 0.29)	0.96	24611.1	11900.00
13	22261.38	93.39	0.719	0.30 ( 0.29)	0.97	30421.6	11330.00
14	23165.24	101.70	0.696	0.30 ( 0.29)	0.97	35508.8	10630.00
15	23100.18	107.27	0.680	0.30 ( 0.29)	0.97	38098.6	12330.00
16	23016.07	113.87	0.662	0.30 ( 0.29)	0.97	41241.1	11600.00
17	22783.64	119.60	0.646	0.30 ( 0.29)	0.97	43475.4	11111.00
18	22511.41	125.68	0.635	0.30 ( 0.29)	0.97	45409.3	12201.00
19	21805.32	134.49	0.620	0.30 ( 0.29)	0.97	47497.5	12231.00
20	21141.76	141.85	0.607	0.30 ( 0.29)	0.97	48909.1	10400.00
21	20735.58	145.73	0.601	0.30 ( 0.29)	0.98	49499.3	10200.00
22	20070.91	153.05	0.588	0.30 ( 0.29)	0.98	50529.8	10320.00
23	19504.54	157.79	0.580	0.30 ( 0.29)	0.98	50755.3	10210.00
24	19015.46	162.55	0.572	0.30 ( 0.29)	0.98	50917.7	12000.00
25	16449.23	191.12	0.533	0.30 ( 0.29)	0.98	51534.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23165.24 Tc (MIN.) = 101.70  
 EFFECTIVE AREA (ACRES) = 35508.78 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 51534.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12741.00 IS CODE = 56

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

=====  
 ELEVATION DATA: UPSTREAM (FEET) = 252.10 DOWNSTREAM (FEET) = 247.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 401.47 CHANNEL SLOPE = 0.0127  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.97  
 CHANNEL FLOW THRU SUBAREA (CFS) = 23165.24  
 FLOW VELOCITY (FEET/SEC.) = 16.88 FLOW DEPTH (FEET) = 5.97  
 TRAVEL TIME (MIN.) = 0.40 Tc (MIN.) = 102.10  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*



FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 102.10

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.695

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.10	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	7.50	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.90	0.30	1.000	66
PUBLIC PARK	B	1.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.40	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	0.50	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.833

SUBAREA AREA(ACRES) = 13.30 SUBAREA RUNOFF(CFS) = 5.32

EFFECTIVE AREA(ACRES) = 35522.08 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 51548.0 PEAK FLOW RATE(CFS) = 23165.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 102.10

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.695

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 0.32

EFFECTIVE AREA(ACRES) = 35522.98 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 51548.9 PEAK FLOW RATE(CFS) = 23165.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: 3C10EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	921.98	18.67	0.30( 0.14)	0.46	635.1	300.00
2	942.95	24.10	0.30( 0.14)	0.47	773.8	327.00

3	926.97	25.16	0.30( 0.14)	0.48	786.6	350.00
4	906.98	26.48	0.30( 0.14)	0.48	799.6	320.00
5	847.47	30.52	0.30( 0.15)	0.49	825.6	306.00
6	760.66	39.44	0.30( 0.15)	0.50	870.6	390.00
TOTAL AREA(ACRES) =					870.6	

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13778.78	23.79	1.457	0.30( 0.25)	0.83	4012.4	910.00
2	14020.19	25.21	1.401	0.30( 0.25)	0.83	4483.7	413.00
3	14437.72	27.80	1.325	0.30( 0.26)	0.85	5329.8	818.00
4	14663.91	29.47	1.277	0.30( 0.26)	0.86	5840.3	12730.00
5	14992.06	32.00	1.225	0.30( 0.26)	0.87	6601.7	430.00
6	15042.25	32.43	1.217	0.30( 0.26)	0.87	6726.0	12710.00
7	15196.53	33.92	1.190	0.30( 0.26)	0.88	7145.2	600.00
8	15200.93	33.96	1.189	0.30( 0.26)	0.88	7156.6	400.00
9	17548.89	52.69	0.939	0.30( 0.28)	0.93	12964.2	40100.00
10	18323.53	61.83	0.866	0.30( 0.28)	0.94	15741.9	11801.00
11	19732.98	75.60	0.799	0.30( 0.29)	0.95	20737.2	11530.00
12	20686.09	83.93	0.758	0.30( 0.29)	0.96	24625.3	11900.00
13	22261.38	93.79	0.718	0.30( 0.29)	0.97	30435.8	11330.00
14	23165.24	102.10	0.695	0.30( 0.29)	0.97	35523.0	10630.00
15	23100.18	107.67	0.679	0.30( 0.29)	0.97	38112.8	12330.00
16	23016.07	114.26	0.661	0.30( 0.29)	0.97	41255.3	11600.00
17	22783.64	120.00	0.645	0.30( 0.29)	0.97	43489.6	11111.00
18	22511.41	126.08	0.635	0.30( 0.29)	0.97	45423.5	12201.00
19	21805.32	134.89	0.619	0.30( 0.29)	0.97	47511.7	12231.00
20	21141.76	142.26	0.607	0.30( 0.29)	0.97	48923.3	10400.00
21	20735.58	146.14	0.600	0.30( 0.29)	0.98	49513.5	10200.00
22	20070.91	153.46	0.588	0.30( 0.29)	0.98	50544.0	10320.00
23	19504.54	158.21	0.579	0.30( 0.29)	0.98	50769.5	10210.00
24	19015.46	162.98	0.571	0.30( 0.29)	0.98	50931.9	12000.00
25	16449.23	191.57	0.533	0.30( 0.29)	0.98	51548.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	921.98	18.67	1.686	0.30( 0.14)	0.46	635.1	300.00
2	942.95	24.10	1.444	0.30( 0.14)	0.47	773.8	327.00
3	926.97	25.16	1.402	0.30( 0.14)	0.48	786.6	350.00
4	906.98	26.48	1.364	0.30( 0.14)	0.48	799.6	320.00
5	847.47	30.52	1.252	0.30( 0.15)	0.49	825.6	306.00
6	760.66	39.44	1.090	0.30( 0.15)	0.50	870.6	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12741.00 = 15238.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13785.71	18.67	1.686	0.30( 0.23)	0.77	3783.9	300.00
2	14720.54	23.79	1.457	0.30( 0.23)	0.77	4778.3	910.00

3	14774.01	24.10	1.444	0.30	( 0.23)	0.77	4888.2	327.00
4	14938.68	25.16	1.402	0.30	( 0.23)	0.78	5253.8	350.00
5	14946.40	25.21	1.401	0.30	( 0.23)	0.78	5270.8	413.00
6	15130.98	26.48	1.364	0.30	( 0.24)	0.79	5696.3	320.00
7	15325.17	27.80	1.325	0.30	( 0.24)	0.80	6138.0	818.00
8	15526.86	29.47	1.277	0.30	( 0.24)	0.81	6659.2	12730.00
9	15647.36	30.52	1.252	0.30	( 0.24)	0.82	6981.4	306.00
10	15825.08	32.00	1.225	0.30	( 0.25)	0.82	7434.8	430.00
11	15871.14	32.43	1.217	0.30	( 0.25)	0.83	7561.2	12710.00
12	16010.86	33.92	1.190	0.30	( 0.25)	0.83	7987.9	600.00
13	16014.92	33.96	1.189	0.30	( 0.25)	0.84	7999.6	400.00
14	16648.97	39.44	1.090	0.30	( 0.26)	0.86	9727.4	390.00
15	18186.91	52.69	0.939	0.30	( 0.27)	0.90	13834.8	40100.00
16	18902.80	61.83	0.866	0.30	( 0.27)	0.92	16612.5	11801.00
17	20257.61	75.60	0.799	0.30	( 0.28)	0.93	21607.8	11530.00
18	21177.67	83.93	0.758	0.30	( 0.28)	0.94	25495.9	11900.00
19	22720.41	93.79	0.718	0.30	( 0.29)	0.95	31306.4	11330.00
20	23605.65	102.10	0.695	0.30	( 0.29)	0.96	36393.6	10630.00
21	23528.12	107.67	0.679	0.30	( 0.29)	0.96	38983.4	12330.00
22	23429.23	114.26	0.661	0.30	( 0.29)	0.96	42125.9	11600.00
23	23183.96	120.00	0.645	0.30	( 0.29)	0.96	44360.2	11111.00
24	22903.28	126.08	0.635	0.30	( 0.29)	0.97	46294.1	12201.00
25	22184.94	134.89	0.619	0.30	( 0.29)	0.97	48382.3	12231.00
26	21511.14	142.26	0.607	0.30	( 0.29)	0.97	49793.9	10400.00
27	21099.56	146.14	0.600	0.30	( 0.29)	0.97	50384.1	10200.00
28	20424.71	153.46	0.588	0.30	( 0.29)	0.97	51414.6	10320.00
29	19851.75	158.21	0.579	0.30	( 0.29)	0.97	51640.1	10210.00
30	19356.05	162.98	0.571	0.30	( 0.29)	0.97	51802.5	12000.00
31	16758.87	191.57	0.533	0.30	( 0.29)	0.97	52419.5	10100.00

TOTAL AREA (ACRES) = 52419.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23605.65 Tc (MIN.) = 102.101  
EFFECTIVE AREA (ACRES) = 36393.58 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 52419.5  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 56  
-----

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

ELEVATION DATA: UPSTREAM (FEET) = 247.00 DOWNSTREAM (FEET) = 240.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 819.00 CHANNEL SLOPE = 0.0085  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.76  
CHANNEL FLOW THRU SUBAREA (CFS) = 23605.65  
FLOW VELOCITY (FEET/SEC.) = 14.92 FLOW DEPTH (FEET) = 6.76  
TRAVEL TIME (MIN.) = 0.91 Tc (MIN.) = 103.02

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

-----  
MAINLINE Tc (MIN.) = 103.02  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.692  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"GRASS" B 17.31 0.30 1.000 69  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 17.31 SUBAREA RUNOFF (CFS) = 6.11  
EFFECTIVE AREA (ACRES) = 36410.89 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA (ACRES) = 52436.8 PEAK FLOW RATE (CFS) = 23605.65  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
-----

END OF STUDY SUMMARY:  
TOTAL AREA (ACRES) = 52436.8 TC (MIN.) = 103.02  
EFFECTIVE AREA (ACRES) = 36410.89 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.959  
PEAK FLOW RATE (CFS) = 23605.65

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13785.71	19.78	1.626	0.30 ( 0.23)	0.77	3801.2	300.00
2	14720.54	24.87	1.412	0.30 ( 0.23)	0.77	4795.6	910.00
3	14774.01	25.18	1.402	0.30 ( 0.23)	0.77	4905.5	327.00
4	14938.68	26.23	1.371	0.30 ( 0.23)	0.78	5271.1	350.00
5	14946.40	26.28	1.370	0.30 ( 0.23)	0.78	5288.1	413.00
6	15130.98	27.54	1.333	0.30 ( 0.24)	0.79	5713.6	320.00
7	15325.17	28.86	1.294	0.30 ( 0.24)	0.80	6155.3	818.00
8	15526.86	30.52	1.252	0.30 ( 0.24)	0.81	6676.5	12730.00
9	15647.36	31.57	1.233	0.30 ( 0.24)	0.82	6998.7	306.00
10	15825.08	33.05	1.206	0.30 ( 0.25)	0.82	7452.1	430.00
11	15871.14	33.48	1.198	0.30 ( 0.25)	0.83	7578.5	12710.00
12	16010.86	34.97	1.171	0.30 ( 0.25)	0.84	8005.3	600.00
13	16014.92	35.01	1.170	0.30 ( 0.25)	0.84	8016.9	400.00
14	16648.97	40.48	1.074	0.30 ( 0.26)	0.86	9744.7	390.00
15	18186.91	53.69	0.930	0.30 ( 0.27)	0.90	13852.1	40100.00
16	18902.80	62.82	0.861	0.30 ( 0.27)	0.92	16629.8	11801.00
17	20257.61	76.57	0.794	0.30 ( 0.28)	0.93	21625.1	11530.00
18	21177.67	84.88	0.753	0.30 ( 0.28)	0.94	25513.2	11900.00
19	22720.41	94.72	0.715	0.30 ( 0.29)	0.95	31323.7	11330.00
20	23605.65	103.02	0.692	0.30 ( 0.29)	0.96	36410.9	10630.00
21	23528.12	108.58	0.677	0.30 ( 0.29)	0.96	39000.8	12330.00
22	23429.23	115.18	0.658	0.30 ( 0.29)	0.96	42143.2	11600.00
23	23183.96	120.92	0.643	0.30 ( 0.29)	0.96	44377.5	11111.00
24	22903.28	127.00	0.633	0.30 ( 0.29)	0.97	46311.4	12201.00
25	22184.94	135.82	0.618	0.30 ( 0.29)	0.97	48399.6	12231.00
26	21511.14	143.20	0.605	0.30 ( 0.29)	0.97	49811.2	10400.00
27	21099.56	147.10	0.598	0.30 ( 0.29)	0.97	50401.4	10200.00

28	20424.71	154.42	0.586	0.30 ( 0.29)	0.97	51431.9	10320.00
29	19851.75	159.18	0.578	0.30 ( 0.29)	0.97	51657.4	10210.00
30	19356.05	163.95	0.570	0.30 ( 0.29)	0.97	51819.8	12000.00
31	16758.87	192.60	0.532	0.30 ( 0.29)	0.97	52436.8	10100.00

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END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S28- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV28.DAT  
TIME/DATE OF STUDY: 15:56 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.878
- 2) 10.00; 2.574
- 3) 15.00; 1.886
- 4) 20.00; 1.614
- 5) 25.00; 1.407
- 6) 30.00; 1.261
- 7) 40.00; 1.080
- 8) 50.00; 0.962
- 9) 60.00; 0.875
- 10) 90.00; 0.728
- 11) 120.00; 0.645
- 12) 180.00; 0.542
- 13) 360.00; 0.402
- 14) 1200.00; 0.177

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV27.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13785.71	19.78	0.30 ( 0.23)	0.77	3801.2	300.00
2	15325.17	28.86	0.30 ( 0.24)	0.80	6155.3	818.00
3	16014.92	35.01	0.30 ( 0.25)	0.84	8016.9	400.00
4	16648.97	40.48	0.30 ( 0.26)	0.86	9744.7	390.00
5	18186.91	53.69	0.30 ( 0.27)	0.90	13852.1	40100.00
6	18902.80	62.82	0.30 ( 0.27)	0.92	16629.8	11801.00
7	20257.61	76.57	0.30 ( 0.28)	0.93	21625.1	11530.00
8	21177.67	84.88	0.30 ( 0.28)	0.94	25513.2	11900.00
9	22720.41	94.72	0.30 ( 0.29)	0.95	31323.7	11330.00
10	23605.65	103.02	0.30 ( 0.29)	0.96	36410.9	10630.00
11	23528.12	108.58	0.30 ( 0.29)	0.96	39000.8	12330.00
12	23429.23	115.18	0.30 ( 0.29)	0.96	42143.2	11600.00
13	23183.96	120.92	0.30 ( 0.29)	0.96	44377.5	11111.00
14	22903.28	127.00	0.30 ( 0.29)	0.97	46311.4	12201.00
15	22184.94	135.82	0.30 ( 0.29)	0.97	48399.6	12231.00
16	21511.14	143.20	0.30 ( 0.29)	0.97	49811.2	10400.00
17	20424.71	154.42	0.30 ( 0.29)	0.97	51431.9	10320.00
18	19851.75	159.18	0.30 ( 0.29)	0.97	51657.4	10210.00
19	19356.05	163.95	0.30 ( 0.29)	0.97	51819.8	12000.00
20	16758.87	192.60	0.30 ( 0.29)	0.97	52436.8	10100.00
TOTAL AREA (ACRES) =						52436.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: P501XX10.DNA  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	250.32	13.83	0.30 ( 0.25)	0.84	172.7	50110.00
2	263.89	18.66	0.30 ( 0.26)	0.85	223.2	50100.00
TOTAL AREA (ACRES) =						223.2

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1 250.32 13.83 0.30( 0.25) 0.84 172.7 50110.00  
 2 263.89 18.66 0.30( 0.26) 0.85 223.2 50100.00  
 TOTAL AREA (ACRES) = 223.2

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	250.32	13.83	2.046	0.30( 0.25)	0.84	172.7	50110.00
2	263.89	18.66	1.687	0.30( 0.26)	0.85	223.2	50100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13785.71	19.78	1.626	0.30( 0.23)	0.77	3801.2	300.00
2	15325.17	28.86	1.294	0.30( 0.24)	0.80	6155.3	818.00
3	16014.92	35.01	1.170	0.30( 0.25)	0.84	8016.9	400.00
4	16648.97	40.48	1.074	0.30( 0.26)	0.86	9744.7	390.00
5	18186.91	53.69	0.930	0.30( 0.27)	0.90	13852.1	40100.00
6	18902.80	62.82	0.861	0.30( 0.27)	0.92	16629.8	11801.00
7	20257.61	76.57	0.794	0.30( 0.28)	0.93	21625.1	11530.00
8	21177.67	84.88	0.753	0.30( 0.28)	0.94	25513.2	11900.00
9	22720.41	94.72	0.715	0.30( 0.29)	0.95	31323.7	11330.00
10	23605.65	103.02	0.692	0.30( 0.29)	0.96	36410.9	10630.00
11	23528.12	108.58	0.677	0.30( 0.29)	0.96	39000.8	12330.00
12	23429.23	115.18	0.658	0.30( 0.29)	0.96	42143.2	11600.00
13	23183.96	120.92	0.643	0.30( 0.29)	0.96	44377.5	11111.00
14	22903.28	127.00	0.633	0.30( 0.29)	0.97	46311.4	12201.00
15	22184.94	135.82	0.618	0.30( 0.29)	0.97	48399.6	12231.00
16	21511.14	143.20	0.605	0.30( 0.29)	0.97	49811.2	10400.00
17	20424.71	154.42	0.586	0.30( 0.29)	0.97	51431.9	10320.00
18	19851.75	159.18	0.578	0.30( 0.29)	0.97	51657.4	10210.00
19	19356.05	163.95	0.570	0.30( 0.29)	0.97	51819.8	12000.00
20	16758.87	192.60	0.532	0.30( 0.29)	0.97	52436.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12796.61	13.83	2.046	0.30( 0.23)	0.77	2832.0	50110.00
2	13837.69	18.66	1.687	0.30( 0.23)	0.77	3810.3	50100.00
3	14038.44	19.78	1.626	0.30( 0.23)	0.77	4024.4	300.00
4	15516.69	28.86	1.294	0.30( 0.24)	0.80	6378.5	818.00
5	16183.62	35.01	1.170	0.30( 0.25)	0.84	8240.1	400.00
6	16799.98	40.48	1.074	0.30( 0.26)	0.86	9967.9	390.00
7	18311.29	53.69	0.930	0.30( 0.27)	0.90	14075.3	40100.00
8	19014.51	62.82	0.861	0.30( 0.27)	0.92	16853.0	11801.00
9	20356.91	76.57	0.794	0.30( 0.28)	0.93	21848.3	11530.00
10	21269.46	84.88	0.753	0.30( 0.28)	0.94	25736.4	11900.00
11	22805.17	94.72	0.715	0.30( 0.29)	0.95	31546.9	11330.00
12	23686.17	103.02	0.692	0.30( 0.29)	0.96	36634.1	10630.00
13	23605.81	108.58	0.677	0.30( 0.29)	0.96	39224.0	12330.00

14	23503.56	115.18	0.658	0.30( 0.29)	0.96	42366.4	11600.00
15	23255.54	120.92	0.643	0.30( 0.29)	0.96	44600.7	11111.00
16	22972.93	127.00	0.633	0.30( 0.29)	0.96	46534.6	12201.00
17	22251.80	135.82	0.618	0.30( 0.29)	0.97	48622.8	12231.00
18	21575.67	143.20	0.605	0.30( 0.29)	0.97	50034.4	10400.00
19	20485.69	154.42	0.586	0.30( 0.29)	0.97	51655.1	10320.00
20	19911.22	159.18	0.578	0.30( 0.29)	0.97	51880.6	10210.00
21	19414.01	163.95	0.570	0.30( 0.29)	0.97	52043.0	12000.00
22	16809.94	192.60	0.532	0.30( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23686.17 Tc (MIN.) = 103.016  
 EFFECTIVE AREA (ACRES) = 36634.09 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52660.0  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52660.0 TC (MIN.) = 103.02  
 EFFECTIVE AREA (ACRES) = 36634.09 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.959  
 PEAK FLOW RATE (CFS) = 23686.17

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12796.61	13.83	2.046	0.30( 0.23)	0.77	2832.0	50110.00
2	13837.69	18.66	1.687	0.30( 0.23)	0.77	3810.3	50100.00
3	14038.44	19.78	1.626	0.30( 0.23)	0.77	4024.4	300.00
4	15516.69	28.86	1.294	0.30( 0.24)	0.80	6378.5	818.00
5	16183.62	35.01	1.170	0.30( 0.25)	0.84	8240.1	400.00
6	16799.98	40.48	1.074	0.30( 0.26)	0.86	9967.9	390.00
7	18311.29	53.69	0.930	0.30( 0.27)	0.90	14075.3	40100.00
8	19014.51	62.82	0.861	0.30( 0.27)	0.92	16853.0	11801.00
9	20356.91	76.57	0.794	0.30( 0.28)	0.93	21848.3	11530.00
10	21269.46	84.88	0.753	0.30( 0.28)	0.94	25736.4	11900.00
11	22805.17	94.72	0.715	0.30( 0.29)	0.95	31546.9	11330.00
12	23686.17	103.02	0.692	0.30( 0.29)	0.96	36634.1	10630.00
13	23605.81	108.58	0.677	0.30( 0.29)	0.96	39224.0	12330.00
14	23503.56	115.18	0.658	0.30( 0.29)	0.96	42366.4	11600.00
15	23255.54	120.92	0.643	0.30( 0.29)	0.96	44600.7	11111.00
16	22972.93	127.00	0.633	0.30( 0.29)	0.96	46534.6	12201.00
17	22251.80	135.82	0.618	0.30( 0.29)	0.97	48622.8	12231.00
18	21575.67	143.20	0.605	0.30( 0.29)	0.97	50034.4	10400.00
19	20485.69	154.42	0.586	0.30( 0.29)	0.97	51655.1	10320.00
20	19911.22	159.18	0.578	0.30( 0.29)	0.97	51880.6	10210.00
21	19414.01	163.95	0.570	0.30( 0.29)	0.97	52043.0	12000.00
22	16809.94	192.60	0.532	0.30( 0.29)	0.97	52660.0	10100.00

END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S29- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV29.DAT  
TIME/DATE OF STUDY: 15:57 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.854
- 2) 10.00; 2.561
- 3) 15.00; 1.881
- 4) 20.00; 1.609
- 5) 25.00; 1.403
- 6) 30.00; 1.259
- 7) 40.00; 1.077
- 8) 50.00; 0.959
- 9) 60.00; 0.872
- 10) 90.00; 0.725
- 11) 120.00; 0.641
- 12) 180.00; 0.539
- 13) 360.00; 0.399
- 14) 1200.00; 0.175

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV28.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12796.61	13.83	0.30 ( 0.23)	0.77	2832.0	50110.00
2	14038.44	19.78	0.30 ( 0.23)	0.77	4024.4	300.00
3	15516.69	28.86	0.30 ( 0.24)	0.80	6378.5	818.00
4	16183.62	35.01	0.30 ( 0.25)	0.84	8240.1	400.00
5	16799.98	40.48	0.30 ( 0.26)	0.86	9967.9	390.00
6	18311.29	53.69	0.30 ( 0.27)	0.90	14075.3	40100.00
7	19014.51	62.82	0.30 ( 0.27)	0.92	16853.0	11801.00
8	20356.91	76.57	0.30 ( 0.28)	0.93	21848.3	11530.00
9	21269.46	84.88	0.30 ( 0.28)	0.94	25736.4	11900.00
10	22805.17	94.72	0.30 ( 0.29)	0.95	31546.9	11330.00
11	23686.17	103.02	0.30 ( 0.29)	0.96	36634.1	10630.00
12	23605.81	108.58	0.30 ( 0.29)	0.96	39224.0	12330.00
13	23503.56	115.18	0.30 ( 0.29)	0.96	42366.4	11600.00
14	23255.54	120.92	0.30 ( 0.29)	0.96	44600.7	11111.00
15	22972.93	127.00	0.30 ( 0.29)	0.96	46534.6	12201.00
16	22251.80	135.82	0.30 ( 0.29)	0.97	48622.8	12231.00
17	21575.67	143.20	0.30 ( 0.29)	0.97	50034.4	10400.00
18	20485.69	154.42	0.30 ( 0.29)	0.97	51655.1	10320.00
19	19414.01	163.95	0.30 ( 0.29)	0.97	52043.0	12000.00
20	16809.94	192.60	0.30 ( 0.29)	0.97	52660.0	10100.00
TOTAL AREA (ACRES) =						52660.0

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12796.61	13.83	0.30 ( 0.23)	0.77	2832.0	50110.00
2	14038.44	19.78	0.30 ( 0.23)	0.77	4024.4	300.00
3	15516.69	28.86	0.30 ( 0.24)	0.80	6378.5	818.00
4	16183.62	35.01	0.30 ( 0.25)	0.84	8240.1	400.00
5	16799.98	40.48	0.30 ( 0.26)	0.86	9967.9	390.00
6	18311.29	53.69	0.30 ( 0.27)	0.90	14075.3	40100.00
7	19014.51	62.82	0.30 ( 0.27)	0.92	16853.0	11801.00
8	20356.91	76.57	0.30 ( 0.28)	0.93	21848.3	11530.00
9	21269.46	84.88	0.30 ( 0.28)	0.94	25736.4	11900.00
10	22805.17	94.72	0.30 ( 0.29)	0.95	31546.9	11330.00
11	23686.17	103.02	0.30 ( 0.29)	0.96	36634.1	10630.00
12	23605.81	108.58	0.30 ( 0.29)	0.96	39224.0	12330.00
13	23503.56	115.18	0.30 ( 0.29)	0.96	42366.4	11600.00

14	23255.54	120.92	0.30	( 0.29)	0.96	44600.7	11111.00
15	22972.93	127.00	0.30	( 0.29)	0.96	46534.6	12201.00
16	22251.80	135.82	0.30	( 0.29)	0.97	48622.8	12231.00
17	21575.67	143.20	0.30	( 0.29)	0.97	50034.4	10400.00
18	20485.69	154.42	0.30	( 0.29)	0.97	51655.1	10320.00
19	19414.01	163.95	0.30	( 0.29)	0.97	52043.0	12000.00
20	16809.94	192.60	0.30	( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

\*\*\*\*\*

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 240.00 DOWNSTREAM (FEET) = 216.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3120.28 CHANNEL SLOPE = 0.0077  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.99  
 CHANNEL FLOW THRU SUBAREA (CFS) = 23686.17  
 FLOW VELOCITY (FEET/SEC.) = 14.43 FLOW DEPTH (FEET) = 6.99  
 TRAVEL TIME (MIN.) = 3.60 Tc (MIN.) = 106.62  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 106.62  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.678  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.60	0.30	0.100	56
COMMERCIAL	B	3.20	0.30	0.100	56
PUBLIC PARK	B	1.50	0.30	0.850	56
COMMERCIAL	B	5.60	0.30	0.100	56
PUBLIC PARK	B	6.50	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.409  
 SUBAREA AREA (ACRES) = 19.40 SUBAREA RUNOFF (CFS) = 9.70  
 EFFECTIVE AREA (ACRES) = 36653.48 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52679.4 PEAK FLOW RATE (CFS) = 23686.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 106.62  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.678  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.50	0.30	0.100	56
PUBLIC PARK	B	4.10	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	1.60	0.30	0.900	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	1.00	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.823  
 SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 3.07  
 EFFECTIVE AREA (ACRES) = 36661.38 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52687.3 PEAK FLOW RATE (CFS) = 23686.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 106.62  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.678  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"4 DWELLING/ACRE"	B	3.60	0.30	0.900	56
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.30	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	12.00	0.30	1.000	86
PUBLIC PARK	B	36.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	15.90	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	1.50	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA (ACRES) = 69.40 SUBAREA RUNOFF (CFS) = 25.20  
 EFFECTIVE AREA (ACRES) = 36730.78 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52756.7 PEAK FLOW RATE (CFS) = 23686.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 106.62



\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.678  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 4.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.40 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 1.00 0.30 1.000 65  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 4.10 0.30 0.500 56  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 3.70 0.30 0.500 56  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 0.40 0.30 0.500 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.703  
 SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 5.81  
 EFFECTIVE AREA (ACRES) = 36744.58 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52770.5 PEAK FLOW RATE (CFS) = 23686.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 106.62  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.678  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 6.70 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.90 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 3.68  
 EFFECTIVE AREA (ACRES) = 36755.38 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52781.3 PEAK FLOW RATE (CFS) = 23686.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12902.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 216.00 DOWNSTREAM (FEET) = 215.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 122.04 CHANNEL SLOPE = 0.0082  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.86  
 CHANNEL FLOW THRU SUBAREA (CFS) = 23686.17  
 FLOW VELOCITY (FEET/SEC.) = 14.73 FLOW DEPTH (FEET) = 6.86  
 TRAVEL TIME (MIN.) = 0.14 Tc (MIN.) = 106.76  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: P503XX10.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1147.25	19.67	0.30 ( 0.22)	0.74	1015.8	50320.00
2	1155.57	20.90	0.30 ( 0.22)	0.74	1063.4	50240.00
3	1161.70	21.75	0.30 ( 0.22)	0.74	1095.6	50330.00
4	1155.23	24.73	0.30 ( 0.22)	0.74	1192.0	50280.00
5	1146.67	25.95	0.30 ( 0.22)	0.74	1221.5	50300.00
6	1124.24	27.59	0.30 ( 0.22)	0.74	1248.7	50220.00
7	1033.51	32.98	0.30 ( 0.22)	0.74	1294.8	50260.00
8	999.73	34.83	0.30 ( 0.22)	0.74	1298.6	50200.00
TOTAL AREA (ACRES) =						1298.6

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12796.61	18.47	1.692	0.30 ( 0.23)	0.77	2953.3	50110.00
2	14038.44	24.26	1.434	0.30 ( 0.23)	0.77	4145.7	300.00
3	15516.69	33.19	1.201	0.30 ( 0.24)	0.80	6499.8	818.00
4	16183.62	39.28	1.090	0.30 ( 0.25)	0.84	8361.4	400.00
5	16799.98	44.69	1.022	0.30 ( 0.26)	0.86	10089.2	390.00
6	18311.29	57.78	0.891	0.30 ( 0.27)	0.90	14196.6	40100.00
7	19014.51	66.85	0.838	0.30 ( 0.27)	0.92	16974.3	11801.00
8	20356.91	80.51	0.772	0.30 ( 0.28)	0.93	21969.6	11530.00
9	21269.46	88.76	0.731	0.30 ( 0.28)	0.94	25857.7	11900.00
10	22805.17	98.51	0.701	0.30 ( 0.29)	0.95	31668.2	11330.00
11	23686.17	106.76	0.678	0.30 ( 0.29)	0.96	36755.4	10630.00
12	23605.81	112.33	0.662	0.30 ( 0.29)	0.96	39345.2	12330.00
13	23503.56	118.93	0.644	0.30 ( 0.29)	0.96	42487.7	11600.00
14	23255.54	124.68	0.633	0.30 ( 0.29)	0.96	44722.0	11111.00
15	22972.93	130.78	0.623	0.30 ( 0.29)	0.96	46655.9	12201.00
16	22251.80	139.65	0.608	0.30 ( 0.29)	0.97	48744.1	12231.00
17	21575.67	147.06	0.595	0.30 ( 0.29)	0.97	50155.7	10400.00
18	20485.69	158.36	0.576	0.30 ( 0.29)	0.97	51776.4	10320.00
19	19414.01	167.96	0.559	0.30 ( 0.29)	0.97	52164.3	12000.00
20	16809.94	196.81	0.526	0.30 ( 0.29)	0.97	52781.3	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 =						115038.03 FEET.	

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*  
 STREAM Q Tc Intensity Fp (Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	1147.25	19.67	1.627	0.30 ( 0.22)	0.74	1015.8 50320.00
2	1155.57	20.90	1.572	0.30 ( 0.22)	0.74	1063.4 50240.00
3	1161.70	21.75	1.537	0.30 ( 0.22)	0.74	1095.6 50330.00
4	1155.23	24.73	1.414	0.30 ( 0.22)	0.74	1192.0 50280.00
5	1146.67	25.95	1.376	0.30 ( 0.22)	0.74	1221.5 50300.00
6	1124.24	27.59	1.328	0.30 ( 0.22)	0.74	1248.7 50220.00
7	1033.51	32.98	1.205	0.30 ( 0.22)	0.74	1294.8 50260.00
8	999.73	34.83	1.171	0.30 ( 0.22)	0.74	1298.6 50200.00

LONGEST FLOWPATH FROM NODE 50220.00 TO NODE 12902.00 = 17597.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13923.88	18.47	1.692	0.30 ( 0.23)	0.76	3907.0	50110.00
2	14202.06	19.67	1.627	0.30 ( 0.23)	0.76	4217.0	50320.00
3	14472.60	20.90	1.572	0.30 ( 0.23)	0.77	4516.4	50240.00
4	14662.59	21.75	1.537	0.30 ( 0.23)	0.77	4725.1	50330.00
5	15194.70	24.26	1.434	0.30 ( 0.23)	0.77	5322.3	300.00
6	15272.05	24.73	1.414	0.30 ( 0.23)	0.77	5462.5	50280.00
7	15465.57	25.95	1.376	0.30 ( 0.23)	0.77	5813.7	50300.00
8	15714.04	27.59	1.328	0.30 ( 0.23)	0.78	6272.4	50220.00
9	16514.99	32.98	1.205	0.30 ( 0.24)	0.79	7738.4	50260.00
10	16546.32	33.19	1.201	0.30 ( 0.24)	0.79	7795.0	818.00
11	16695.89	34.83	1.171	0.30 ( 0.24)	0.80	8299.3	50200.00
12	17098.10	39.28	1.090	0.30 ( 0.25)	0.82	9660.0	400.00
13	17642.26	44.69	1.022	0.30 ( 0.25)	0.84	11387.8	390.00
14	19016.19	57.78	0.891	0.30 ( 0.27)	0.89	15495.2	40100.00
15	19663.66	66.85	0.838	0.30 ( 0.27)	0.90	18272.9	11801.00
16	20935.53	80.51	0.772	0.30 ( 0.28)	0.92	23268.2	11530.00
17	21805.45	88.76	0.731	0.30 ( 0.28)	0.93	27156.3	11900.00
18	23309.66	98.51	0.701	0.30 ( 0.28)	0.94	32966.8	11330.00
19	24166.33	106.76	0.678	0.30 ( 0.29)	0.95	38054.0	10630.00
20	24069.52	112.33	0.662	0.30 ( 0.29)	0.95	40643.9	12330.00
21	23947.79	118.93	0.644	0.30 ( 0.29)	0.96	43786.3	11600.00
22	23688.22	124.68	0.633	0.30 ( 0.29)	0.96	46020.6	11111.00
23	23394.68	130.78	0.623	0.30 ( 0.29)	0.96	47954.5	12201.00
24	22657.68	139.65	0.608	0.30 ( 0.29)	0.96	50042.7	12231.00
25	21968.26	147.06	0.595	0.30 ( 0.29)	0.96	51454.3	10400.00
26	20858.04	158.36	0.576	0.30 ( 0.29)	0.96	53075.0	10320.00
27	19769.16	167.96	0.559	0.30 ( 0.29)	0.96	53462.9	12000.00
28	17129.74	196.81	0.526	0.30 ( 0.29)	0.96	54079.9	10100.00

TOTAL AREA (ACRES) = 54079.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 24166.33 Tc (MIN.) = 106.757  
EFFECTIVE AREA (ACRES) = 38053.98 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
TOTAL AREA (ACRES) = 54079.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 215.00 DOWNSTREAM (FEET) = 214.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 895.53 CHANNEL SLOPE = 0.0011  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.20  
CHANNEL FLOW THRU SUBAREA (CFS) = 24166.33  
FLOW VELOCITY (FEET/SEC.) = 7.59 FLOW DEPTH (FEET) = 12.20  
TRAVEL TIME (MIN.) = 1.97 Tc (MIN.) = 108.72  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P504XX10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	96.33	13.93	0.30 ( 0.28)	0.94	70.7	50400.00

TOTAL AREA (ACRES) = 70.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13923.88	20.82	1.575	0.30 ( 0.23)	0.76	3907.0	50110.00
2	14202.06	22.01	1.526	0.30 ( 0.23)	0.76	4217.0	50320.00
3	14472.60	23.22	1.477	0.30 ( 0.23)	0.77	4516.4	50240.00
4	14662.59	24.06	1.442	0.30 ( 0.23)	0.77	4725.1	50330.00
5	15194.70	26.54	1.359	0.30 ( 0.23)	0.77	5322.3	300.00
6	15272.05	27.01	1.345	0.30 ( 0.23)	0.77	5462.5	50280.00
7	15465.57	28.22	1.310	0.30 ( 0.23)	0.77	5813.7	50300.00
8	15714.04	29.85	1.263	0.30 ( 0.23)	0.78	6272.4	50220.00
9	16514.99	35.20	1.164	0.30 ( 0.24)	0.79	7738.4	50260.00
10	16546.32	35.41	1.160	0.30 ( 0.24)	0.79	7795.0	818.00
11	16695.89	37.04	1.131	0.30 ( 0.24)	0.80	8299.3	50200.00
12	17098.10	41.47	1.060	0.30 ( 0.25)	0.82	9660.0	400.00
13	17642.26	46.86	0.996	0.30 ( 0.25)	0.84	11387.8	390.00
14	19016.19	59.90	0.873	0.30 ( 0.27)	0.89	15495.2	40100.00
15	19663.66	68.95	0.828	0.30 ( 0.27)	0.90	18272.9	11801.00
16	20935.53	82.57	0.761	0.30 ( 0.28)	0.92	23268.2	11530.00
17	21805.45	90.80	0.723	0.30 ( 0.28)	0.93	27156.3	11900.00
18	23309.66	100.50	0.696	0.30 ( 0.28)	0.94	32966.8	11330.00
19	24166.33	108.72	0.673	0.30 ( 0.29)	0.95	38054.0	10630.00
20	24069.52	114.30	0.657	0.30 ( 0.29)	0.95	40643.9	12330.00
21	23947.79	120.90	0.639	0.30 ( 0.29)	0.96	43786.3	11600.00
22	23688.22	126.66	0.630	0.30 ( 0.29)	0.96	46020.6	11111.00

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23 23394.68 132.77 0.619 0.30( 0.29) 0.96 47954.5 12201.00
24 22657.68 141.65 0.604 0.30( 0.29) 0.96 50042.7 12231.00
25 21968.26 149.09 0.592 0.30( 0.29) 0.96 51454.3 10400.00
26 20858.04 160.42 0.572 0.30( 0.29) 0.96 53075.0 10320.00
27 19769.16 170.06 0.556 0.30( 0.29) 0.96 53462.9 12000.00
28 17129.74 199.01 0.524 0.30( 0.29) 0.96 54079.9 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

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\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

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STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1           96.33  13.93  2.027  0.30( 0.28) 0.94   70.7  50400.00
LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

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\*\* PEAK FLOW RATE TABLE \*\*

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STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1           12536.85  13.93  2.027  0.30( 0.23) 0.77  2684.4  50400.00
2           13995.28  20.82  1.575  0.30( 0.23) 0.77  3977.7  50110.00
3           14270.76  22.01  1.526  0.30( 0.23) 0.77  4287.7  50320.00
4           14538.55  23.22  1.477  0.30( 0.23) 0.77  4587.1  50240.00
5           14726.62  24.06  1.442  0.30( 0.23) 0.77  4795.8  50330.00
6           15254.14  26.54  1.359  0.30( 0.23) 0.77  5393.0   300.00
7           15330.75  27.01  1.345  0.30( 0.23) 0.77  5533.2  50280.00
8           15522.34  28.22  1.310  0.30( 0.23) 0.77  5884.4  50300.00
9           15768.23  29.85  1.263  0.30( 0.23) 0.78  6343.1  50220.00
10          16563.72  35.20  1.164  0.30( 0.24) 0.79  7809.1  50260.00
11          16594.83  35.41  1.160  0.30( 0.24) 0.80  7865.7   818.00
12          16742.77  37.04  1.131  0.30( 0.24) 0.80  8370.0  50200.00
13          17141.05  41.47  1.060  0.30( 0.25) 0.82  9730.7   400.00
14          17681.70  46.86  0.996  0.30( 0.25) 0.84  11458.5  390.00
15          19048.84  59.90  0.873  0.30( 0.27) 0.89  15565.9  40100.00
16          19693.84  68.95  0.828  0.30( 0.27) 0.90  18343.6  11801.00
17          20962.03  82.57  0.761  0.30( 0.28) 0.92  23338.9  11530.00
18          21829.81  90.80  0.723  0.30( 0.28) 0.93  27227.0  11900.00
19          23332.52  100.50  0.696  0.30( 0.28) 0.94  33037.5  11330.00
20          24187.92  108.72  0.673  0.30( 0.29) 0.95  38124.7  10630.00
21          24090.25  114.30  0.657  0.30( 0.29) 0.95  40714.6  12330.00
22          23967.55  120.90  0.639  0.30( 0.29) 0.96  43857.0  11600.00
23          23707.45  126.66  0.630  0.30( 0.29) 0.96  46091.3  11111.00
24          23413.34  132.77  0.619  0.30( 0.29) 0.96  48025.2  12201.00
25          22675.50  141.65  0.604  0.30( 0.29) 0.96  50113.4  12231.00
26          21985.38  149.09  0.592  0.30( 0.29) 0.96  51525.0  10400.00
27          20874.10  160.42  0.572  0.30( 0.29) 0.96  53145.7  10320.00
28          19784.31  170.06  0.556  0.30( 0.29) 0.96  53533.6  12000.00
29          17143.15  199.01  0.524  0.30( 0.29) 0.96  54150.6  10100.00
TOTAL AREA(ACRES) = 54150.6

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

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PEAK FLOW RATE(CFS) = 24187.92 Tc(MIN.) = 108.724
EFFECTIVE AREA(ACRES) = 38124.68 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 54150.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

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*****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 2 <<<<<
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*****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
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>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.69
CHANNEL FLOW THRU SUBAREA(CFS) = 24187.92
FLOW VELOCITY(FEET/SEC.) = 8.00 FLOW DEPTH(FEET) = 11.69
TRAVEL TIME(MIN.) = 1.60 Tc(MIN.) = 110.32
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

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*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1
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>>>>DEFINE MEMORY BANK # 3 <<<<<
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PEAK FLOWRATE TABLE FILE NAME: 3B10EVRL.DNA
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MEMORY BANK # 3 DEFINED AS FOLLOWS:
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```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1           302.43  15.44  0.30( 0.13) 0.42   194.2  200.00
2           305.33  18.21  0.30( 0.13) 0.42   214.7  210.00
TOTAL AREA(ACRES) = 214.7

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*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
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\*\* MAIN STREAM CONFLUENCE DATA \*\*

```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1           12536.85  15.91  1.832  0.30( 0.23) 0.77  2684.4  50400.00
2           13995.28  22.73  1.497  0.30( 0.23) 0.77  3977.7  50110.00
3           14270.76  23.90  1.448  0.30( 0.23) 0.77  4287.7  50320.00
4           14538.55  25.10  1.400  0.30( 0.23) 0.77  4587.1  50240.00
5           14726.62  25.94  1.376  0.30( 0.23) 0.77  4795.8  50330.00
6           15254.14  28.40  1.305  0.30( 0.23) 0.77  5393.0   300.00
7           15330.75  28.86  1.292  0.30( 0.23) 0.77  5533.2  50280.00
8           15522.34  30.07  1.258  0.30( 0.23) 0.77  5884.4  50300.00
9           15768.23  31.69  1.228  0.30( 0.23) 0.78  6343.1  50220.00
10          16563.72  37.01  1.131  0.30( 0.24) 0.79  7809.1  50260.00
11          16594.83  37.22  1.128  0.30( 0.24) 0.80  7865.7   818.00
12          16742.77  38.84  1.098  0.30( 0.24) 0.80  8370.0  50200.00
13          17141.05  43.26  1.039  0.30( 0.25) 0.82  9730.7   400.00
14          17681.70  48.63  0.975  0.30( 0.25) 0.84  11458.5  390.00
15          19048.84  61.62  0.864  0.30( 0.27) 0.89  15565.9  40100.00
16          19693.84  70.66  0.820  0.30( 0.27) 0.90  18343.6  11801.00
17          20962.03  84.24  0.753  0.30( 0.28) 0.92  23338.9  11530.00

```

18	21829.81	92.45	0.718	0.30 ( 0.28)	0.93	27227.0	11900.00
19	23332.52	102.12	0.691	0.30 ( 0.28)	0.94	33037.5	11330.00
20	24187.92	110.32	0.668	0.30 ( 0.29)	0.95	38124.7	10630.00
21	24090.25	115.90	0.652	0.30 ( 0.29)	0.95	40714.6	12330.00
22	23967.55	122.51	0.637	0.30 ( 0.29)	0.96	43857.0	11600.00
23	23707.45	128.27	0.627	0.30 ( 0.29)	0.96	46091.3	11111.00
24	23413.34	134.38	0.617	0.30 ( 0.29)	0.96	48025.2	12201.00
25	22675.50	143.29	0.601	0.30 ( 0.29)	0.96	50113.4	12231.00
26	21985.38	150.74	0.589	0.30 ( 0.29)	0.96	51525.0	10400.00
27	20874.10	162.09	0.569	0.30 ( 0.29)	0.96	53145.7	10320.00
28	19784.31	171.76	0.553	0.30 ( 0.29)	0.96	53533.6	12000.00
29	17143.15	200.79	0.523	0.30 ( 0.29)	0.96	54150.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	302.43	15.44	1.857	0.30 ( 0.13)	0.42	194.2	200.00
2	305.33	18.21	1.707	0.30 ( 0.13)	0.42	214.7	210.00

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 5961.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12665.48	15.44	1.857	0.30 ( 0.22)	0.75	2800.2	200.00
2	12839.77	15.91	1.832	0.30 ( 0.22)	0.75	2882.0	50400.00
3	13334.12	18.21	1.707	0.30 ( 0.22)	0.75	3335.3	210.00
4	14260.06	22.73	1.497	0.30 ( 0.22)	0.75	4192.4	50110.00
5	14526.18	23.90	1.448	0.30 ( 0.23)	0.75	4502.4	50320.00
6	14784.68	25.10	1.400	0.30 ( 0.23)	0.75	4801.8	50240.00
7	14968.07	25.94	1.376	0.30 ( 0.23)	0.75	5010.5	50330.00
8	15481.92	28.40	1.305	0.30 ( 0.23)	0.75	5607.7	300.00
9	15555.93	28.86	1.292	0.30 ( 0.23)	0.76	5747.9	50280.00
10	15740.95	30.07	1.258	0.30 ( 0.23)	0.76	6099.1	50300.00
11	15981.16	31.69	1.228	0.30 ( 0.23)	0.77	6557.8	50220.00
12	16757.92	37.01	1.131	0.30 ( 0.24)	0.78	8023.8	50260.00
13	16788.30	37.22	1.128	0.30 ( 0.24)	0.79	8080.4	818.00
14	16930.52	38.84	1.098	0.30 ( 0.24)	0.79	8584.7	50200.00
15	17317.31	43.26	1.039	0.30 ( 0.24)	0.82	9945.4	400.00
16	17845.70	48.63	0.975	0.30 ( 0.25)	0.84	11673.2	390.00
17	19191.37	61.62	0.864	0.30 ( 0.26)	0.88	15780.6	40100.00
18	19827.82	70.66	0.820	0.30 ( 0.27)	0.90	18558.3	11801.00
19	21083.15	84.24	0.753	0.30 ( 0.28)	0.92	23553.6	11530.00
20	21944.16	92.45	0.718	0.30 ( 0.28)	0.93	27441.7	11900.00
21	23441.63	102.12	0.691	0.30 ( 0.28)	0.94	33252.2	11330.00
22	24292.59	110.32	0.668	0.30 ( 0.28)	0.95	38339.4	10630.00
23	24191.90	115.90	0.652	0.30 ( 0.29)	0.95	40929.2	12330.00
24	24066.17	122.51	0.637	0.30 ( 0.29)	0.95	44071.7	11600.00
25	23804.17	128.27	0.627	0.30 ( 0.29)	0.95	46306.0	11111.00
26	23508.05	134.38	0.617	0.30 ( 0.29)	0.96	48239.9	12201.00
27	22767.29	143.29	0.601	0.30 ( 0.29)	0.96	50328.1	12231.00
28	22074.72	150.74	0.589	0.30 ( 0.29)	0.96	51739.7	10400.00
29	20959.71	162.09	0.569	0.30 ( 0.29)	0.96	53360.4	10320.00
30	19866.75	171.76	0.553	0.30 ( 0.29)	0.96	53748.3	12000.00
31	17219.75	200.79	0.523	0.30 ( 0.29)	0.96	54365.3	10100.00

TOTAL AREA (ACRES) = 54365.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 24292.59 Tc(MIN.) = 110.323  
EFFECTIVE AREA(ACRES) = 38339.38 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 54365.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 110.32  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.668  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	20.00	0.30	1.000	69
NATURAL FAIR COVER "MEADOWS"	B	0.10	0.30	1.000	70
PUBLIC PARK	B	14.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.920  
SUBAREA AREA(ACRES) = 39.10 SUBAREA RUNOFF(CFS) = 13.80  
EFFECTIVE AREA(ACRES) = 38378.48 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 54404.4 PEAK FLOW RATE(CFS) = 24292.59  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 110.32  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.668  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.10	0.30	1.000	66
AGRICULTURAL FAIR COVER "ORCHARDS"	B	0.10	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER "GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.912  
SUBAREA AREA(ACRES) = 5.00 SUBAREA RUNOFF(CFS) = 1.78

EFFECTIVE AREA(ACRES) = 38383.48 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA(ACRES) = 54409.4 PEAK FLOW RATE(CFS) = 24292.59  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 110.32

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.668

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL FAIR COVER "ORCHARDS"	B	0.10	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "GRASS"	B	3.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.956

SUBAREA AREA(ACRES) = 5.90 SUBAREA RUNOFF(CFS) = 2.02

EFFECTIVE AREA(ACRES) = 38389.38 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 54415.3 PEAK FLOW RATE(CFS) = 24292.59

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 54415.3 TC(MIN.) = 110.32

EFFECTIVE AREA(ACRES) = 38389.38 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.948

PEAK FLOW RATE(CFS) = 24292.59

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12665.48	15.44	1.857	0.30(0.22)	0.75	2850.2	200.00
2	12839.77	15.91	1.832	0.30(0.22)	0.75	2932.0	50400.00
3	13334.12	18.21	1.707	0.30(0.22)	0.75	3385.3	210.00
4	14260.06	22.73	1.497	0.30(0.23)	0.75	4242.4	50110.00
5	14526.18	23.90	1.448	0.30(0.23)	0.75	4552.4	50320.00
6	14784.68	25.10	1.400	0.30(0.23)	0.75	4851.8	50240.00
7	14968.07	25.94	1.376	0.30(0.23)	0.75	5060.5	50330.00
8	15481.92	28.40	1.305	0.30(0.23)	0.76	5657.7	300.00
9	15555.93	28.86	1.292	0.30(0.23)	0.76	5797.9	50280.00
10	15740.95	30.07	1.258	0.30(0.23)	0.76	6149.1	50300.00
11	15981.16	31.69	1.228	0.30(0.23)	0.77	6607.8	50220.00
12	16757.92	37.01	1.131	0.30(0.24)	0.79	8073.8	50260.00
13	16788.30	37.22	1.128	0.30(0.24)	0.79	8130.4	818.00
14	16930.52	38.84	1.098	0.30(0.24)	0.79	8634.7	50200.00
15	17317.31	43.26	1.039	0.30(0.24)	0.82	9995.4	400.00
16	17845.70	48.63	0.975	0.30(0.25)	0.84	11723.2	390.00
17	19191.37	61.62	0.864	0.30(0.26)	0.88	15830.6	40100.00
18	19827.82	70.66	0.820	0.30(0.27)	0.90	18608.3	11801.00

19	21083.15	84.24	0.753	0.30(0.28)	0.92	23603.6	11530.00
20	21944.16	92.45	0.718	0.30(0.28)	0.93	27491.7	11900.00
21	23441.63	102.12	0.691	0.30(0.28)	0.94	33302.2	11330.00
22	24292.59	110.32	0.668	0.30(0.28)	0.95	38389.4	10630.00
23	24191.90	115.90	0.652	0.30(0.29)	0.95	40979.2	12330.00
24	24066.17	122.51	0.637	0.30(0.29)	0.95	44121.7	11600.00
25	23804.17	128.27	0.627	0.30(0.29)	0.95	46356.0	11111.00
26	23508.05	134.38	0.617	0.30(0.29)	0.96	48289.9	12201.00
27	22767.29	143.29	0.601	0.30(0.29)	0.96	50378.1	12231.00
28	22074.72	150.74	0.589	0.30(0.29)	0.96	51789.7	10400.00
29	20959.71	162.09	0.569	0.30(0.29)	0.96	53410.4	10320.00
30	19866.75	171.76	0.553	0.30(0.29)	0.96	53798.3	12000.00
31	17219.75	200.79	0.523	0.30(0.29)	0.96	54415.3	10100.00

END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S33- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV33.DAT  
TIME/DATE OF STUDY: 15:57 04/01/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.774
- 2) 10.00; 2.517
- 3) 15.00; 1.863
- 4) 20.00; 1.593
- 5) 25.00; 1.391
- 6) 30.00; 1.250
- 7) 40.00; 1.068
- 8) 50.00; 0.950
- 9) 60.00; 0.862
- 10) 90.00; 0.714
- 11) 120.00; 0.630
- 12) 180.00; 0.528
- 13) 360.00; 0.388
- 14) 1200.00; 0.170

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: S31X10.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1716.14	38.98	0.30 ( 0.24)	0.81	2485.1	13100.00
2	1689.35	68.05	0.30 ( 0.24)	0.81	3778.1	13000.00
3	1657.69	70.37	0.30 ( 0.24)	0.81	3796.8	13010.00
TOTAL AREA (ACRES) =						3796.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: S32X10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	821.94	36.32	0.30 ( 0.25)	0.83	1125.1	13210.00
2	821.47	36.44	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	821.94	36.32	0.30 ( 0.25)	0.83	1125.1	13210.00
2	821.47	36.44	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 11  
-----

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

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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	821.94	36.32	1.135	0.30 ( 0.25)	0.83	1125.1	13210.00
2	821.47	36.44	1.133	0.30 ( 0.25)	0.83	1127.6	13200.00

LONGEST FLOWPATH FROM NODE 13200.00 TO NODE 13222.00 = 16821.05 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1716.14	38.98	1.087	0.30 ( 0.24)	0.81	2485.1	13100.00
2	1689.35	68.05	0.822	0.30 ( 0.24)	0.81	3778.1	13000.00
3	1657.69	70.37	0.811	0.30 ( 0.24)	0.81	3796.8	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2512.74	36.32	1.135	0.30 ( 0.24)	0.82	3440.8	13210.00
2	2513.70	36.44	1.133	0.30 ( 0.24)	0.82	3450.9	13200.00
3	2494.71	38.98	1.087	0.30 ( 0.24)	0.82	3612.7	13100.00
4	2222.44	68.05	0.822	0.30 ( 0.24)	0.81	4905.7	13000.00
5	2180.16	70.37	0.811	0.30 ( 0.24)	0.81	4924.4	13010.00

TOTAL AREA (ACRES) = 4924.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2513.70 Tc(MIN.) = 36.438

EFFECTIVE AREA(ACRES) = 3450.86 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82

TOTAL AREA (ACRES) = 4924.4

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

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FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

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>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

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

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\*\*\*\*\*

FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.83

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.064

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.60	0.30	1.000	66
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.10	0.30	0.600	56
AGRICULTURAL POOR COVER					

"ROW CROPS,CONTOURED"	B	5.30	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
COMMERCIAL	B	22.60	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.521

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2532.15

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.74

AVERAGE FLOW DEPTH(FEET) = 3.83 TRAVEL TIME(MIN.) = 3.93

Tc(MIN.) = 40.37

SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 36.91

EFFECTIVE AREA(ACRES) = 3496.06 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81

TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 2580.54

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.87 FLOW VELOCITY(FEET/SEC.) = 10.82

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2577.71	40.24	1.065	0.30 ( 0.24)	0.81	3486.0	13210.00
2	2580.54	40.37	1.064	0.30 ( 0.24)	0.81	3496.1	13200.00
3	2601.28	42.91	1.034	0.30 ( 0.24)	0.81	3657.9	13100.00
4	2491.96	72.14	0.802	0.30 ( 0.24)	0.81	4950.9	13000.00
5	2449.85	74.49	0.791	0.30 ( 0.24)	0.81	4969.6	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2601.28 Tc(MIN.) = 42.91

AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.81 EFFECTIVE AREA(ACRES) = 3657.90

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 42.91

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.034

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.00	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	7.40	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	4.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.596					
SUBAREA AREA(ACRES) = 16.50 SUBAREA RUNOFF(CFS) = 12.69					
EFFECTIVE AREA(ACRES) = 3674.40 AREA-AVERAGED Fm(INCH/HR) = 0.24					



AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 4986.1 PEAK FLOW RATE (CFS) = 2613.98

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MAINLINE Tc (MIN.) = 42.91					
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.034					
SUBAREA LOSS RATE DATA (AMC II):					
NATURAL POOR COVER					
"BARREN"	B	1.30	0.30	1.000	86
COMMERCIAL	B	0.20	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	5.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.20	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.60	0.30	1.000	66
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.977					
SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 5.26					
EFFECTIVE AREA (ACRES) = 3682.30 AREA-AVERAGED Fm (INCH/HR) = 0.24					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81					
TOTAL AREA (ACRES) = 4994.0 PEAK FLOW RATE (CFS) = 2619.24					

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MAINLINE Tc (MIN.) = 42.91					
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.034					
SUBAREA LOSS RATE DATA (AMC II):					
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	4.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	1.10	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	6.90	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	7.90	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.00	0.30	1.000	65
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA (ACRES) = 22.00 SUBAREA RUNOFF (CFS) = 14.53					
EFFECTIVE AREA (ACRES) = 3704.30 AREA-AVERAGED Fm (INCH/HR) = 0.24					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81					

TOTAL AREA (ACRES) = 5016.0 PEAK FLOW RATE (CFS) = 2633.77

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
MAINLINE Tc (MIN.) = 42.91					
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.034					
SUBAREA LOSS RATE DATA (AMC II):					
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	14.60	0.30	1.000	79
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 9.90					
EFFECTIVE AREA (ACRES) = 3719.30 AREA-AVERAGED Fm (INCH/HR) = 0.24					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81					
TOTAL AREA (ACRES) = 5031.0 PEAK FLOW RATE (CFS) = 2643.67					

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31100.00 TO NODE 31101.00 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00  
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.859  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL, BROADLEAF"	B	0.50	0.30	1.000	63	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30						
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000						
SUBAREA RUNOFF (CFS) = 2.53						
TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 2.53						

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 685.00 DOWNSTREAM(FEET) = 655.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 135.00 CHANNEL SLOPE = 0.2222  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.768

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63
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NATURAL FAIR COVER "OPEN BRUSH"	B	0.10	0.30	1.000	66
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NATURAL FAIR COVER "OPEN BRUSH"	B	0.70	0.30	1.000	66
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.98

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.25

AVERAGE FLOW DEPTH(FEET) = 0.46 TRAVEL TIME(MIN.) = 0.36

Tc(MIN.) = 9.00

SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = 2.89

EFFECTIVE AREA(ACRES) = 2.40 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 5.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.51 FLOW VELOCITY(FEET/SEC.) = 6.88

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 630.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 203.00 CHANNEL SLOPE = 0.1232  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.654

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
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NATURAL FAIR COVER "OPEN BRUSH"	B	0.10	0.30	1.000	66
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NATURAL FAIR COVER "OPEN BRUSH"	B	1.90	0.30	1.000	66
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.77

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.43

AVERAGE FLOW DEPTH(FEET) = 0.59 TRAVEL TIME(MIN.) = 0.46

Tc(MIN.) = 9.46

SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 4.87  
EFFECTIVE AREA(ACRES) = 4.70 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 9.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 7.96

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 605.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 321.00 CHANNEL SLOPE = 0.0779  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.467

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL FAIR COVER "OPEN BRUSH"	B	1.10	0.30	1.000	66
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NATURAL FAIR COVER "OPEN BRUSH"	B	2.50	0.30	1.000	66
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 13.47

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.79

AVERAGE FLOW DEPTH(FEET) = 0.88 TRAVEL TIME(MIN.) = 0.92

Tc(MIN.) = 10.38

SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 7.02

EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 16.19

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.94 FLOW VELOCITY(FEET/SEC.) = 6.07

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.367

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.70	0.30	1.000	63
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NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 3.00 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22.15  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.26  
 AVERAGE FLOW DEPTH(FEET) = 1.09 TRAVEL TIME(MIN.) = 0.77  
 Tc(MIN.) = 11.15  
 SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 11.91  
 EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 27.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.17 FLOW VELOCITY(FEET/SEC.) = 6.64  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

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 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.264

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	2.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	4.10	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36.89  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.26  
 AVERAGE FLOW DEPTH(FEET) = 1.30 TRAVEL TIME(MIN.) = 0.79  
 Tc(MIN.) = 11.94  
 SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 19.09  
 EFFECTIVE AREA(ACRES) = 25.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 25.5 PEAK FLOW RATE(CFS) = 45.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.40 FLOW VELOCITY(FEET/SEC.) = 7.65  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTREAM(FEET) = 530.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 619.00 CHANNEL SLOPE = 0.0485  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.070

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	8.20	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.70	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 57.10  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.97  
 AVERAGE FLOW DEPTH(FEET) = 1.65 TRAVEL TIME(MIN.) = 1.48  
 Tc(MIN.) = 13.42  
 SUBAREA AREA(ACRES) = 15.10 SUBAREA RUNOFF(CFS) = 24.05  
 EFFECTIVE AREA(ACRES) = 40.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 40.6 PEAK FLOW RATE(CFS) = 64.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.73 FLOW VELOCITY(FEET/SEC.) = 7.16  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51

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 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 530.00 DOWNSTREAM(FEET) = 515.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 377.00 CHANNEL SLOPE = 0.0398  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.952

SUBAREA LOSS RATE DATA(AMC II):

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

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"CHAPARRAL,BROADLEAF"   B      0.50   0.30   1.000   63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"   B      6.50   0.30   1.000   63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"   B      1.30   0.30   1.000   63
NATURAL FAIR COVER
"OPEN BRUSH"            B      1.10   0.30   1.000   66
NATURAL FAIR COVER
"OPEN BRUSH"            B      5.50   0.30   1.000   66
NATURAL FAIR COVER
"OPEN BRUSH"            B      3.40   0.30   1.000   66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 78.29
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.98
AVERAGE FLOW DEPTH(FEET) = 1.93 TRAVEL TIME(MIN.) = 0.90
Tc(MIN.) = 14.32
SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 27.21
EFFECTIVE AREA(ACRES) = 58.90 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 58.9 PEAK FLOW RATE(CFS) = 87.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.02 FLOW VELOCITY(FEET/SEC.) = 7.18
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

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FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 515.00 DOWNSTREAM(FEET) = 490.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0481
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.841
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA     Fp      Ap      SCS
LAND USE           GROUP    (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"   B      0.70   0.30   1.000   63
NATURAL FAIR COVER
"GRASS"                 B      2.20   0.30   1.000   69
NATURAL FAIR COVER
"OPEN BRUSH"            B      3.10   0.30   1.000   66
NATURAL FAIR COVER
"WOODLAND,GRASS"       B      0.90   0.30   1.000   65
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"   B      7.40   0.30   1.000   63
NATURAL FAIR COVER
"GRASS"                 B      0.30   0.30   1.000   69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 97.71
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.93
AVERAGE FLOW DEPTH(FEET) = 2.03 TRAVEL TIME(MIN.) = 1.09
Tc(MIN.) = 15.41

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SUBAREA AREA(ACRES) = 14.60 SUBAREA RUNOFF(CFS) = 20.25
EFFECTIVE AREA(ACRES) = 73.50 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 73.5 PEAK FLOW RATE(CFS) = 101.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.06 FLOW VELOCITY(FEET/SEC.) = 8.03
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

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*****
FLOW PROCESS FROM NODE 31109.00 TO NODE 31109.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc(MIN.) = 15.41
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.841
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA     Fp      Ap      SCS
LAND USE           GROUP    (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"            B      11.40  0.30   1.000   66
NATURAL FAIR COVER
"WOODLAND,GRASS"       B      8.90   0.30   1.000   65
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"   B      1.90   0.30   1.000   63
NATURAL FAIR COVER
"OPEN BRUSH"            B      9.20   0.30   1.000   66
NATURAL FAIR COVER
"WOODLAND,GRASS"       B      1.40   0.30   1.000   65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 32.80 SUBAREA RUNOFF(CFS) = 45.49
EFFECTIVE AREA(ACRES) = 106.30 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 106.3 PEAK FLOW RATE(CFS) = 147.42

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FLOW PROCESS FROM NODE 31109.00 TO NODE 31110.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 490.00 DOWNSTREAM(FEET) = 432.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1420.00 CHANNEL SLOPE = 0.0408
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.688
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA     Fp      Ap      SCS
LAND USE           GROUP    (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"GRASS"                 B      0.80   0.30   1.000   69
NATURAL FAIR COVER
"OPEN BRUSH"            B      0.60   0.30   1.000   66
RESIDENTIAL
".4 DWELLING/ACRE"     B      0.10   0.30   0.900   56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED"  B      1.30   0.30   1.000   79

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NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 4.00 0.30 1.000 65  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 1.50 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 152.60  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.34  
 AVERAGE FLOW DEPTH(FEET) = 2.47 TRAVEL TIME(MIN.) = 2.84  
 Tc(MIN.) = 18.25  
 SUBAREA AREA(ACRES) = 8.30 SUBAREA RUNOFF(CFS) = 10.37  
 EFFECTIVE AREA(ACRES) = 114.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 114.6 PEAK FLOW RATE(CFS) = 147.42  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.44 FLOW VELOCITY(FEET/SEC.) = 8.28  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31110.00 = 4544.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 31110.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 18.25  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.688  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 9.60 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.40 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 6.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 3.90 0.30 1.000 65  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.40 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.998  
 SUBAREA AREA(ACRES) = 21.80 SUBAREA RUNOFF(CFS) = 27.24  
 EFFECTIVE AREA(ACRES) = 136.40 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 136.4 PEAK FLOW RATE(CFS) = 170.37

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 13301.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM(FEET) = 432.00 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1847.00 CHANNEL SLOPE = 0.0271  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.497  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 4.90 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.50 0.30 1.000 79  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.50 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 5.30 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 3.30 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.997  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 180.13  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.44  
 AVERAGE FLOW DEPTH(FEET) = 2.84 TRAVEL TIME(MIN.) = 4.14  
 Tc(MIN.) = 22.38  
 SUBAREA AREA(ACRES) = 18.10 SUBAREA RUNOFF(CFS) = 19.51  
 EFFECTIVE AREA(ACRES) = 154.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 154.5 PEAK FLOW RATE(CFS) = 170.37  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.78 FLOW VELOCITY(FEET/SEC.) = 7.35  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 11

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

\*\*\*\*\*  
 \*\* MAIN STREAM CONFLUENCE DATA \*\*  
 STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER  
 NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE  
 1 170.37 22.38 1.497 0.30( 0.30) 1.00 154.5 31100.00  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

\*\*\*\*\*  
 \*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*  
 STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER  
 NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE  
 1 2621.84 40.24 1.065 0.30( 0.24) 0.81 3547.4 13210.00  
 2 2624.58 40.37 1.064 0.30( 0.24) 0.81 3557.5 13200.00  
 3 2643.67 42.91 1.034 0.30( 0.24) 0.81 3719.3 13100.00  
 4 2521.55 72.14 0.802 0.30( 0.24) 0.81 5012.3 13000.00  
 5 2478.80 74.49 0.791 0.30( 0.24) 0.81 5031.0 13010.00  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

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

1	2395.04	22.38	1.497	0.30	( 0.25)	0.83	2127.6	31100.00
2	2730.78	40.24	1.065	0.30	( 0.25)	0.82	3701.9	13210.00
3	2733.32	40.37	1.064	0.30	( 0.25)	0.82	3712.0	13200.00
4	2748.13	42.91	1.034	0.30	( 0.25)	0.82	3873.8	13100.00
5	2593.06	72.14	0.802	0.30	( 0.24)	0.82	5166.8	13000.00
6	2548.66	74.49	0.791	0.30	( 0.24)	0.82	5185.5	13010.00
TOTAL AREA (ACRES) =		5185.5						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2748.13 Tc(MIN.) = 42.911  
EFFECTIVE AREA(ACRES) = 3873.80 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5185.5  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<<

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.43  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.004  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	9.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2751.11  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.65  
AVERAGE FLOW DEPTH(FEET) = 5.43 TRAVEL TIME(MIN.) = 2.49  
Tc(MIN.) = 45.40  
SUBAREA AREA(ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 5.96  
EFFECTIVE AREA(ACRES) = 3883.20 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 2748.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.42 FLOW VELOCITY(FEET/SEC.) = 7.65  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2395.04	24.98	1.392	0.30( 0.25)	0.83	2137.0	31100.00
2	2730.78	42.73	1.036	0.30( 0.25)	0.82	3711.3	13210.00
3	2733.32	42.86	1.034	0.30( 0.25)	0.82	3721.4	13200.00
4	2748.13	45.40	1.004	0.30( 0.25)	0.82	3883.2	13100.00
5	2593.06	74.67	0.790	0.30( 0.24)	0.82	5176.2	13000.00
6	2548.66	77.03	0.778	0.30( 0.24)	0.82	5194.9	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2748.13 Tc(MIN.) = 45.40  
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.82 EFFECTIVE AREA(ACRES) = 3883.20

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 45.40

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.004

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	13.80	0.30	1.000	86
NATURAL POOR COVER					
"BARREN"	B	2.60	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952  
SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 18.17  
EFFECTIVE AREA(ACRES) = 3911.30 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 2748.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 45.40

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.004

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	0.10	0.30	1.000	79
COMMERCIAL	B	0.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.40	0.30	0.900	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED" B 0.50 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894  
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 2.05  
 EFFECTIVE AREA (ACRES) = 3914.40 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 2748.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 45.40  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.004  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.10	0.30	1.000	86
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.20	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	13.80	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 12.80  
 EFFECTIVE AREA (ACRES) = 3934.60 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 2748.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 45.40  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.004  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	34.60	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.40	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	22.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	11.60	0.30	1.000	79
APARTMENTS	B	0.40	0.30	0.200	56

NATURAL FAIR COVER  
 "CHAPARRAL, BROADLEAF" B 4.80 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 48.51  
 EFFECTIVE AREA (ACRES) = 4011.00 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 2748.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 45.40  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.004  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	1.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	46.40	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	60.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	5.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 72.66  
 EFFECTIVE AREA (ACRES) = 4125.60 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 2803.58

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 4.91  
 CHANNEL FLOW THRU SUBAREA (CFS) = 2803.58  
 FLOW VELOCITY (FEET/SEC.) = 8.82 FLOW DEPTH (FEET) = 4.91  
 TRAVEL TIME (MIN.) = 4.15 Tc (MIN.) = 49.54  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	2438.32	29.31	1.269	0.30 ( 0.25)	0.84	2379.4	31100.00
2	2797.64	46.88	0.987	0.30 ( 0.25)	0.83	3953.7	13210.00

3 2799.68 47.01 0.985 0.30( 0.25) 0.83 3963.8 13200.00  
 4 2803.58 49.54 0.955 0.30( 0.25) 0.83 4125.6 13100.00  
 5 2644.86 78.89 0.769 0.30( 0.25) 0.82 5418.6 13000.00  
 6 2597.35 81.28 0.757 0.30( 0.25) 0.82 5437.3 13010.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2803.58 Tc(MIN.) = 49.54  
 AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA(ACRES) = 4125.60

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 49.54  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.955  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834  
 SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 4.82  
 EFFECTIVE AREA(ACRES) = 4133.20 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 49.54  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.955  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.40	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.20	0.30	1.000	63
COMMERCIAL	B	3.60	0.30	0.100	56
NATURAL FAIR COVER					

"GRASS" B 4.00 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781  
 SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 9.60  
 EFFECTIVE AREA(ACRES) = 4148.00 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 49.54  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.955  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	14.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	6.30	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 14.51  
 EFFECTIVE AREA(ACRES) = 4172.60 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 49.54  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.955  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.80	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	1.60	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	31.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990  
 SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 20.92  
 EFFECTIVE AREA(ACRES) = 4207.90 AREA-AVERAGED Fm(INCH/HR) = 0.25



AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5519.6 PEAK FLOW RATE (CFS) = 2803.58  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 2803.58  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 49.54  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.955  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 1.70 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
RESIDENTIAL  
".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 5.50 0.30 1.000 79  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.20 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830  
SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 6.68  
EFFECTIVE AREA (ACRES) = 4218.40 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 2803.58  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 49.54  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.955  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
RESIDENTIAL  
".4 DWELLING/ACRE" B 1.30 0.30 0.900 56  
NATURAL POOR COVER  
"BARREN" B 0.30 0.30 1.000 86  
COMMERCIAL B 0.20 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
RESIDENTIAL  
".4 DWELLING/ACRE" B 6.50 0.30 0.900 56  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 3.00 0.30 1.000 79  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 7.10  
EFFECTIVE AREA (ACRES) = 4230.00 AREA-AVERAGED Fm (INCH/HR) = 0.25

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 5.68  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.936  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
PUBLIC PARK B 13.80 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2807.80  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.37  
AVERAGE FLOW DEPTH (FEET) = 5.68 TRAVEL TIME (MIN.) = 2.09  
Tc (MIN.) = 51.64  
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 8.45  
EFFECTIVE AREA (ACRES) = 4243.80 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 2803.58  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 5.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 5.68 FLOW VELOCITY (FEET/SEC.) = 7.36  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13304.00 = 38920.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2438.32	31.50	1.223	0.30 ( 0.25)	0.85	2497.6	31100.00
2	2797.64	48.97	0.962	0.30 ( 0.25)	0.83	4071.9	13210.00
3	2799.68	49.10	0.961	0.30 ( 0.25)	0.83	4082.0	13200.00
4	2803.58	51.64	0.936	0.30 ( 0.25)	0.83	4243.8	13100.00
5	2644.86	81.02	0.758	0.30 ( 0.25)	0.83	5536.8	13000.00
6	2597.35	83.42	0.746	0.30 ( 0.25)	0.83	5555.5	13010.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 2803.58 Tc (MIN.) = 51.64  
AREA-AVERAGED Fm (INCH/HR) = 0.25 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA (ACRES) = 4243.80

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 51.64  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.936  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 7.80 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.70 0.30 1.000 79  
 NATURAL POOR COVER  
 "BARREN" B 9.40 0.30 1.000 86  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.10 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.60 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 22.80 SUBAREA RUNOFF(CFS) = 13.05  
 EFFECTIVE AREA(ACRES) = 4266.60 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5578.3 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 51.64  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.936  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.30 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.20 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.70 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994  
 SUBAREA AREA(ACRES) = 3.40 SUBAREA RUNOFF(CFS) = 1.95  
 EFFECTIVE AREA(ACRES) = 4270.00 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5581.7 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.57  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.890  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 27.40 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2810.86  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.64  
 AVERAGE FLOW DEPTH(FEET) = 4.57 TRAVEL TIME(MIN.) = 5.13  
 Tc(MIN.) = 56.76  
 SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 14.56  
 EFFECTIVE AREA(ACRES) = 4297.40 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 4.57 FLOW VELOCITY(FEET/SEC.) = 9.64  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2438.32	36.85	1.125	0.30( 0.26)	0.85	2551.2	31100.00
2	2797.64	54.10	0.914	0.30( 0.25)	0.84	4125.5	13210.00
3	2799.68	54.23	0.913	0.30( 0.25)	0.84	4135.6	13200.00
4	2803.58	56.76	0.890	0.30( 0.25)	0.84	4297.4	13100.00
5	2644.86	86.25	0.732	0.30( 0.25)	0.83	5590.4	13000.00
6	2597.35	88.68	0.721	0.30( 0.25)	0.83	5609.1	13010.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2803.58 Tc(MIN.) = 56.76  
 AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 4297.40

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 56.76  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.890  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 18.40 0.30 1.000 86  
 NATURAL FAIR COVER  
 "MEADOWS" B 1.20 0.30 1.000 70  
 NATURAL FAIR COVER

"WOODLAND,GRASS" B 0.10 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 26.60 0.30 1.000 86  
 COMMERCIAL B 3.90 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.00 0.30 1.000 86  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934  
 SUBAREA AREA (ACRES) = 53.20 SUBAREA RUNOFF (CFS) = 29.22  
 EFFECTIVE AREA (ACRES) = 4350.60 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5662.3 PEAK FLOW RATE (CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 56.76  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.890  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 1.10 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.20 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 14.00 0.30 1.000 86  
 COMMERCIAL B 4.30 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 5.30 0.30 1.000 86  
 NATURAL FAIR COVER  
 "GRASS" B 2.70 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860  
 SUBAREA AREA (ACRES) = 27.60 SUBAREA RUNOFF (CFS) = 15.71  
 EFFECTIVE AREA (ACRES) = 4378.20 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5689.9 PEAK FLOW RATE (CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 56.76  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.890  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "MEADOWS" B 3.20 0.30 1.000 70  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 6.10 0.30 1.000 66  
 RESIDENTIAL

".4 DWELLING/ACRE" B 7.50 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 5.40 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 1.60 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 1.90 0.30 1.000 86  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971  
 SUBAREA AREA (ACRES) = 25.70 SUBAREA RUNOFF (CFS) = 13.86  
 EFFECTIVE AREA (ACRES) = 4403.90 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5715.6 PEAK FLOW RATE (CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 56.76  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.890  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 2.00 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.70 0.30 1.000 86  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 0.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.10 0.30 1.000 65  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807  
 SUBAREA AREA (ACRES) = 10.70 SUBAREA RUNOFF (CFS) = 6.24  
 EFFECTIVE AREA (ACRES) = 4414.60 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5726.3 PEAK FLOW RATE (CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 56.76  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.890  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 8.20 0.30 0.900 56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 4.84  
 EFFECTIVE AREA(ACRES) = 4423.30 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA(ACRES) = 5735.0 PEAK FLOW RATE(CFS) = 2803.58  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 3A10EVRL.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	742.58	14.11	0.30( 0.13)	0.43	433.8	120.00
2	739.67	14.27	0.30( 0.13)	0.43	436.5	110.00
3	635.72	21.58	0.30( 0.13)	0.43	503.8	100.00
4	587.61	24.64	0.30( 0.13)	0.43	510.2	150.00
TOTAL AREA(ACRES) =						510.2

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 11  
 -----

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

\*\*\*\*\*  
 \*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2438.32	36.85	1.125	0.30( 0.26)	0.85	2677.1	31100.00
2	2797.64	54.10	0.914	0.30( 0.25)	0.84	4251.4	13210.00
3	2799.68	54.23	0.913	0.30( 0.25)	0.84	4261.5	13200.00
4	2803.58	56.76	0.890	0.30( 0.25)	0.84	4423.3	13100.00
5	2644.86	86.25	0.732	0.30( 0.25)	0.83	5716.3	13000.00
6	2597.35	88.68	0.721	0.30( 0.25)	0.83	5735.0	13010.00
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 =							41886.54 FEET.

\*\*\*\*\*  
 \*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	742.58	14.11	1.980	0.30( 0.13)	0.43	433.8	120.00
2	739.67	14.27	1.959	0.30( 0.13)	0.43	436.5	110.00
3	635.72	21.58	1.529	0.30( 0.13)	0.43	503.8	100.00
4	587.61	24.64	1.406	0.30( 0.13)	0.43	510.2	150.00
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 13305.00 =							9867.00 FEET.

\*\*\*\*\*  
 \*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2593.56	14.11	1.980	0.30( 0.22)	0.73	1458.6	120.00
2	2588.92	14.27	1.959	0.30( 0.22)	0.73	1472.9	110.00
3	2726.98	21.58	1.529	0.30( 0.22)	0.75	2071.4	100.00
4	2743.52	24.64	1.406	0.30( 0.23)	0.76	2299.9	150.00
5	2896.77	36.85	1.125	0.30( 0.24)	0.79	3187.3	31100.00
6	3158.73	54.10	0.914	0.30( 0.24)	0.80	4761.6	13210.00

7	3160.24	54.23	0.913	0.30( 0.24)	0.80	4771.7	13200.00
8	3153.87	56.76	0.890	0.30( 0.24)	0.80	4933.5	13100.00
9	2922.37	86.25	0.732	0.30( 0.24)	0.80	6226.5	13000.00
10	2869.36	88.68	0.721	0.30( 0.24)	0.80	6245.2	13010.00
TOTAL AREA(ACRES) =						6245.2	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3160.24 Tc(MIN.) = 54.231  
 EFFECTIVE AREA(ACRES) = 4771.66 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.75  
 TOTAL AREA(ACRES) = 6245.2  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.52  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.858

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	68.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3178.90

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.07

AVERAGE FLOW DEPTH(FEET) = 4.52 TRAVEL TIME(MIN.) = 6.64

Tc(MIN.) = 60.87

SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 37.32

EFFECTIVE AREA(ACRES) = 4840.46 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 3160.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.50 FLOW VELOCITY(FEET/SEC.) = 11.05

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13306.00 = 46294.95 FEET.

\*\*\*\*\*  
 \*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2593.56	21.16	1.546	0.30( 0.22)	0.73	1527.4	120.00

2	2588.92	21.33	1.539	0.30	( 0.22)	0.73	1541.7	110.00
3	2726.98	28.52	1.292	0.30	( 0.23)	0.75	2140.2	100.00
4	2743.52	31.57	1.221	0.30	( 0.23)	0.76	2368.7	150.00
5	2896.77	43.67	1.025	0.30	( 0.24)	0.79	3256.1	31100.00
6	3158.73	60.74	0.858	0.30	( 0.24)	0.80	4830.4	13210.00
7	3160.24	60.87	0.858	0.30	( 0.24)	0.80	4840.5	13200.00
8	3153.87	63.41	0.845	0.30	( 0.24)	0.80	5002.3	13100.00
9	2922.37	93.06	0.705	0.30	( 0.24)	0.80	6295.3	13000.00
10	2869.36	95.52	0.699	0.30	( 0.24)	0.80	6314.0	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 3160.24 Tc(MIN.) = 60.87  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 4840.46

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 60.87  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.858  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	21.50	0.30	1.000	86
COMMERCIAL	B	15.30	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.60	0.30	1.000	65
RESIDENTIAL					
".4 DWELLING/ACRE"	B	8.00	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.685  
 SUBAREA AREA(ACRES) = 46.30 SUBAREA RUNOFF(CFS) = 27.17  
 EFFECTIVE AREA(ACRES) = 4886.76 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6360.3 PEAK FLOW RATE(CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 60.87  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.858  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	43.30	0.30	1.000	86
COMMERCIAL	B	4.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	5.70	0.30	1.000	69

AGRICULTURAL FAIR COVER

"ORCHARDS"	B	0.50	0.30	1.000	65
PUBLIC PARK	B	1.10	0.30	0.850	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.10	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA(ACRES) = 58.60 SUBAREA RUNOFF(CFS) = 30.73  
 EFFECTIVE AREA(ACRES) = 4945.36 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6418.9 PEAK FLOW RATE(CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 60.87  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.858  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	6.80	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.50	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.10	0.30	1.000	65
PUBLIC PARK	B	0.50	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
 SUBAREA AREA(ACRES) = 9.70 SUBAREA RUNOFF(CFS) = 5.16  
 EFFECTIVE AREA(ACRES) = 4955.06 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6428.6 PEAK FLOW RATE(CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 60.87  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.858  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.20	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
 SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 1.21

EFFECTIVE AREA (ACRES) = 4957.36 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA (ACRES) = 6430.9 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 245.50 DOWNSTREAM (FEET) = 220.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1543.21 CHANNEL SLOPE = 0.0165  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 4.45  
 CHANNEL FLOW THRU SUBAREA (CFS) = 3160.24  
 FLOW VELOCITY (FEET/SEC.) = 11.23 FLOW DEPTH (FEET) = 4.45  
 TRAVEL TIME (MIN.) = 2.29 Tc (MIN.) = 63.16  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13307.00 = 47838.16 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2593.56	23.60	1.448	0.30 ( 0.22)	0.74	1644.3	120.00
2	2588.92	23.77	1.441	0.30 ( 0.22)	0.74	1658.6	110.00
3	2726.98	30.93	1.233	0.30 ( 0.23)	0.76	2257.1	100.00
4	2743.52	33.97	1.178	0.30 ( 0.23)	0.77	2485.6	150.00
5	2896.77	46.03	0.997	0.30 ( 0.24)	0.79	3373.0	31100.00
6	3158.73	63.03	0.847	0.30 ( 0.24)	0.80	4947.3	13210.00
7	3160.24	63.16	0.846	0.30 ( 0.24)	0.80	4957.4	13200.00
8	3153.87	65.70	0.834	0.30 ( 0.24)	0.80	5119.2	13100.00
9	2922.37	95.41	0.699	0.30 ( 0.24)	0.80	6412.2	13000.00
10	2869.36	97.89	0.692	0.30 ( 0.24)	0.80	6430.9	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 3160.24 Tc (MIN.) = 63.16  
 AREA-AVERAGED Fm (INCH/HR) = 0.24 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA (ACRES) = 4957.36

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 63.16  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.846

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.20	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	3.70	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					

"GRASS" B 3.20 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.942  
 SUBAREA AREA (ACRES) = 7.70 SUBAREA RUNOFF (CFS) = 3.91  
 EFFECTIVE AREA (ACRES) = 4965.06 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA (ACRES) = 6438.6 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 63.16  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.846  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 3.60 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 1.90 0.30 1.000 69  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.60 0.30 1.000 65  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 6.10 SUBAREA RUNOFF (CFS) = 3.00  
 EFFECTIVE AREA (ACRES) = 4971.16 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA (ACRES) = 6444.7 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 220.00 DOWNSTREAM (FEET) = 212.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 925.62 CHANNEL SLOPE = 0.0086  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.33  
 CHANNEL FLOW THRU SUBAREA (CFS) = 3160.24  
 FLOW VELOCITY (FEET/SEC.) = 8.99 FLOW DEPTH (FEET) = 5.33  
 TRAVEL TIME (MIN.) = 1.72 Tc (MIN.) = 64.88  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2593.56	25.43	1.379	0.30 ( 0.22)	0.74	1658.1	120.00
2	2588.92	25.60	1.374	0.30 ( 0.22)	0.74	1672.4	110.00
3	2726.98	32.72	1.200	0.30 ( 0.23)	0.76	2270.9	100.00
4	2743.52	35.76	1.145	0.30 ( 0.23)	0.77	2499.4	150.00
5	2896.77	47.79	0.976	0.30 ( 0.24)	0.79	3386.8	31100.00
6	3158.73	64.75	0.839	0.30 ( 0.24)	0.80	4961.1	13210.00

7 3160.24 64.88 0.838 0.30( 0.24) 0.80 4971.2 13200.00  
 8 3153.87 67.41 0.825 0.30( 0.24) 0.80 5133.0 13100.00  
 9 2922.37 97.17 0.694 0.30( 0.24) 0.80 6426.0 13000.00  
 10 2869.36 99.65 0.687 0.30( 0.24) 0.80 6444.7 13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 3160.24 Tc(MIN.) = 64.88  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 4971.16

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	5.00	0.30	1.000	65
COMMERCIAL	B	3.20	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.90	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697  
 SUBAREA AREA(ACRES) = 9.50 SUBAREA RUNOFF(CFS) = 5.38  
 EFFECTIVE AREA(ACRES) = 4980.66 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6454.2 PEAK FLOW RATE(CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	B	0.30	0.30	0.200	56
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	B	1.00	0.30	1.000	63
COMMERCIAL	B	41.90	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	7.20	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	25.00	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498  
 SUBAREA AREA(ACRES) = 75.60 SUBAREA RUNOFF(CFS) = 46.85  
 EFFECTIVE AREA(ACRES) = 5056.26 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6529.8 PEAK FLOW RATE(CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	0.90	0.30	1.000	79
SCHOOL	B	0.30	0.30	0.600	56
NATURAL FAIR COVER "WOODLAND, GRASS"	B	13.20	0.30	1.000	65
APARTMENTS	B	0.50	0.30	0.200	56
NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	B	0.60	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966  
 SUBAREA AREA(ACRES) = 15.60 SUBAREA RUNOFF(CFS) = 7.70  
 EFFECTIVE AREA(ACRES) = 5071.86 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6545.4 PEAK FLOW RATE(CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	33.90	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	17.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	16.80	0.30	1.000	66
RESIDENTIAL "11+ DWELLINGS/ACRE"	B	0.60	0.30	0.200	56
RESIDENTIAL "8-10 DWELLINGS/ACRE"	B	1.50	0.30	0.400	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	10.00	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603

SUBAREA AREA (ACRES) = 80.40 SUBAREA RUNOFF (CFS) = 47.54  
 EFFECTIVE AREA (ACRES) = 5152.26 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6625.8 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 SCHOOL B 0.30 0.30 0.600 56  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.70 0.30 1.000 65  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.880  
 SUBAREA AREA (ACRES) = 1.00 SUBAREA RUNOFF (CFS) = 0.52  
 EFFECTIVE AREA (ACRES) = 5153.26 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6626.8 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.80 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 0.50 0.30 1.000 69  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 2.10 SUBAREA RUNOFF (CFS) = 1.02  
 EFFECTIVE AREA (ACRES) = 5155.36 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6628.9 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 64.88  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.838  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 1.20 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 PUBLIC PARK B 1.70 0.30 0.850 56  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 7.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 1.00 0.30 1.000 69  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.978  
 SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 5.68  
 EFFECTIVE AREA (ACRES) = 5166.96 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6640.5 PEAK FLOW RATE (CFS) = 3160.24  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU10EV29.DNA  
 MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13334.12	18.21	0.30 ( 0.22)	0.75	3385.3	210.00
2	14968.07	25.94	0.30 ( 0.23)	0.75	5060.5	50330.00
3	15981.16	31.69	0.30 ( 0.23)	0.77	6607.8	50220.00
4	17317.31	43.26	0.30 ( 0.24)	0.82	9995.4	400.00
5	17845.70	48.63	0.30 ( 0.25)	0.84	11723.2	390.00
6	19191.37	61.62	0.30 ( 0.26)	0.88	15830.6	40100.00
7	19827.82	70.66	0.30 ( 0.27)	0.90	18608.3	11801.00
8	21083.15	84.24	0.30 ( 0.28)	0.92	23603.6	11530.00
9	21944.16	92.45	0.30 ( 0.28)	0.93	27491.7	11900.00
10	23441.63	102.12	0.30 ( 0.28)	0.94	33302.2	11330.00
11	24292.59	110.32	0.30 ( 0.28)	0.95	38389.4	10630.00
12	24191.90	115.90	0.30 ( 0.29)	0.95	40979.2	12330.00
13	24066.17	122.51	0.30 ( 0.29)	0.95	44121.7	11600.00
14	23804.17	128.27	0.30 ( 0.29)	0.95	46356.0	11111.00
15	23508.05	134.38	0.30 ( 0.29)	0.96	48289.9	12201.00
16	22767.29	143.29	0.30 ( 0.29)	0.96	50378.1	1231.00
17	22074.72	150.74	0.30 ( 0.29)	0.96	51789.7	10400.00
18	20959.71	162.09	0.30 ( 0.29)	0.96	53410.4	10320.00
19	19866.75	171.76	0.30 ( 0.29)	0.96	53798.3	12000.00



20 17219.75 200.79 0.30( 0.29) 0.96 54415.3 10100.00  
TOTAL AREA(ACRES) = 54415.3

\*\*\*\*\*

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13334.12	18.21	0.30( 0.22)	0.75	3385.3	210.00
2	14968.07	25.94	0.30( 0.23)	0.75	5060.5	50330.00
3	15981.16	31.69	0.30( 0.23)	0.77	6607.8	50220.00
4	17317.31	43.26	0.30( 0.24)	0.82	9995.4	400.00
5	17845.70	48.63	0.30( 0.25)	0.84	11723.2	390.00
6	19191.37	61.62	0.30( 0.26)	0.88	15830.6	40100.00
7	19827.82	70.66	0.30( 0.27)	0.90	18608.3	11801.00
8	21083.15	84.24	0.30( 0.28)	0.92	23603.6	11530.00
9	21944.16	92.45	0.30( 0.28)	0.93	27491.7	11900.00
10	23441.63	102.12	0.30( 0.28)	0.94	33302.2	11330.00
11	24292.59	110.32	0.30( 0.28)	0.95	38389.4	10630.00
12	24191.90	115.90	0.30( 0.29)	0.95	40979.2	12330.00
13	24066.17	122.51	0.30( 0.29)	0.95	44121.7	11600.00
14	23804.17	128.27	0.30( 0.29)	0.95	46356.0	11111.00
15	23508.05	134.38	0.30( 0.29)	0.96	48289.9	12201.00
16	22767.29	143.29	0.30( 0.29)	0.96	50378.1	12231.00
17	22074.72	150.74	0.30( 0.29)	0.96	51789.7	10400.00
18	20959.71	162.09	0.30( 0.29)	0.96	53410.4	10320.00
19	19866.75	171.76	0.30( 0.29)	0.96	53798.3	12000.00
20	17219.75	200.79	0.30( 0.29)	0.96	54415.3	10100.00

TOTAL AREA(ACRES) = 54415.3

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FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 13.81  
CHANNEL FLOW THRU SUBAREA(CFS) = 24292.59  
FLOW VELOCITY(FEET/SEC.) = 6.54 FLOW DEPTH(FEET) = 13.81  
TRAVEL TIME(MIN.) = 3.54 Tc(MIN.) = 113.87  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13334.12	22.49	1.492	0.30( 0.22)	0.75	3385.3	210.00
2	14968.07	30.07	1.249	0.30( 0.23)	0.75	5060.5	50330.00
3	15981.16	35.73	1.146	0.30( 0.23)	0.77	6607.8	50220.00
4	17317.31	47.20	0.983	0.30( 0.24)	0.82	9995.4	400.00
5	17845.70	52.53	0.928	0.30( 0.25)	0.84	11723.2	390.00

6	19191.37	65.44	0.835	0.30( 0.26)	0.88	15830.6	40100.00
7	19827.82	74.43	0.791	0.30( 0.27)	0.90	18608.3	11801.00
8	21083.15	87.94	0.724	0.30( 0.28)	0.92	23603.6	11530.00
9	21944.16	96.11	0.697	0.30( 0.28)	0.93	27491.7	11900.00
10	23441.63	105.70	0.670	0.30( 0.28)	0.94	33302.2	11330.00
11	24292.59	113.87	0.647	0.30( 0.28)	0.95	38389.4	10630.00
12	24191.90	119.45	0.632	0.30( 0.29)	0.95	40979.2	12330.00
13	24066.17	126.06	0.620	0.30( 0.29)	0.95	44121.7	11600.00
14	23804.17	131.84	0.610	0.30( 0.29)	0.95	46356.0	11111.00
15	23508.05	137.96	0.599	0.30( 0.29)	0.96	48289.9	12201.00
16	22767.29	146.90	0.584	0.30( 0.29)	0.96	50378.1	12231.00
17	22074.72	154.39	0.572	0.30( 0.29)	0.96	51789.7	10400.00
18	20959.71	165.80	0.552	0.30( 0.29)	0.96	53410.4	10320.00
19	19866.75	175.53	0.536	0.30( 0.29)	0.96	53798.3	12000.00
20	17219.75	204.74	0.509	0.30( 0.29)	0.96	54415.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 24292.59 Tc(MIN.) = 113.87

AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 38389.38

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FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13334.12	22.49	1.492	0.30( 0.22)	0.75	3385.3	210.00
2	14968.07	30.07	1.249	0.30( 0.23)	0.75	5060.5	50330.00
3	15981.16	35.73	1.146	0.30( 0.23)	0.77	6607.8	50220.00
4	17317.31	47.20	0.983	0.30( 0.24)	0.82	9995.4	400.00
5	17845.70	52.53	0.928	0.30( 0.25)	0.84	11723.2	390.00
6	19191.37	65.44	0.835	0.30( 0.26)	0.88	15830.6	40100.00
7	19827.82	74.43	0.791	0.30( 0.27)	0.90	18608.3	11801.00
8	21083.15	87.94	0.724	0.30( 0.28)	0.92	23603.6	11530.00
9	21944.16	96.11	0.697	0.30( 0.28)	0.93	27491.7	11900.00
10	23441.63	105.70	0.670	0.30( 0.28)	0.94	33302.2	11330.00
11	24292.59	113.87	0.647	0.30( 0.28)	0.95	38389.4	10630.00
12	24191.90	119.45	0.632	0.30( 0.29)	0.95	40979.2	12330.00
13	24066.17	126.06	0.620	0.30( 0.29)	0.95	44121.7	11600.00
14	23804.17	131.84	0.610	0.30( 0.29)	0.95	46356.0	11111.00
15	23508.05	137.96	0.599	0.30( 0.29)	0.96	48289.9	12201.00
16	22767.29	146.90	0.584	0.30( 0.29)	0.96	50378.1	12231.00
17	22074.72	154.39	0.572	0.30( 0.29)	0.96	51789.7	10400.00
18	20959.71	165.80	0.552	0.30( 0.29)	0.96	53410.4	10320.00
19	19866.75	175.53	0.536	0.30( 0.29)	0.96	53798.3	12000.00
20	17219.75	204.74	0.509	0.30( 0.29)	0.96	54415.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2593.56	25.43	1.379	0.30( 0.22)	0.73	1853.9	120.00
2	2588.92	25.60	1.374	0.30( 0.22)	0.73	1868.2	110.00
3	2726.98	32.72	1.200	0.30( 0.22)	0.75	2466.7	100.00
4	2743.52	35.76	1.145	0.30( 0.23)	0.76	2695.2	150.00

5	2896.77	47.79	0.976	0.30 ( 0.23)	0.78	3582.6	31100.00
6	3158.73	64.75	0.839	0.30 ( 0.24)	0.79	5156.9	13210.00
7	3160.24	64.88	0.838	0.30 ( 0.24)	0.79	5167.0	13200.00
8	3153.87	67.41	0.825	0.30 ( 0.24)	0.79	5328.8	13100.00
9	2922.37	97.17	0.694	0.30 ( 0.24)	0.79	6621.8	13000.00
10	2869.36	99.65	0.687	0.30 ( 0.24)	0.79	6640.5	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15852.50	22.49	1.492	0.30 ( 0.22)	0.74	5025.2	210.00
2	16560.66	25.43	1.379	0.30 ( 0.22)	0.74	5888.2	120.00
3	16592.58	25.60	1.374	0.30 ( 0.22)	0.74	5940.0	110.00
4	17643.62	30.07	1.249	0.30 ( 0.23)	0.75	7304.2	50330.00
5	18170.25	32.72	1.200	0.30 ( 0.23)	0.76	8253.0	100.00
6	18724.51	35.73	1.146	0.30 ( 0.23)	0.76	9300.7	50220.00
7	18728.37	35.76	1.145	0.30 ( 0.23)	0.76	9312.4	150.00
8	20206.52	47.20	0.983	0.30 ( 0.24)	0.81	13534.3	400.00
9	20272.86	47.79	0.976	0.30 ( 0.24)	0.81	13770.2	31100.00
10	20815.71	52.53	0.928	0.30 ( 0.25)	0.82	15746.0	390.00
11	22278.38	64.75	0.839	0.30 ( 0.26)	0.86	20768.6	13210.00
12	22293.07	64.88	0.838	0.30 ( 0.26)	0.86	20818.8	13200.00
13	22350.20	65.44	0.835	0.30 ( 0.26)	0.86	21033.3	40100.00
14	22485.00	67.41	0.825	0.30 ( 0.26)	0.86	21769.3	13100.00
15	22927.08	74.43	0.791	0.30 ( 0.26)	0.87	24242.2	11801.00
16	24077.29	87.94	0.724	0.30 ( 0.27)	0.89	29824.6	11530.00
17	24874.79	96.11	0.697	0.30 ( 0.27)	0.90	34067.4	11900.00
18	25032.15	97.17	0.694	0.30 ( 0.27)	0.90	34756.2	13000.00
19	25367.46	99.65	0.687	0.30 ( 0.27)	0.91	36281.6	13010.00
20	26202.81	105.70	0.670	0.30 ( 0.27)	0.92	39942.8	11330.00
21	26907.62	113.87	0.647	0.30 ( 0.28)	0.93	45029.9	10630.00
22	26706.99	119.45	0.632	0.30 ( 0.28)	0.93	47619.8	12330.00
23	26505.56	126.06	0.620	0.30 ( 0.28)	0.93	50762.2	11600.00
24	26180.79	131.84	0.610	0.30 ( 0.28)	0.93	52996.6	11111.00
25	25818.09	137.96	0.599	0.30 ( 0.28)	0.94	54930.4	12201.00
26	24980.22	146.90	0.584	0.30 ( 0.28)	0.94	57018.7	12231.00
27	24206.31	154.39	0.572	0.30 ( 0.28)	0.94	58430.2	10400.00
28	22967.28	165.80	0.552	0.30 ( 0.28)	0.94	60051.0	10320.00
29	21768.58	175.53	0.536	0.30 ( 0.28)	0.94	60438.8	12000.00
30	18950.08	204.74	0.509	0.30 ( 0.28)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 26907.62 Tc (MIN.) = 113.866  
EFFECTIVE AREA (ACRES) = 45029.91 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 61055.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 61055.8 TC (MIN.) = 113.87  
EFFECTIVE AREA (ACRES) = 45029.91 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.925  
PEAK FLOW RATE (CFS) = 26907.62

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	15852.50	22.49	1.492	0.30 ( 0.22)	0.74	5025.2 210.00
2	16560.66	25.43	1.379	0.30 ( 0.22)	0.74	5888.2 120.00
3	16592.58	25.60	1.374	0.30 ( 0.22)	0.74	5940.0 110.00
4	17643.62	30.07	1.249	0.30 ( 0.23)	0.75	7304.2 50330.00
5	18170.25	32.72	1.200	0.30 ( 0.23)	0.76	8253.0 100.00
6	18724.51	35.73	1.146	0.30 ( 0.23)	0.76	9300.7 50220.00
7	18728.37	35.76	1.145	0.30 ( 0.23)	0.76	9312.4 150.00
8	20206.52	47.20	0.983	0.30 ( 0.24)	0.81	13534.3 400.00
9	20272.86	47.79	0.976	0.30 ( 0.24)	0.81	13770.2 31100.00
10	20815.71	52.53	0.928	0.30 ( 0.25)	0.82	15746.0 390.00
11	22278.38	64.75	0.839	0.30 ( 0.26)	0.86	20768.6 13210.00
12	22293.07	64.88	0.838	0.30 ( 0.26)	0.86	20818.8 13200.00
13	22350.20	65.44	0.835	0.30 ( 0.26)	0.86	21033.3 40100.00
14	22485.00	67.41	0.825	0.30 ( 0.26)	0.86	21769.3 13100.00
15	22927.08	74.43	0.791	0.30 ( 0.26)	0.87	24242.2 11801.00
16	24077.29	87.94	0.724	0.30 ( 0.27)	0.89	29824.6 11530.00
17	24874.79	96.11	0.697	0.30 ( 0.27)	0.90	34067.4 11900.00
18	25032.15	97.17	0.694	0.30 ( 0.27)	0.90	34756.2 13000.00
19	25367.46	99.65	0.687	0.30 ( 0.27)	0.91	36281.6 13010.00
20	26202.81	105.70	0.670	0.30 ( 0.27)	0.92	39942.8 11330.00
21	26907.62	113.87	0.647	0.30 ( 0.28)	0.93	45029.9 10630.00
22	26706.99	119.45	0.632	0.30 ( 0.28)	0.93	47619.8 12330.00
23	26505.56	126.06	0.620	0.30 ( 0.28)	0.93	50762.2 11600.00
24	26180.79	131.84	0.610	0.30 ( 0.28)	0.93	52996.6 11111.00
25	25818.09	137.96	0.599	0.30 ( 0.28)	0.94	54930.4 12201.00
26	24980.22	146.90	0.584	0.30 ( 0.28)	0.94	57018.7 12231.00
27	24206.31	154.39	0.572	0.30 ( 0.28)	0.94	58430.2 10400.00
28	22967.28	165.80	0.552	0.30 ( 0.28)	0.94	60051.0 10320.00
29	21768.58	175.53	0.536	0.30 ( 0.28)	0.94	60438.8 12000.00
30	18950.08	204.74	0.509	0.30 ( 0.28)	0.94	61055.8 10100.00

=====  
END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S34- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV34.DAT  
TIME/DATE OF STUDY: 15:57 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*

NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.757
- 2) 10.00; 2.507
- 3) 15.00; 1.859
- 4) 20.00; 1.590
- 5) 25.00; 1.388
- 6) 30.00; 1.248
- 7) 40.00; 1.066
- 8) 50.00; 0.948
- 9) 60.00; 0.860
- 10) 90.00; 0.712
- 11) 120.00; 0.627
- 12) 180.00; 0.525
- 13) 360.00; 0.386
- 14) 1200.00; 0.169

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN CROSSFALL (FT)	TO STREET / SIDE (FT)	STREET-CROSSFALL / SIDE (FT)	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES LIP (FT)	MANNING HIKE FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV33.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16592.58	25.60	0.30 ( 0.22)	0.74	5940.0	110.00
2	18170.25	32.72	0.30 ( 0.23)	0.76	8253.0	100.00
3	18728.37	35.76	0.30 ( 0.23)	0.76	9312.4	150.00
4	20272.86	47.79	0.30 ( 0.24)	0.81	13770.2	31100.00
5	20815.71	52.53	0.30 ( 0.25)	0.82	15746.0	390.00
6	22485.00	67.41	0.30 ( 0.26)	0.86	21769.3	13100.00
7	22927.08	74.43	0.30 ( 0.26)	0.87	24242.2	11801.00
8	24077.29	87.94	0.30 ( 0.27)	0.89	29824.6	11530.00
9	25367.46	99.65	0.30 ( 0.27)	0.91	36281.6	13010.00
10	26202.81	105.70	0.30 ( 0.27)	0.92	39942.8	11330.00
11	26907.62	113.87	0.30 ( 0.28)	0.93	45029.9	10630.00
12	26706.99	119.45	0.30 ( 0.28)	0.93	47619.8	12330.00
13	26505.56	126.06	0.30 ( 0.28)	0.93	50762.2	11600.00
14	26180.79	131.84	0.30 ( 0.28)	0.93	52996.6	11111.00
15	25818.09	137.96	0.30 ( 0.28)	0.94	54930.4	12201.00
16	24980.22	146.90	0.30 ( 0.28)	0.94	57018.7	12231.00
17	24206.31	154.39	0.30 ( 0.28)	0.94	58430.2	10400.00
18	22967.28	165.80	0.30 ( 0.28)	0.94	60051.0	10320.00
19	21768.58	175.53	0.30 ( 0.28)	0.94	60438.8	12000.00
20	18950.08	204.74	0.30 ( 0.28)	0.94	61055.8	10100.00
TOTAL AREA (ACRES) =						61055.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16592.58	25.60	0.30 ( 0.22)	0.74	5940.0	110.00
2	18170.25	32.72	0.30 ( 0.23)	0.76	8253.0	100.00
3	18728.37	35.76	0.30 ( 0.23)	0.76	9312.4	150.00
4	20272.86	47.79	0.30 ( 0.24)	0.81	13770.2	31100.00
5	20815.71	52.53	0.30 ( 0.25)	0.82	15746.0	390.00
6	22485.00	67.41	0.30 ( 0.26)	0.86	21769.3	13100.00
7	22927.08	74.43	0.30 ( 0.26)	0.87	24242.2	11801.00
8	24077.29	87.94	0.30 ( 0.27)	0.89	29824.6	11530.00
9	25367.46	99.65	0.30 ( 0.27)	0.91	36281.6	13010.00
10	26202.81	105.70	0.30 ( 0.27)	0.92	39942.8	11330.00
11	26907.62	113.87	0.30 ( 0.28)	0.93	45029.9	10630.00
12	26706.99	119.45	0.30 ( 0.28)	0.93	47619.8	12330.00
13	26505.56	126.06	0.30 ( 0.28)	0.93	50762.2	11600.00

14	26180.79	131.84	0.30	( 0.28)	0.93	52996.6	11111.00
15	25818.09	137.96	0.30	( 0.28)	0.94	54930.4	12201.00
16	24980.22	146.90	0.30	( 0.28)	0.94	57018.7	12231.00
17	24206.31	154.39	0.30	( 0.28)	0.94	58430.2	10400.00
18	22967.28	165.80	0.30	( 0.28)	0.94	60051.0	10320.00
19	21768.58	175.53	0.30	( 0.28)	0.94	60438.8	12000.00
20	18950.08	204.74	0.30	( 0.28)	0.94	61055.8	10100.00
TOTAL AREA (ACRES) =							61055.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 212.00 DOWNSTREAM (FEET) = 209.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 623.02 CHANNEL SLOPE = 0.0048  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.59  
CHANNEL FLOW THRU SUBAREA (CFS) = 26907.62  
FLOW VELOCITY (FEET/SEC.) = 12.89 FLOW DEPTH (FEET) = 8.59  
TRAVEL TIME (MIN.) = 0.81 Tc (MIN.) = 114.67  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16592.58	26.54	1.345	0.30 ( 0.22)	0.74	5940.0	110.00
2	18170.25	33.64	1.182	0.30 ( 0.23)	0.76	8253.0	100.00
3	18728.37	36.67	1.127	0.30 ( 0.23)	0.76	9312.4	150.00
4	20272.86	48.68	0.964	0.30 ( 0.24)	0.81	13770.2	31100.00
5	20815.71	53.41	0.918	0.30 ( 0.25)	0.82	15746.0	390.00
6	22485.00	68.27	0.819	0.30 ( 0.26)	0.86	21769.3	13100.00
7	22927.08	75.28	0.785	0.30 ( 0.26)	0.87	24242.2	11801.00
8	24077.29	88.78	0.718	0.30 ( 0.27)	0.89	29824.6	11530.00
9	25367.46	100.48	0.682	0.30 ( 0.27)	0.91	36281.6	13010.00
10	26202.81	106.51	0.665	0.30 ( 0.27)	0.92	39942.8	11330.00
11	26907.62	114.67	0.642	0.30 ( 0.28)	0.93	45029.9	10630.00
12	26706.99	120.26	0.627	0.30 ( 0.28)	0.93	47619.8	12330.00
13	26505.56	126.87	0.615	0.30 ( 0.28)	0.93	50762.2	11600.00
14	26180.79	132.65	0.605	0.30 ( 0.28)	0.93	52996.6	11111.00
15	25818.09	138.78	0.595	0.30 ( 0.28)	0.94	54930.4	12201.00
16	24980.22	147.73	0.580	0.30 ( 0.28)	0.94	57018.7	12231.00
17	24206.31	155.22	0.567	0.30 ( 0.28)	0.94	58430.2	10400.00
18	22967.28	166.65	0.548	0.30 ( 0.28)	0.94	60051.0	10320.00
19	21768.58	176.40	0.531	0.30 ( 0.28)	0.94	60438.8	12000.00
20	18950.08	205.64	0.505	0.30 ( 0.28)	0.94	61055.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 26907.62 Tc (MIN.) = 114.67  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 45029.91

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P505XX10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	165.51	18.39	1.677	0.30 ( 0.29)	0.96	146.4	50500.00
TOTAL AREA (ACRES) =							146.4

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11  
-----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16592.58	26.54	1.345	0.30 ( 0.22)	0.74	5940.0	110.00
2	18170.25	33.64	1.182	0.30 ( 0.23)	0.76	8253.0	100.00
3	18728.37	36.67	1.127	0.30 ( 0.23)	0.76	9312.4	150.00
4	20272.86	48.68	0.964	0.30 ( 0.24)	0.81	13770.2	31100.00
5	20815.71	53.41	0.918	0.30 ( 0.25)	0.82	15746.0	390.00
6	22485.00	68.27	0.819	0.30 ( 0.26)	0.86	21769.3	13100.00
7	22927.08	75.28	0.785	0.30 ( 0.26)	0.87	24242.2	11801.00
8	24077.29	88.78	0.718	0.30 ( 0.27)	0.89	29824.6	11530.00
9	25367.46	100.48	0.682	0.30 ( 0.27)	0.91	36281.6	13010.00
10	26202.81	106.51	0.665	0.30 ( 0.27)	0.92	39942.8	11330.00
11	26907.62	114.67	0.642	0.30 ( 0.28)	0.93	45029.9	10630.00
12	26706.99	120.26	0.627	0.30 ( 0.28)	0.93	47619.8	12330.00
13	26505.56	126.87	0.615	0.30 ( 0.28)	0.93	50762.2	11600.00
14	26180.79	132.65	0.605	0.30 ( 0.28)	0.93	52996.6	11111.00
15	25818.09	138.78	0.595	0.30 ( 0.28)	0.94	54930.4	12201.00
16	24980.22	147.73	0.580	0.30 ( 0.28)	0.94	57018.7	12231.00
17	24206.31	155.22	0.567	0.30 ( 0.28)	0.94	58430.2	10400.00
18	22967.28	166.65	0.548	0.30 ( 0.28)	0.94	60051.0	10320.00
19	21768.58	176.40	0.531	0.30 ( 0.28)	0.94	60438.8	12000.00
20	18950.08	205.64	0.505	0.30 ( 0.28)	0.94	61055.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	165.51	18.39	1.677	0.30 ( 0.29)	0.96	146.4	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 5416.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15063.10	18.39	1.677	0.30 ( 0.23)	0.75	4262.0	50500.00
2	16718.56	26.54	1.345	0.30 ( 0.22)	0.75	6086.4	110.00
3	18276.80	33.64	1.182	0.30 ( 0.23)	0.76	8399.4	100.00
4	18828.35	36.67	1.127	0.30 ( 0.23)	0.77	9458.8	150.00
5	20353.41	48.68	0.964	0.30 ( 0.24)	0.81	13916.6	31100.00
6	20890.83	53.41	0.918	0.30 ( 0.25)	0.82	15892.4	390.00
7	22548.35	68.27	0.819	0.30 ( 0.26)	0.86	21915.7	13100.00
8	22986.30	75.28	0.785	0.30 ( 0.26)	0.87	24388.6	11801.00
9	24128.59	88.78	0.718	0.30 ( 0.27)	0.89	29971.0	11530.00
10	25414.50	100.48	0.682	0.30 ( 0.27)	0.91	36428.0	13010.00
11	26247.81	106.51	0.665	0.30 ( 0.27)	0.92	40089.2	11330.00

12 26949.86 114.67 0.642 0.30( 0.28) 0.93 45176.3 10630.00  
 13 26747.39 120.26 0.627 0.30( 0.28) 0.93 47766.2 12330.00  
 14 26544.62 126.87 0.615 0.30( 0.28) 0.93 50908.6 11600.00  
 15 26218.68 132.65 0.605 0.30( 0.28) 0.93 53143.0 11111.00  
 16 25854.74 138.78 0.595 0.30( 0.28) 0.94 55076.8 12201.00  
 17 25015.05 147.73 0.580 0.30( 0.28) 0.94 57165.1 12231.00  
 18 24239.62 155.22 0.567 0.30( 0.28) 0.94 58576.6 10400.00  
 19 22998.28 166.65 0.548 0.30( 0.28) 0.94 60197.4 10320.00  
 20 21797.61 176.40 0.531 0.30( 0.28) 0.94 60585.2 12000.00  
 21 18976.01 205.64 0.505 0.30( 0.28) 0.94 61202.2 10100.00  
 TOTAL AREA (ACRES) = 61202.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 26949.86 Tc (MIN.) = 114.672  
 EFFECTIVE AREA (ACRES) = 45176.31 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 61202.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13402.00 TO NODE 13404.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 209.00 DOWNSTREAM (FEET) = 207.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 395.35 CHANNEL SLOPE = 0.0051  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.48  
 CHANNEL FLOW THRU SUBAREA (CFS) = 26949.86  
 FLOW VELOCITY (FEET/SEC.) = 13.11 FLOW DEPTH (FEET) = 8.48  
 TRAVEL TIME (MIN.) = 0.50 Tc (MIN.) = 115.17  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15063.10	19.00	1.644	0.30( 0.23)	0.75	4262.0	50500.00
2	16718.56	27.13	1.328	0.30( 0.22)	0.75	6086.4	110.00
3	18276.80	34.21	1.171	0.30( 0.23)	0.76	8399.4	100.00
4	18828.35	37.24	1.116	0.30( 0.23)	0.77	9458.8	150.00
5	20353.41	49.23	0.957	0.30( 0.24)	0.81	13916.6	31100.00
6	20890.83	53.96	0.913	0.30( 0.25)	0.82	15892.4	390.00
7	22548.35	68.80	0.817	0.30( 0.26)	0.86	21915.7	13100.00
8	22986.30	75.81	0.782	0.30( 0.26)	0.87	24388.6	11801.00
9	24128.59	89.30	0.715	0.30( 0.27)	0.89	29971.0	11530.00
10	25414.50	100.99	0.681	0.30( 0.27)	0.91	36428.0	13010.00
11	26247.81	107.02	0.664	0.30( 0.27)	0.92	40089.2	11330.00
12	26949.86	115.17	0.641	0.30( 0.28)	0.93	45176.3	10630.00
13	26747.39	120.76	0.626	0.30( 0.28)	0.93	47766.2	12330.00
14	26544.62	127.38	0.614	0.30( 0.28)	0.93	50908.6	11600.00
15	26218.68	133.16	0.605	0.30( 0.28)	0.93	53143.0	11111.00
16	25854.74	139.29	0.594	0.30( 0.28)	0.94	55076.8	12201.00
17	25015.05	148.24	0.579	0.30( 0.28)	0.94	57165.1	12231.00
18	24239.62	155.74	0.566	0.30( 0.28)	0.94	58576.6	10400.00
19	22998.28	167.18	0.547	0.30( 0.28)	0.94	60197.4	10320.00
20	21797.61	176.94	0.530	0.30( 0.28)	0.94	60585.2	12000.00

21 18976.01 206.21 0.505 0.30( 0.28) 0.94 61202.2 10100.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 26949.86 Tc (MIN.) = 115.17  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 45176.31

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P506XX10.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	54.80	18.85	0.30( 0.29)	0.97	49.5	50600.00
TOTAL AREA (ACRES) = 49.5						

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15063.10	19.00	1.644	0.30( 0.23)	0.75	4262.0	50500.00
2	16718.56	27.13	1.328	0.30( 0.22)	0.75	6086.4	110.00
3	18276.80	34.21	1.171	0.30( 0.23)	0.76	8399.4	100.00
4	18828.35	37.24	1.116	0.30( 0.23)	0.77	9458.8	150.00
5	20353.41	49.23	0.957	0.30( 0.24)	0.81	13916.6	31100.00
6	20890.83	53.96	0.913	0.30( 0.25)	0.82	15892.4	390.00
7	22548.35	68.80	0.817	0.30( 0.26)	0.86	21915.7	13100.00
8	22986.30	75.81	0.782	0.30( 0.26)	0.87	24388.6	11801.00
9	24128.59	89.30	0.715	0.30( 0.27)	0.89	29971.0	11530.00
10	25414.50	100.99	0.681	0.30( 0.27)	0.91	36428.0	13010.00
11	26247.81	107.02	0.664	0.30( 0.27)	0.92	40089.2	11330.00
12	26949.86	115.17	0.641	0.30( 0.28)	0.93	45176.3	10630.00
13	26747.39	120.76	0.626	0.30( 0.28)	0.93	47766.2	12330.00
14	26544.62	127.38	0.614	0.30( 0.28)	0.93	50908.6	11600.00
15	26218.68	133.16	0.605	0.30( 0.28)	0.93	53143.0	11111.00
16	25854.74	139.29	0.594	0.30( 0.28)	0.94	55076.8	12201.00
17	25015.05	148.24	0.579	0.30( 0.28)	0.94	57165.1	12231.00
18	24239.62	155.74	0.566	0.30( 0.28)	0.94	58576.6	10400.00
19	22998.28	167.18	0.547	0.30( 0.28)	0.94	60197.4	10320.00
20	21797.61	176.94	0.530	0.30( 0.28)	0.94	60585.2	12000.00
21	18976.01	206.21	0.505	0.30( 0.28)	0.94	61202.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.							

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	54.80	18.85	1.652	0.30( 0.29)	0.97	49.5	50600.00
LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	15083.51	18.85	1.652	0.30 ( 0.23)	0.75	4277.3 50600.00
2	15117.57	19.00	1.644	0.30 ( 0.23)	0.75	4311.5 50500.00
3	16760.35	27.13	1.328	0.30 ( 0.23)	0.75	6135.9 110.00
4	18312.27	34.21	1.171	0.30 ( 0.23)	0.76	8448.9 100.00
5	18861.61	37.24	1.116	0.30 ( 0.23)	0.77	9508.3 150.00
6	20380.27	49.23	0.957	0.30 ( 0.24)	0.81	13966.1 31100.00
7	20915.92	53.96	0.913	0.30 ( 0.25)	0.82	15941.9 390.00
8	22569.55	68.80	0.817	0.30 ( 0.26)	0.86	21965.2 13100.00
9	23006.12	75.81	0.782	0.30 ( 0.26)	0.87	24438.1 11801.00
10	24145.72	89.30	0.715	0.30 ( 0.27)	0.89	30020.5 11530.00
11	25430.25	100.99	0.681	0.30 ( 0.27)	0.91	36477.5 13010.00
12	26262.87	107.02	0.664	0.30 ( 0.27)	0.92	40138.7 11330.00
13	26963.99	115.17	0.641	0.30 ( 0.28)	0.93	45225.8 10630.00
14	26760.92	120.76	0.626	0.30 ( 0.28)	0.93	47815.7 12330.00
15	26557.69	127.38	0.614	0.30 ( 0.28)	0.93	50958.1 11600.00
16	26231.36	133.16	0.605	0.30 ( 0.28)	0.93	53192.5 11111.00
17	25866.99	139.29	0.594	0.30 ( 0.28)	0.94	55126.3 12201.00
18	25026.70	148.24	0.579	0.30 ( 0.28)	0.94	57214.6 12231.00
19	24250.75	155.74	0.566	0.30 ( 0.28)	0.94	58626.1 10400.00
20	23008.63	167.18	0.547	0.30 ( 0.28)	0.94	60246.9 10320.00
21	21807.29	176.94	0.530	0.30 ( 0.28)	0.94	60634.7 12000.00
22	18984.67	206.21	0.505	0.30 ( 0.28)	0.94	61251.7 10100.00

TOTAL AREA (ACRES) = 61251.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 26963.99 Tc (MIN.) = 115.174  
EFFECTIVE AREA (ACRES) = 45225.81 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61251.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 207.00 DOWNSTREAM (FEET) = 195.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1601.97 CHANNEL SLOPE = 0.0075  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 7.59  
CHANNEL FLOW THRU SUBAREA (CFS) = 26963.99  
FLOW VELOCITY (FEET/SEC.) = 14.94 FLOW DEPTH (FEET) = 7.59  
TRAVEL TIME (MIN.) = 1.79 Tc (MIN.) = 116.96  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15083.51	21.03	1.548	0.30 ( 0.23)	0.75	4277.3	50600.00
2	15117.57	21.18	1.542	0.30 ( 0.23)	0.75	4311.5	50500.00
3	16760.35	29.24	1.269	0.30 ( 0.23)	0.75	6135.9	110.00
4	18312.27	36.25	1.134	0.30 ( 0.23)	0.76	8448.9	100.00
5	18861.61	39.25	1.080	0.30 ( 0.23)	0.77	9508.3	150.00
6	20380.27	51.19	0.937	0.30 ( 0.24)	0.81	13966.1	31100.00
7	20915.92	55.91	0.896	0.30 ( 0.25)	0.82	15941.9	390.00

8	22569.55	70.70	0.807	0.30 ( 0.26)	0.86	21965.2	13100.00
9	23006.12	77.70	0.773	0.30 ( 0.26)	0.87	24438.1	11801.00
10	24145.72	91.16	0.709	0.30 ( 0.27)	0.89	30020.5	11530.00
11	25430.25	102.81	0.676	0.30 ( 0.27)	0.91	36477.5	13010.00
12	26262.87	108.82	0.659	0.30 ( 0.27)	0.92	40138.7	11330.00
13	26963.99	116.96	0.636	0.30 ( 0.28)	0.93	45225.8	10630.00
14	26760.92	122.55	0.623	0.30 ( 0.28)	0.93	47815.7	12330.00
15	26557.69	129.17	0.611	0.30 ( 0.28)	0.93	50958.1	11600.00
16	26231.36	134.96	0.602	0.30 ( 0.28)	0.93	53192.5	11111.00
17	25866.99	141.10	0.591	0.30 ( 0.28)	0.94	55126.3	12201.00
18	25026.70	150.08	0.576	0.30 ( 0.28)	0.94	57214.6	12231.00
19	24250.75	157.60	0.563	0.30 ( 0.28)	0.94	58626.1	10400.00
20	23008.63	169.07	0.544	0.30 ( 0.28)	0.94	60246.9	10320.00
21	21807.29	178.86	0.527	0.30 ( 0.28)	0.94	60634.7	12000.00
22	18984.67	208.22	0.503	0.30 ( 0.28)	0.94	61251.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 26963.99 Tc (MIN.) = 116.96  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 45225.81

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 116.96  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.636  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	1.60	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 20.10 SUBAREA RUNOFF (CFS) = 6.07  
EFFECTIVE AREA (ACRES) = 45245.91 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 61271.8 PEAK FLOW RATE (CFS) = 26963.99  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 116.96  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.636  
SUBAREA LOSS RATE DATA (AMC II):

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

AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 2.00 0.30 1.000 81  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 7.10 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 5.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 4.53  
EFFECTIVE AREA (ACRES) = 45260.91 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 61286.8 PEAK FLOW RATE (CFS) = 26963.99  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 195.00 DOWNSTREAM (FEET) = 182.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2458.36 CHANNEL SLOPE = 0.0053  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.38  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.627

SUBAREA LOSS RATE DATA (AMC II):

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

NATURAL FAIR COVER  
"OPEN BRUSH" B 7.00 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 3.30 0.30 1.000 65  
COMMERCIAL B 0.40 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
COMMERCIAL B 0.30 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 26965.90  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.30  
AVERAGE FLOW DEPTH (FEET) = 8.38 TRAVEL TIME (MIN.) = 3.08  
Tc (MIN.) = 120.04  
SUBAREA AREA (ACRES) = 12.40 SUBAREA RUNOFF (CFS) = 3.82  
EFFECTIVE AREA (ACRES) = 45273.31 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 61299.2 PEAK FLOW RATE (CFS) = 26963.99  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 8.38 FLOW VELOCITY (FEET/SEC.) = 13.30

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15083.51	24.78	1.397	0.30 ( 0.23)	0.76	4324.8	50600.00
2	15117.57	24.93	1.391	0.30 ( 0.23)	0.76	4359.0	50500.00
3	16760.35	32.85	1.196	0.30 ( 0.23)	0.75	6183.4	110.00
4	18312.27	39.76	1.070	0.30 ( 0.23)	0.76	8496.4	100.00
5	18861.61	42.73	1.034	0.30 ( 0.23)	0.77	9555.8	150.00
6	20380.27	54.58	0.908	0.30 ( 0.24)	0.81	14013.6	31100.00
7	20915.92	59.26	0.867	0.30 ( 0.25)	0.82	15989.4	390.00
8	22569.55	73.97	0.791	0.30 ( 0.26)	0.86	22012.7	13100.00
9	23006.12	80.94	0.757	0.30 ( 0.26)	0.87	24485.6	11801.00
10	24145.72	94.35	0.700	0.30 ( 0.27)	0.89	30068.0	11530.00
11	25430.25	105.95	0.667	0.30 ( 0.27)	0.91	36525.0	13010.00
12	26262.87	111.93	0.650	0.30 ( 0.27)	0.92	40186.2	11330.00
13	26963.99	120.04	0.627	0.30 ( 0.28)	0.93	45273.3	10630.00
14	26760.92	125.64	0.617	0.30 ( 0.28)	0.93	47863.2	12330.00
15	26557.69	132.27	0.606	0.30 ( 0.28)	0.93	51005.6	11600.00
16	26231.36	138.07	0.596	0.30 ( 0.28)	0.93	53240.0	11111.00
17	25866.99	144.22	0.586	0.30 ( 0.28)	0.94	55173.8	12201.00
18	25026.70	153.23	0.571	0.30 ( 0.28)	0.94	57262.1	12231.00
19	24250.75	160.79	0.558	0.30 ( 0.28)	0.94	58673.6	10400.00
20	23008.63	172.32	0.538	0.30 ( 0.28)	0.94	60294.4	10320.00
21	21807.29	182.16	0.523	0.30 ( 0.28)	0.94	60682.2	12000.00
22	18984.67	211.69	0.501	0.30 ( 0.28)	0.94	61299.2	10100.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 26963.99 Tc (MIN.) = 120.04  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 45273.31

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

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 2P10EVBB.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	518.09	10.14	0.30 ( 0.11)	0.38	237.9	429.00
2	548.24	11.82	0.30 ( 0.11)	0.38	277.3	425.00
3	551.99	12.10	0.30 ( 0.11)	0.38	284.1	400.00
4	566.31	13.74	0.30 ( 0.11)	0.38	322.9	300.00
5	605.65	19.30	0.30 ( 0.11)	0.38	439.2	210.00
6	601.31	21.30	0.30 ( 0.11)	0.38	463.8	410.00
7	598.36	22.55	0.30 ( 0.11)	0.38	478.8	200.00
8	595.72	23.25	0.30 ( 0.11)	0.38	486.6	230.00
9	580.44	24.41	0.30 ( 0.11)	0.37	491.2	220.50
TOTAL AREA (ACRES) =		491.2				



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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15083.51	24.78	1.397	0.30 ( 0.23)	0.76	4324.8	50600.00
2	15117.57	24.93	1.391	0.30 ( 0.23)	0.76	4359.0	50500.00
3	16760.35	32.85	1.196	0.30 ( 0.23)	0.75	6183.4	110.00
4	18312.27	39.76	1.070	0.30 ( 0.23)	0.76	8496.4	100.00
5	18861.61	42.73	1.034	0.30 ( 0.23)	0.77	9555.8	150.00
6	20380.27	54.58	0.908	0.30 ( 0.24)	0.81	14013.6	31100.00
7	20915.92	59.26	0.867	0.30 ( 0.25)	0.82	15989.4	390.00
8	22569.55	73.97	0.791	0.30 ( 0.26)	0.86	22012.7	13100.00
9	23006.12	80.94	0.757	0.30 ( 0.26)	0.87	24485.6	11801.00
10	24145.72	94.35	0.700	0.30 ( 0.27)	0.89	30068.0	11530.00
11	25430.25	105.95	0.667	0.30 ( 0.27)	0.91	36525.0	13010.00
12	26262.87	111.93	0.650	0.30 ( 0.27)	0.92	40186.2	11330.00
13	26963.99	120.04	0.627	0.30 ( 0.28)	0.93	45273.3	10630.00
14	26760.92	125.64	0.617	0.30 ( 0.28)	0.93	47863.2	12330.00
15	26557.69	132.27	0.606	0.30 ( 0.28)	0.93	51005.6	11600.00
16	26231.36	138.07	0.596	0.30 ( 0.28)	0.93	53240.0	11111.00
17	25866.99	144.22	0.586	0.30 ( 0.28)	0.94	55173.8	12201.00
18	25026.70	153.23	0.571	0.30 ( 0.28)	0.94	57262.1	12231.00
19	24250.75	160.79	0.558	0.30 ( 0.28)	0.94	58673.6	10400.00
20	23008.63	172.32	0.538	0.30 ( 0.28)	0.94	60294.4	10320.00
21	21807.29	182.16	0.523	0.30 ( 0.28)	0.94	60682.2	12000.00
22	18984.67	211.69	0.501	0.30 ( 0.28)	0.94	61299.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	518.09	10.14	2.489	0.30 ( 0.11)	0.38	237.9	429.00
2	548.24	11.82	2.271	0.30 ( 0.11)	0.38	277.3	425.00
3	551.99	12.10	2.234	0.30 ( 0.11)	0.38	284.1	400.00
4	566.31	13.74	2.022	0.30 ( 0.11)	0.38	322.9	300.00
5	605.65	19.30	1.628	0.30 ( 0.11)	0.38	439.2	210.00
6	601.31	21.30	1.537	0.30 ( 0.11)	0.38	463.8	410.00
7	598.36	22.55	1.487	0.30 ( 0.11)	0.38	478.8	200.00
8	595.72	23.25	1.459	0.30 ( 0.11)	0.38	486.6	230.00
9	580.44	24.41	1.412	0.30 ( 0.11)	0.37	491.2	220.50

LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13408.00 = 11903.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12449.50	10.14	2.489	0.30 ( 0.21)	0.71	2006.8	429.00
2	13120.12	11.82	2.271	0.30 ( 0.21)	0.71	2340.4	425.00
3	13193.61	12.10	2.234	0.30 ( 0.21)	0.71	2396.3	400.00
4	13400.93	13.74	2.022	0.30 ( 0.21)	0.71	2721.5	300.00
5	14670.55	19.30	1.628	0.30 ( 0.21)	0.71	3807.1	210.00
6	15124.51	21.30	1.537	0.30 ( 0.21)	0.71	4180.9	410.00
7	15380.57	22.55	1.487	0.30 ( 0.21)	0.72	4413.3	200.00
8	15494.98	23.25	1.459	0.30 ( 0.21)	0.72	4543.4	230.00

9	15628.93	24.41	1.412	0.30 ( 0.22)	0.72	4752.0	220.50
10	15657.33	24.78	1.397	0.30 ( 0.22)	0.72	4816.0	50600.00
11	15688.77	24.93	1.391	0.30 ( 0.22)	0.72	4850.2	50500.00
12	17244.48	32.85	1.196	0.30 ( 0.22)	0.73	6674.6	110.00
13	18740.25	39.76	1.070	0.30 ( 0.22)	0.74	8987.6	100.00
14	19273.26	42.73	1.034	0.30 ( 0.22)	0.75	10047.0	150.00
15	20735.57	54.58	0.908	0.30 ( 0.24)	0.80	14504.8	31100.00
16	21252.81	59.26	0.867	0.30 ( 0.24)	0.81	16480.6	390.00
17	22872.75	73.97	0.791	0.30 ( 0.26)	0.85	22503.9	13100.00
18	23293.94	80.94	0.757	0.30 ( 0.26)	0.86	24976.8	11801.00
19	24408.08	94.35	0.700	0.30 ( 0.27)	0.88	30559.2	11530.00
20	25677.92	105.95	0.667	0.30 ( 0.27)	0.90	37016.2	13010.00
21	26502.98	111.93	0.650	0.30 ( 0.27)	0.91	40677.4	11330.00
22	27193.85	120.04	0.627	0.30 ( 0.28)	0.92	45764.5	10630.00
23	26986.52	125.64	0.617	0.30 ( 0.28)	0.92	48354.4	12330.00
24	26778.26	132.27	0.606	0.30 ( 0.28)	0.93	51496.8	11600.00
25	26447.52	138.07	0.596	0.30 ( 0.28)	0.93	53731.2	11111.00
26	26078.48	144.22	0.586	0.30 ( 0.28)	0.93	55665.0	12201.00
27	25231.35	153.23	0.571	0.30 ( 0.28)	0.93	57753.3	12231.00
28	24449.66	160.79	0.558	0.30 ( 0.28)	0.93	59164.8	10400.00
29	23198.79	172.32	0.538	0.30 ( 0.28)	0.94	60785.6	10320.00
30	21990.86	182.16	0.523	0.30 ( 0.28)	0.94	61173.4	12000.00
31	19158.06	211.69	0.501	0.30 ( 0.28)	0.94	61790.4	10100.00

TOTAL AREA (ACRES) = 61790.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 27193.85 Tc (MIN.) = 120.042

EFFECTIVE AREA (ACRES) = 45764.51 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.74

TOTAL AREA (ACRES) = 61790.4

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

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

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P507XX10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	215.04	23.85	0.30 ( 0.30)	0.99	231.4	50700.00

TOTAL AREA (ACRES) = 231.4

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	12449.50	10.14	2.489	0.30 ( 0.21)	0.71	2006.8 429.00
2	13120.12	11.82	2.271	0.30 ( 0.21)	0.71	2340.4 425.00
3	13193.61	12.10	2.234	0.30 ( 0.21)	0.71	2396.3 400.00
4	13400.93	13.74	2.022	0.30 ( 0.21)	0.71	2721.5 300.00
5	14670.55	19.30	1.628	0.30 ( 0.21)	0.71	3807.1 210.00
6	15124.51	21.30	1.537	0.30 ( 0.21)	0.71	4180.9 410.00
7	15380.57	22.55	1.487	0.30 ( 0.21)	0.72	4413.3 200.00
8	15494.98	23.25	1.459	0.30 ( 0.21)	0.72	4543.4 230.00
9	15628.93	24.41	1.412	0.30 ( 0.22)	0.72	4752.0 220.50
10	15657.33	24.78	1.397	0.30 ( 0.22)	0.72	4816.0 50600.00
11	15688.77	24.93	1.391	0.30 ( 0.22)	0.72	4850.2 50500.00
12	17244.48	32.85	1.196	0.30 ( 0.22)	0.73	6674.6 110.00
13	18740.25	39.76	1.070	0.30 ( 0.22)	0.74	8987.6 100.00
14	19273.26	42.73	1.034	0.30 ( 0.22)	0.75	10047.0 150.00
15	20735.57	54.58	0.908	0.30 ( 0.24)	0.80	14504.8 31100.00
16	21252.81	59.26	0.867	0.30 ( 0.24)	0.81	16480.6 390.00
17	22872.75	73.97	0.791	0.30 ( 0.26)	0.85	22503.9 13100.00
18	23293.94	80.94	0.757	0.30 ( 0.26)	0.86	24976.8 11801.00
19	24408.08	94.35	0.700	0.30 ( 0.27)	0.88	30559.2 11530.00
20	25677.92	105.95	0.667	0.30 ( 0.27)	0.90	37016.2 13010.00
21	26502.98	111.93	0.650	0.30 ( 0.27)	0.91	40677.4 11330.00
22	27193.85	120.04	0.627	0.30 ( 0.28)	0.92	45764.5 10630.00
23	26986.52	125.64	0.617	0.30 ( 0.28)	0.92	48354.4 12330.00
24	26778.26	132.27	0.606	0.30 ( 0.28)	0.93	51496.8 11600.00
25	26447.52	138.07	0.596	0.30 ( 0.28)	0.93	53731.2 11111.00
26	26078.48	144.22	0.586	0.30 ( 0.28)	0.93	55665.0 12201.00
27	25231.35	153.23	0.571	0.30 ( 0.28)	0.93	57753.3 12231.00
28	24449.66	160.79	0.558	0.30 ( 0.28)	0.93	59164.8 10400.00
29	23198.79	172.32	0.538	0.30 ( 0.28)	0.94	60785.6 10320.00
30	21990.86	182.16	0.523	0.30 ( 0.28)	0.94	61173.4 12000.00
31	19158.06	211.69	0.501	0.30 ( 0.28)	0.94	61790.4 10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	215.04	23.85	1.434	0.30 ( 0.30)	0.99	231.4	50700.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12625.60	10.14	2.489	0.30 ( 0.22)	0.72	2105.2	429.00
2	13305.05	11.82	2.271	0.30 ( 0.22)	0.72	2455.1	425.00
3	13379.44	12.10	2.234	0.30 ( 0.22)	0.72	2513.8	400.00
4	13588.80	13.74	2.022	0.30 ( 0.22)	0.72	2854.8	300.00
5	14874.10	19.30	1.628	0.30 ( 0.22)	0.73	3994.3	210.00
6	15333.94	21.30	1.537	0.30 ( 0.22)	0.73	4387.5	410.00
7	15593.26	22.55	1.487	0.30 ( 0.22)	0.73	4632.0	200.00
8	15709.07	23.25	1.459	0.30 ( 0.22)	0.73	4768.9	230.00
9	15779.62	23.85	1.434	0.30 ( 0.22)	0.73	4883.2	50700.00
10	15839.69	24.41	1.412	0.30 ( 0.22)	0.73	4983.4	220.50
11	15865.28	24.78	1.397	0.30 ( 0.22)	0.73	5047.4	50600.00
12	15895.62	24.93	1.391	0.30 ( 0.22)	0.73	5081.6	50500.00
13	17414.50	32.85	1.196	0.30 ( 0.22)	0.73	6906.0	110.00
14	18886.51	39.76	1.070	0.30 ( 0.22)	0.75	9219.0	100.00
15	19412.62	42.73	1.034	0.30 ( 0.23)	0.76	10278.4	150.00

16	20851.10	54.58	0.908	0.30 ( 0.24)	0.80	14736.2	31100.00
17	21360.55	59.26	0.867	0.30 ( 0.24)	0.81	16712.0	390.00
18	22966.23	73.97	0.791	0.30 ( 0.26)	0.85	22735.3	13100.00
19	23380.91	80.94	0.757	0.30 ( 0.26)	0.87	25208.2	11801.00
20	24484.28	94.35	0.700	0.30 ( 0.27)	0.88	30790.6	11530.00
21	25747.91	105.95	0.667	0.30 ( 0.27)	0.90	37247.6	13010.00
22	26569.77	111.93	0.650	0.30 ( 0.27)	0.91	40908.8	11330.00
23	27256.30	120.04	0.627	0.30 ( 0.28)	0.92	45995.9	10630.00
24	27047.18	125.64	0.617	0.30 ( 0.28)	0.92	48585.8	12330.00
25	26836.79	132.27	0.606	0.30 ( 0.28)	0.93	51728.2	11600.00
26	26504.19	138.07	0.596	0.30 ( 0.28)	0.93	53962.6	11111.00
27	26133.17	144.22	0.586	0.30 ( 0.28)	0.93	55896.4	12201.00
28	25283.14	153.23	0.571	0.30 ( 0.28)	0.93	57984.7	12231.00
29	24499.03	160.79	0.558	0.30 ( 0.28)	0.93	59396.2	10400.00
30	23244.45	172.32	0.538	0.30 ( 0.28)	0.94	61017.0	10320.00
31	22033.74	182.16	0.523	0.30 ( 0.28)	0.94	61404.8	12000.00
32	19196.63	211.69	0.501	0.30 ( 0.28)	0.94	62021.8	10100.00

TOTAL AREA (ACRES) = 62021.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 27256.30 Tc (MIN.) = 120.042  
EFFECTIVE AREA (ACRES) = 45995.91 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 62021.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72  
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.52  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.625

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 27256.79					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.57					
AVERAGE FLOW DEPTH (FEET) = 9.52 TRAVEL TIME (MIN.) = 1.37					
Tc (MIN.) = 121.41					
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 0.96					
EFFECTIVE AREA (ACRES) = 45999.21 AREA-AVERAGED Fm (INCH/HR) = 0.28					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92					
TOTAL AREA (ACRES) = 62025.1 PEAK FLOW RATE (CFS) = 27256.30					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0					
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030					

\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 9.52 FLOW VELOCITY (FEET/SEC.) = 11.57

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12625.60	11.91	2.259	0.30 (0.22)	0.73	2108.5	429.00
2	13305.05	13.57	2.045	0.30 (0.22)	0.73	2458.4	425.00
3	13379.44	13.85	2.009	0.30 (0.22)	0.73	2517.1	400.00
4	13588.80	15.48	1.833	0.30 (0.22)	0.73	2858.1	300.00
5	14874.10	20.98	1.550	0.30 (0.22)	0.73	3997.6	210.00
6	15333.94	22.96	1.470	0.30 (0.22)	0.73	4390.8	410.00
7	15593.26	24.20	1.420	0.30 (0.22)	0.73	4635.3	200.00
8	15709.07	24.90	1.392	0.30 (0.22)	0.73	4772.2	230.00
9	15779.62	25.50	1.374	0.30 (0.22)	0.73	4886.5	50700.00
10	15839.69	26.06	1.358	0.30 (0.22)	0.73	4986.7	220.50
11	15865.28	26.43	1.348	0.30 (0.22)	0.73	5050.7	50600.00
12	15895.62	26.57	1.344	0.30 (0.22)	0.73	5084.9	50500.00
13	17414.50	34.45	1.167	0.30 (0.22)	0.73	6909.3	110.00
14	18886.51	41.31	1.051	0.30 (0.22)	0.75	9222.3	100.00
15	19412.62	44.26	1.016	0.30 (0.23)	0.76	10281.7	150.00
16	20851.10	56.08	0.895	0.30 (0.24)	0.80	14739.5	31100.00
17	21360.55	60.75	0.856	0.30 (0.24)	0.81	16715.3	390.00
18	22966.23	75.42	0.784	0.30 (0.26)	0.85	22738.6	13100.00
19	23380.91	82.39	0.750	0.30 (0.26)	0.87	25211.5	11801.00
20	24484.28	95.77	0.696	0.30 (0.27)	0.88	30793.9	11530.00
21	25747.91	107.35	0.663	0.30 (0.27)	0.90	37250.9	13010.00
22	26569.77	113.31	0.646	0.30 (0.27)	0.91	40912.1	11330.00
23	27256.30	121.41	0.625	0.30 (0.28)	0.92	45999.2	10630.00
24	27047.18	127.02	0.615	0.30 (0.28)	0.92	48589.1	12330.00
25	26836.79	133.65	0.604	0.30 (0.28)	0.93	51731.5	11600.00
26	26504.19	139.45	0.594	0.30 (0.28)	0.93	53965.9	11111.00
27	26133.17	145.62	0.583	0.30 (0.28)	0.93	55899.7	12201.00
28	25283.14	154.64	0.568	0.30 (0.28)	0.93	57988.0	12231.00
29	24499.03	162.21	0.555	0.30 (0.28)	0.93	59399.5	10400.00
30	23244.45	173.76	0.536	0.30 (0.28)	0.94	61020.3	10320.00
31	22033.74	183.64	0.522	0.30 (0.28)	0.94	61408.1	12000.00
32	19196.63	213.23	0.499	0.30 (0.28)	0.94	62025.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 27256.30 Tc (MIN.) = 121.41

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 45999.21

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<<

PEAK FLOWRATE TABLE FILE NAME: RU10EV36.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	30.81	0.30 (0.27)	0.90	1440.9	110.00
2	1573.72	33.19	0.30 (0.27)	0.90	1597.0	100.00
3	1590.73	34.56	0.30 (0.27)	0.90	1678.1	100.00
4	1600.63	37.85	0.30 (0.27)	0.91	1850.3	130.00
5	1651.13	52.91	0.30 (0.28)	0.93	2602.0	20100.00
6	1611.81	59.35	0.30 (0.28)	0.93	2797.2	13600.00
7	1408.16	100.08	0.30 (0.28)	0.93	3789.3	13510.00
8	1318.82	111.28	0.30 (0.28)	0.93	3859.7	13500.00
TOTAL AREA (ACRES) =			3859.7			

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12625.60	11.91	2.259	0.30 (0.22)	0.73	2108.5	429.00
2	13305.05	13.57	2.045	0.30 (0.22)	0.73	2458.4	425.00
3	13379.44	13.85	2.009	0.30 (0.22)	0.73	2517.1	400.00
4	13588.80	15.48	1.833	0.30 (0.22)	0.73	2858.1	300.00
5	14874.10	20.98	1.550	0.30 (0.22)	0.73	3997.6	210.00
6	15333.94	22.96	1.470	0.30 (0.22)	0.73	4390.8	410.00
7	15593.26	24.20	1.420	0.30 (0.22)	0.73	4635.3	200.00
8	15709.07	24.90	1.392	0.30 (0.22)	0.73	4772.2	230.00
9	15779.62	25.50	1.374	0.30 (0.22)	0.73	4886.5	50700.00
10	15839.69	26.06	1.358	0.30 (0.22)	0.73	4986.7	220.50
11	15865.28	26.43	1.348	0.30 (0.22)	0.73	5050.7	50600.00
12	15895.62	26.57	1.344	0.30 (0.22)	0.73	5084.9	50500.00
13	17414.50	34.45	1.167	0.30 (0.22)	0.73	6909.3	110.00
14	18886.51	41.31	1.051	0.30 (0.22)	0.75	9222.3	100.00
15	19412.62	44.26	1.016	0.30 (0.23)	0.76	10281.7	150.00
16	20851.10	56.08	0.895	0.30 (0.24)	0.80	14739.5	31100.00
17	21360.55	60.75	0.856	0.30 (0.24)	0.81	16715.3	390.00
18	22966.23	75.42	0.784	0.30 (0.26)	0.85	22738.6	13100.00
19	23380.91	82.39	0.750	0.30 (0.26)	0.87	25211.5	11801.00
20	24484.28	95.77	0.696	0.30 (0.27)	0.88	30793.9	11530.00
21	25747.91	107.35	0.663	0.30 (0.27)	0.90	37250.9	13010.00
22	26569.77	113.31	0.646	0.30 (0.27)	0.91	40912.1	11330.00
23	27256.30	121.41	0.625	0.30 (0.28)	0.92	45999.2	10630.00
24	27047.18	127.02	0.615	0.30 (0.28)	0.92	48589.1	12330.00
25	26836.79	133.65	0.604	0.30 (0.28)	0.93	51731.5	11600.00
26	26504.19	139.45	0.594	0.30 (0.28)	0.93	53965.9	11111.00
27	26133.17	145.62	0.583	0.30 (0.28)	0.93	55899.7	12201.00
28	25283.14	154.64	0.568	0.30 (0.28)	0.93	57988.0	12231.00
29	24499.03	162.21	0.555	0.30 (0.28)	0.93	59399.5	10400.00
30	23244.45	173.76	0.536	0.30 (0.28)	0.94	61020.3	10320.00
31	22033.74	183.64	0.522	0.30 (0.28)	0.94	61408.1	12000.00
32	19196.63	213.23	0.499	0.30 (0.28)	0.94	62025.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	1521.80	30.81	1.233	0.30 ( 0.27)	0.90	1440.9 110.00
2	1573.72	33.19	1.190	0.30 ( 0.27)	0.90	1597.0 100.00
3	1590.73	34.56	1.165	0.30 ( 0.27)	0.90	1678.1 100.00
4	1600.63	37.85	1.105	0.30 ( 0.27)	0.91	1850.3 130.00
5	1651.13	52.91	0.922	0.30 ( 0.28)	0.93	2602.0 20100.00
6	1611.81	59.35	0.866	0.30 ( 0.28)	0.93	2797.2 13600.00
7	1408.16	100.08	0.683	0.30 ( 0.28)	0.93	3789.3 13510.00
8	1318.82	111.28	0.652	0.30 ( 0.28)	0.93	3859.7 13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13840.92	11.91	2.259	0.30 ( 0.23)	0.76	2665.7	429.00
2	14539.90	13.57	2.045	0.30 ( 0.23)	0.76	3093.0	425.00
3	14614.01	13.85	2.009	0.30 ( 0.23)	0.76	3164.7	400.00
4	14829.73	15.48	1.833	0.30 ( 0.23)	0.76	3582.1	300.00
5	16251.73	20.98	1.550	0.30 ( 0.23)	0.76	4978.9	210.00
6	16747.42	22.96	1.470	0.30 ( 0.23)	0.76	5464.9	410.00
7	17020.85	24.20	1.420	0.30 ( 0.23)	0.76	5767.2	200.00
8	17141.81	24.90	1.392	0.30 ( 0.23)	0.76	5936.7	230.00
9	17223.32	25.50	1.374	0.30 ( 0.23)	0.76	6079.2	50700.00
10	17294.12	26.06	1.358	0.30 ( 0.23)	0.76	6205.6	220.50
11	17326.25	26.43	1.348	0.30 ( 0.23)	0.76	6286.7	50600.00
12	17359.06	26.57	1.344	0.30 ( 0.23)	0.76	6327.6	50500.00
13	18234.26	30.81	1.233	0.30 ( 0.23)	0.76	7506.9	110.00
14	18745.42	33.19	1.190	0.30 ( 0.23)	0.77	8214.6	100.00
15	19003.82	34.45	1.167	0.30 ( 0.23)	0.77	8580.6	110.00
16	19029.62	34.56	1.165	0.30 ( 0.23)	0.77	8625.6	100.00
17	19745.24	37.85	1.105	0.30 ( 0.23)	0.77	9906.8	130.00
18	20498.74	41.31	1.051	0.30 ( 0.23)	0.78	11245.4	100.00
19	21034.75	44.26	1.016	0.30 ( 0.23)	0.78	12452.1	150.00
20	22116.12	52.91	0.922	0.30 ( 0.24)	0.81	16145.0	20100.00
21	22482.89	56.08	0.895	0.30 ( 0.25)	0.82	17437.6	31100.00
22	22820.30	59.35	0.866	0.30 ( 0.25)	0.83	18922.8	13600.00
23	22965.39	60.75	0.856	0.30 ( 0.25)	0.83	19546.5	390.00
24	24497.68	75.42	0.784	0.30 ( 0.26)	0.86	25927.3	13100.00
25	24877.53	82.39	0.750	0.30 ( 0.26)	0.87	28569.9	11801.00
26	25913.96	95.77	0.696	0.30 ( 0.27)	0.89	34478.4	11530.00
27	26361.98	100.08	0.683	0.30 ( 0.27)	0.90	36982.5	13510.00
28	27098.05	107.35	0.663	0.30 ( 0.27)	0.90	41086.0	13010.00
29	27608.24	111.28	0.652	0.30 ( 0.27)	0.91	43522.9	13500.00
30	27868.14	113.31	0.646	0.30 ( 0.27)	0.91	44771.8	11330.00
31	28478.91	121.41	0.625	0.30 ( 0.28)	0.92	49858.9	10630.00
32	28236.00	127.02	0.615	0.30 ( 0.28)	0.92	52448.8	12330.00
33	27985.61	133.65	0.604	0.30 ( 0.28)	0.93	55591.2	11600.00
34	27617.98	139.45	0.594	0.30 ( 0.28)	0.93	57825.5	11111.00
35	27209.78	145.62	0.583	0.30 ( 0.28)	0.93	59759.4	12201.00
36	26305.33	154.64	0.568	0.30 ( 0.28)	0.93	61847.6	12231.00
37	25475.57	162.21	0.555	0.30 ( 0.28)	0.93	63259.2	10400.00
38	24151.28	173.76	0.536	0.30 ( 0.28)	0.94	64879.9	10320.00
39	22892.98	183.64	0.522	0.30 ( 0.28)	0.94	65267.8	12000.00
40	19974.79	213.23	0.499	0.30 ( 0.28)	0.94	65884.8	10100.00

TOTAL AREA (ACRES) = 65884.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 28478.91 Tc (MIN.) = 121.415

EFFECTIVE AREA (ACRES) = 49858.89 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 65884.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 7.10  
 CHANNEL FLOW THRU SUBAREA (CFS) = 28478.91  
 FLOW VELOCITY (FEET/SEC.) = 17.04 FLOW DEPTH (FEET) = 7.10  
 TRAVEL TIME (MIN.) = 0.17 Tc (MIN.) = 121.58  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13840.92	12.13	2.231	0.30 ( 0.23)	0.76	2665.7	429.00
2	14539.90	13.78	2.017	0.30 ( 0.23)	0.76	3093.0	425.00
3	14614.01	14.05	1.981	0.30 ( 0.23)	0.76	3164.7	400.00
4	14829.73	15.69	1.822	0.30 ( 0.23)	0.76	3582.1	300.00
5	16251.73	21.18	1.542	0.30 ( 0.23)	0.76	4978.9	210.00
6	16747.42	23.16	1.462	0.30 ( 0.23)	0.76	5464.9	410.00
7	17020.85	24.40	1.412	0.30 ( 0.23)	0.76	5767.2	200.00
8	17141.81	25.09	1.385	0.30 ( 0.23)	0.76	5936.7	230.00
9	17223.32	25.70	1.368	0.30 ( 0.23)	0.76	6079.2	50700.00
10	17294.12	26.26	1.353	0.30 ( 0.23)	0.76	6205.6	220.50
11	17326.25	26.62	1.343	0.30 ( 0.23)	0.76	6286.7	50600.00
12	17359.06	26.77	1.339	0.30 ( 0.23)	0.76	6327.6	50500.00
13	18234.26	31.00	1.230	0.30 ( 0.23)	0.76	7506.9	110.00
14	18745.42	33.38	1.187	0.30 ( 0.23)	0.77	8214.6	100.00
15	19003.82	34.64	1.164	0.30 ( 0.23)	0.77	8580.6	110.00
16	19029.62	34.75	1.162	0.30 ( 0.23)	0.77	8625.6	100.00
17	19745.24	38.04	1.102	0.30 ( 0.23)	0.77	9906.8	130.00
18	20498.74	41.50	1.048	0.30 ( 0.23)	0.78	11245.4	100.00
19	21034.75	44.44	1.014	0.30 ( 0.23)	0.78	12452.1	150.00
20	22116.12	53.09	0.921	0.30 ( 0.24)	0.81	16145.0	20100.00
21	22482.89	56.26	0.893	0.30 ( 0.25)	0.82	17437.6	31100.00
22	22820.30	59.53	0.864	0.30 ( 0.25)	0.83	18922.8	13600.00
23	22965.39	60.93	0.855	0.30 ( 0.25)	0.83	19546.5	390.00
24	24497.68	75.60	0.783	0.30 ( 0.26)	0.86	25927.3	13100.00
25	24877.53	82.56	0.749	0.30 ( 0.26)	0.87	28569.9	11801.00
26	25913.96	95.94	0.695	0.30 ( 0.27)	0.89	34478.4	11530.00
27	26361.98	100.25	0.683	0.30 ( 0.27)	0.90	36982.5	13510.00
28	27098.05	107.52	0.662	0.30 ( 0.27)	0.90	41086.0	13010.00
29	27608.24	111.45	0.651	0.30 ( 0.27)	0.91	43522.9	13500.00
30	27868.14	113.48	0.645	0.30 ( 0.27)	0.91	44771.8	11330.00
31	28478.91	121.58	0.624	0.30 ( 0.28)	0.92	49858.9	10630.00
32	28236.00	127.18	0.615	0.30 ( 0.28)	0.92	52448.8	12330.00
33	27985.61	133.81	0.604	0.30 ( 0.28)	0.93	55591.2	11600.00
34	27617.98	139.62	0.594	0.30 ( 0.28)	0.93	57825.5	11111.00

35	27209.78	145.79	0.583	0.30 ( 0.28)	0.93	59759.4	12201.00
36	26305.33	154.81	0.568	0.30 ( 0.28)	0.93	61847.6	12231.00
37	25475.57	162.38	0.555	0.30 ( 0.28)	0.93	63259.2	10400.00
38	24151.28	173.94	0.535	0.30 ( 0.28)	0.94	64879.9	10320.00
39	22892.98	183.82	0.522	0.30 ( 0.28)	0.94	65267.8	12000.00
40	19974.79	213.42	0.499	0.30 ( 0.28)	0.94	65884.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 28478.91 Tc(MIN.) = 121.58  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 49858.89

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506101E.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	366.95	40.42	0.30 ( 0.30)	0.98	591.0	10100.00
TOTAL AREA(ACRES) =						591.0

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13840.92	12.13	2.231	0.30 ( 0.23)	0.76	2665.7	429.00
2	14539.90	13.78	2.017	0.30 ( 0.23)	0.76	3093.0	425.00
3	14614.01	14.05	1.981	0.30 ( 0.23)	0.76	3164.7	400.00
4	14829.73	15.69	1.822	0.30 ( 0.23)	0.76	3582.1	300.00
5	16251.73	21.18	1.542	0.30 ( 0.23)	0.76	4978.9	210.00
6	16747.42	23.16	1.462	0.30 ( 0.23)	0.76	5464.9	410.00
7	17020.85	24.40	1.412	0.30 ( 0.23)	0.76	5767.2	200.00
8	17141.81	25.09	1.385	0.30 ( 0.23)	0.76	5936.7	230.00
9	17223.32	25.70	1.368	0.30 ( 0.23)	0.76	6079.2	50700.00
10	17294.12	26.26	1.353	0.30 ( 0.23)	0.76	6205.6	220.50
11	17326.25	26.62	1.343	0.30 ( 0.23)	0.76	6286.7	50600.00
12	17359.06	26.77	1.339	0.30 ( 0.23)	0.76	6327.6	50500.00
13	18234.26	31.00	1.230	0.30 ( 0.23)	0.76	7506.9	110.00
14	18745.42	33.38	1.187	0.30 ( 0.23)	0.77	8214.6	100.00
15	19003.82	34.64	1.164	0.30 ( 0.23)	0.77	8580.6	110.00
16	19029.62	34.75	1.162	0.30 ( 0.23)	0.77	8625.6	100.00
17	19745.24	38.04	1.102	0.30 ( 0.23)	0.77	9906.8	130.00
18	20498.74	41.50	1.048	0.30 ( 0.23)	0.78	11245.4	100.00
19	21034.75	44.44	1.014	0.30 ( 0.23)	0.78	12452.1	150.00
20	22116.12	53.09	0.921	0.30 ( 0.24)	0.81	16145.0	20100.00

21	22482.89	56.26	0.893	0.30 ( 0.25)	0.82	17437.6	31100.00
22	22820.30	59.53	0.864	0.30 ( 0.25)	0.83	18922.8	13600.00
23	22965.39	60.93	0.855	0.30 ( 0.25)	0.83	19546.5	390.00
24	24497.68	75.60	0.783	0.30 ( 0.26)	0.86	25927.3	13100.00
25	24877.53	82.56	0.749	0.30 ( 0.26)	0.87	28569.9	11801.00
26	25913.96	95.94	0.695	0.30 ( 0.27)	0.89	34478.4	11530.00
27	26361.98	100.25	0.683	0.30 ( 0.27)	0.90	36982.5	13510.00
28	27098.05	107.52	0.662	0.30 ( 0.27)	0.90	41086.0	13010.00
29	27608.24	111.45	0.651	0.30 ( 0.27)	0.91	43522.9	13500.00
30	27868.14	113.48	0.645	0.30 ( 0.27)	0.91	44771.8	11330.00
31	28478.91	121.58	0.624	0.30 ( 0.28)	0.92	49858.9	10630.00
32	28236.00	127.18	0.615	0.30 ( 0.28)	0.92	52448.8	12330.00
33	27985.61	133.81	0.604	0.30 ( 0.28)	0.93	55591.2	11600.00
34	27617.98	139.62	0.594	0.30 ( 0.28)	0.93	57825.5	11111.00
35	27209.78	145.79	0.583	0.30 ( 0.28)	0.93	59759.4	12201.00
36	26305.33	154.81	0.568	0.30 ( 0.28)	0.93	61847.6	12231.00
37	25475.57	162.38	0.555	0.30 ( 0.28)	0.93	63259.2	10400.00
38	24151.28	173.94	0.535	0.30 ( 0.28)	0.94	64879.9	10320.00
39	22892.98	183.82	0.522	0.30 ( 0.28)	0.94	65267.8	12000.00
40	19974.79	213.42	0.499	0.30 ( 0.28)	0.94	65884.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	366.95	40.42	1.061	0.30 ( 0.30)	0.98	591.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 14677.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14119.20	12.13	2.231	0.30 ( 0.23)	0.78	2843.0	429.00
2	14821.13	13.78	2.017	0.30 ( 0.23)	0.77	3294.4	425.00
3	14894.91	14.05	1.981	0.30 ( 0.23)	0.77	3370.2	400.00
4	15113.60	15.69	1.822	0.30 ( 0.23)	0.77	3811.4	300.00
5	16564.81	21.18	1.542	0.30 ( 0.23)	0.77	5288.6	210.00
6	17067.82	23.16	1.462	0.30 ( 0.23)	0.77	5803.5	410.00
7	17343.90	24.40	1.412	0.30 ( 0.23)	0.78	6123.9	200.00
8	17466.07	25.09	1.385	0.30 ( 0.23)	0.78	6303.6	230.00
9	17550.23	25.70	1.368	0.30 ( 0.23)	0.78	6454.9	50700.00
10	17623.27	26.26	1.353	0.30 ( 0.23)	0.78	6589.4	220.50
11	17656.76	26.62	1.343	0.30 ( 0.23)	0.78	6675.9	50600.00
12	17690.07	26.77	1.339	0.30 ( 0.23)	0.78	6719.0	50500.00
13	18577.67	31.00	1.230	0.30 ( 0.23)	0.78	7960.1	110.00
14	19098.06	33.38	1.187	0.30 ( 0.23)	0.78	8702.6	100.00
15	19360.36	34.64	1.164	0.30 ( 0.23)	0.78	9087.0	110.00
16	19386.48	34.75	1.162	0.30 ( 0.23)	0.78	9133.7	100.00
17	20108.89	38.04	1.102	0.30 ( 0.23)	0.78	10463.0	130.00
18	20632.21	40.42	1.061	0.30 ( 0.24)	0.79	11421.6	10100.00
19	20859.63	41.50	1.048	0.30 ( 0.24)	0.79	11836.4	100.00
20	21378.97	44.44	1.014	0.30 ( 0.24)	0.79	13043.1	150.00
21	22415.93	53.09	0.921	0.30 ( 0.24)	0.82	16736.0	20100.00
22	22769.33	56.26	0.893	0.30 ( 0.25)	0.82	18028.6	31100.00
23	23092.93	59.53	0.864	0.30 ( 0.25)	0.83	19513.8	13600.00
24	23233.87	60.93	0.855	0.30 ( 0.25)	0.84	20137.5	390.00
25	24731.48	75.60	0.783	0.30 ( 0.26)	0.87	26518.3	13100.00
26	25094.87	82.56	0.749	0.30 ( 0.26)	0.88	29160.9	11801.00
27	26105.65	95.94	0.695	0.30 ( 0.27)	0.89	35069.4	11530.00

28	26547.83	100.25	0.683	0.30	( 0.27)	0.90	37573.5	13510.00
29	27274.03	107.52	0.662	0.30	( 0.27)	0.91	41677.0	13010.00
30	27778.89	111.45	0.651	0.30	( 0.27)	0.91	44113.9	13500.00
31	28036.03	113.48	0.645	0.30	( 0.27)	0.91	45362.8	11330.00
32	28636.66	121.58	0.624	0.30	( 0.28)	0.92	50449.9	10630.00
33	28389.19	127.18	0.615	0.30	( 0.28)	0.92	53039.8	12330.00
34	28133.40	133.81	0.604	0.30	( 0.28)	0.93	56182.2	11600.00
35	27761.04	139.62	0.594	0.30	( 0.28)	0.93	58416.5	11111.00
36	27347.82	145.79	0.583	0.30	( 0.28)	0.93	60350.4	12201.00
37	26436.02	154.81	0.568	0.30	( 0.28)	0.93	62438.6	12231.00
38	25600.10	162.38	0.555	0.30	( 0.28)	0.94	63850.2	10400.00
39	24266.39	173.94	0.535	0.30	( 0.28)	0.94	65470.9	10320.00
40	23001.75	183.82	0.522	0.30	( 0.28)	0.94	65858.8	12000.00
41	20072.60	213.42	0.499	0.30	( 0.28)	0.94	66475.8	10100.00
TOTAL AREA (ACRES) =		66475.8						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 28636.66 Tc (MIN.) = 121.581  
EFFECTIVE AREA (ACRES) = 50449.89 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 66475.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 176.93 DOWNSTREAM (FEET) = 173.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 260.10 CHANNEL SLOPE = 0.0151  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.42  
CHANNEL FLOW THRU SUBAREA (CFS) = 28636.66  
FLOW VELOCITY (FEET/SEC.) = 19.22 FLOW DEPTH (FEET) = 6.42  
TRAVEL TIME (MIN.) = 0.23 Tc (MIN.) = 121.81  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14119.20	12.42	2.194	0.30 ( 0.23)	0.78	2843.0	429.00
2	14821.13	14.06	1.981	0.30 ( 0.23)	0.77	3294.4	425.00
3	14894.91	14.34	1.945	0.30 ( 0.23)	0.77	3370.2	400.00
4	15113.60	15.97	1.807	0.30 ( 0.23)	0.77	3811.4	300.00
5	16564.81	21.45	1.531	0.30 ( 0.23)	0.77	5288.6	210.00
6	17067.82	23.43	1.451	0.30 ( 0.23)	0.77	5803.5	410.00
7	17343.90	24.67	1.401	0.30 ( 0.23)	0.78	6123.9	200.00
8	17466.07	25.36	1.378	0.30 ( 0.23)	0.78	6303.6	230.00
9	17550.23	25.97	1.361	0.30 ( 0.23)	0.78	6454.9	50700.00
10	17623.27	26.52	1.345	0.30 ( 0.23)	0.78	6589.4	220.50
11	17656.76	26.89	1.335	0.30 ( 0.23)	0.78	6675.9	50600.00
12	17690.07	27.03	1.331	0.30 ( 0.23)	0.78	6719.0	50500.00
13	18577.67	31.26	1.225	0.30 ( 0.23)	0.78	7960.1	110.00
14	19098.06	33.64	1.182	0.30 ( 0.23)	0.78	8702.6	100.00
15	19360.36	34.89	1.159	0.30 ( 0.23)	0.78	9087.0	110.00
16	19386.48	35.01	1.157	0.30 ( 0.23)	0.78	9133.7	100.00

17	20108.89	38.29	1.097	0.30	( 0.23)	0.78	10463.0	130.00
18	20632.21	40.68	1.058	0.30	( 0.24)	0.79	11421.6	10100.00
19	20859.63	41.75	1.045	0.30	( 0.24)	0.79	11836.4	100.00
20	21378.97	44.69	1.011	0.30	( 0.24)	0.79	13043.1	150.00
21	22415.93	53.33	0.919	0.30	( 0.24)	0.82	16736.0	20100.00
22	22769.33	56.50	0.891	0.30	( 0.25)	0.82	18028.6	31100.00
23	23092.93	59.77	0.862	0.30	( 0.25)	0.83	19513.8	13600.00
24	23233.87	61.17	0.854	0.30	( 0.25)	0.84	20137.5	390.00
25	24731.48	75.83	0.782	0.30	( 0.26)	0.87	26518.3	13100.00
26	25094.87	82.80	0.748	0.30	( 0.26)	0.88	29160.9	11801.00
27	26105.65	96.18	0.694	0.30	( 0.27)	0.89	35069.4	11530.00
28	26547.83	100.48	0.682	0.30	( 0.27)	0.90	37573.5	13510.00
29	27274.03	107.75	0.662	0.30	( 0.27)	0.91	41677.0	13010.00
30	27778.89	111.67	0.651	0.30	( 0.27)	0.91	44113.9	13500.00
31	28036.03	113.71	0.645	0.30	( 0.27)	0.91	45362.8	11330.00
32	28636.66	121.81	0.624	0.30	( 0.28)	0.92	50449.9	10630.00
33	28389.19	127.41	0.614	0.30	( 0.28)	0.92	53039.8	12330.00
34	28133.40	134.04	0.603	0.30	( 0.28)	0.93	56182.2	11600.00
35	27761.04	139.85	0.593	0.30	( 0.28)	0.93	58416.5	11111.00
36	27347.82	146.02	0.583	0.30	( 0.28)	0.93	60350.4	12201.00
37	26436.02	155.04	0.567	0.30	( 0.28)	0.93	62438.6	12231.00
38	25600.10	162.61	0.555	0.30	( 0.28)	0.94	63850.2	10400.00
39	24266.39	174.18	0.535	0.30	( 0.28)	0.94	65470.9	10320.00
40	23001.75	184.06	0.522	0.30	( 0.28)	0.94	65858.8	12000.00
41	20072.60	213.67	0.499	0.30	( 0.28)	0.94	66475.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 28636.66 Tc (MIN.) = 121.81  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 50449.89

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

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

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

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P508XX10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	124.05	23.35	0.30 ( 0.30)	0.99	131.3	50800.00
TOTAL AREA (ACRES) =		131.3				

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14119.20	12.42	2.194	0.30 ( 0.23)	0.78	2843.0	429.00

2	14821.13	14.06	1.981	0.30 ( 0.23)	0.77	3294.4	425.00
3	14894.91	14.34	1.945	0.30 ( 0.23)	0.77	3370.2	400.00
4	15113.60	15.97	1.807	0.30 ( 0.23)	0.77	3811.4	300.00
5	16564.81	21.45	1.531	0.30 ( 0.23)	0.77	5288.6	210.00
6	17067.82	23.43	1.451	0.30 ( 0.23)	0.77	5803.5	410.00
7	17343.90	24.67	1.401	0.30 ( 0.23)	0.78	6123.9	200.00
8	17466.07	25.36	1.378	0.30 ( 0.23)	0.78	6303.6	230.00
9	17550.23	25.97	1.361	0.30 ( 0.23)	0.78	6454.9	50700.00
10	17623.27	26.52	1.345	0.30 ( 0.23)	0.78	6589.4	220.50
11	17656.76	26.89	1.335	0.30 ( 0.23)	0.78	6675.9	50600.00
12	17690.07	27.03	1.331	0.30 ( 0.23)	0.78	6719.0	50500.00
13	18577.67	31.26	1.225	0.30 ( 0.23)	0.78	7960.1	110.00
14	19098.06	33.64	1.182	0.30 ( 0.23)	0.78	8702.6	100.00
15	19360.36	34.89	1.159	0.30 ( 0.23)	0.78	9087.0	110.00
16	19386.48	35.01	1.157	0.30 ( 0.23)	0.78	9133.7	100.00
17	20108.89	38.29	1.097	0.30 ( 0.23)	0.78	10463.0	130.00
18	20632.21	40.68	1.058	0.30 ( 0.24)	0.79	11421.6	10100.00
19	20859.63	41.75	1.045	0.30 ( 0.24)	0.79	11836.4	100.00
20	21378.97	44.69	1.011	0.30 ( 0.24)	0.79	13043.1	150.00
21	22415.93	53.33	0.919	0.30 ( 0.24)	0.82	16736.0	20100.00
22	22769.33	56.50	0.891	0.30 ( 0.25)	0.82	18028.6	31100.00
23	23092.93	59.77	0.862	0.30 ( 0.25)	0.83	19513.8	13600.00
24	23233.87	61.17	0.854	0.30 ( 0.25)	0.84	20137.5	390.00
25	24731.48	75.83	0.782	0.30 ( 0.26)	0.87	26518.3	13100.00
26	25094.87	82.80	0.748	0.30 ( 0.26)	0.88	29160.9	11801.00
27	26105.65	96.18	0.694	0.30 ( 0.27)	0.89	35069.4	11530.00
28	26547.83	100.48	0.682	0.30 ( 0.27)	0.90	37573.5	13510.00
29	27274.03	107.75	0.662	0.30 ( 0.27)	0.91	41677.0	13010.00
30	27778.89	111.67	0.651	0.30 ( 0.27)	0.91	44113.9	13500.00
31	28036.03	113.71	0.645	0.30 ( 0.27)	0.91	45362.8	11330.00
32	28636.66	121.81	0.624	0.30 ( 0.28)	0.92	50449.9	10630.00
33	28389.19	127.41	0.614	0.30 ( 0.28)	0.92	53039.8	12330.00
34	28133.40	134.04	0.603	0.30 ( 0.28)	0.93	56182.2	11600.00
35	27761.04	139.85	0.593	0.30 ( 0.28)	0.93	58416.5	11111.00
36	27347.82	146.02	0.583	0.30 ( 0.28)	0.93	60350.4	12201.00
37	26436.02	155.04	0.567	0.30 ( 0.28)	0.93	62438.6	12231.00
38	25600.10	162.61	0.555	0.30 ( 0.28)	0.94	63850.2	10400.00
39	24266.39	174.18	0.535	0.30 ( 0.28)	0.94	65470.9	10320.00
40	23001.75	184.06	0.522	0.30 ( 0.28)	0.94	65858.8	12000.00
41	20072.60	213.67	0.499	0.30 ( 0.28)	0.94	66475.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	124.05	23.35	1.455	0.30 ( 0.30)	0.99	131.3	50800.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14227.27	12.42	2.194	0.30 ( 0.23)	0.78	2912.9	429.00
2	14929.76	14.06	1.981	0.30 ( 0.23)	0.78	3373.5	425.00
3	15003.32	14.34	1.945	0.30 ( 0.23)	0.78	3450.8	400.00
4	15224.24	15.97	1.807	0.30 ( 0.23)	0.78	3901.2	300.00
5	16686.33	21.45	1.531	0.30 ( 0.23)	0.78	5409.2	210.00
6	17170.08	23.35	1.455	0.30 ( 0.23)	0.78	5912.5	50800.00
7	17191.50	23.43	1.451	0.30 ( 0.23)	0.78	5934.8	410.00

8	17462.24	24.67	1.401	0.30 ( 0.23)	0.78	6255.2	200.00
9	17581.88	25.36	1.378	0.30 ( 0.23)	0.78	6434.9	230.00
10	17664.23	25.97	1.361	0.30 ( 0.23)	0.78	6586.2	50700.00
11	17735.60	26.52	1.345	0.30 ( 0.23)	0.78	6720.7	220.50
12	17767.99	26.89	1.335	0.30 ( 0.23)	0.78	6807.2	50600.00
13	17800.88	27.03	1.331	0.30 ( 0.23)	0.78	6850.3	50500.00
14	18677.12	31.26	1.225	0.30 ( 0.23)	0.78	8091.4	110.00
15	19192.88	33.64	1.182	0.30 ( 0.23)	0.78	8833.9	100.00
16	19452.73	34.89	1.159	0.30 ( 0.23)	0.78	9218.3	110.00
17	19478.62	35.01	1.157	0.30 ( 0.23)	0.78	9265.0	100.00
18	20194.63	38.29	1.097	0.30 ( 0.24)	0.79	10594.3	130.00
19	20713.77	40.68	1.058	0.30 ( 0.24)	0.79	11552.9	10100.00
20	20939.84	41.75	1.045	0.30 ( 0.24)	0.79	11967.7	100.00
21	21455.46	44.69	1.011	0.30 ( 0.24)	0.79	13174.4	150.00
22	22482.57	53.33	0.919	0.30 ( 0.25)	0.82	16867.3	20100.00
23	22832.98	56.50	0.891	0.30 ( 0.25)	0.83	18159.9	31100.00
24	23153.50	59.77	0.862	0.30 ( 0.25)	0.83	19645.1	13600.00
25	23293.60	61.17	0.854	0.30 ( 0.25)	0.84	20268.8	390.00
26	24783.46	75.83	0.782	0.30 ( 0.26)	0.87	26649.7	13100.00
27	25143.18	82.80	0.748	0.30 ( 0.26)	0.88	29292.2	11801.00
28	26148.28	96.18	0.694	0.30 ( 0.27)	0.89	35200.7	11530.00
29	26589.16	100.48	0.682	0.30 ( 0.27)	0.90	37704.8	13510.00
30	27313.15	107.75	0.662	0.30 ( 0.27)	0.91	41808.3	13010.00
31	27816.82	111.67	0.651	0.30 ( 0.27)	0.91	44245.2	13500.00
32	28073.34	113.71	0.645	0.30 ( 0.27)	0.91	45494.1	11330.00
33	28671.73	121.81	0.624	0.30 ( 0.28)	0.92	50581.2	10630.00
34	28423.24	127.41	0.614	0.30 ( 0.28)	0.93	53171.1	12330.00
35	28166.24	134.04	0.603	0.30 ( 0.28)	0.93	56313.5	11600.00
36	27792.83	139.85	0.593	0.30 ( 0.28)	0.93	58547.8	11111.00
37	27378.49	146.02	0.583	0.30 ( 0.28)	0.93	60481.7	12201.00
38	26465.04	155.04	0.567	0.30 ( 0.28)	0.93	62569.9	12231.00
39	25627.74	162.61	0.555	0.30 ( 0.28)	0.94	63981.5	10400.00
40	24291.93	174.18	0.535	0.30 ( 0.28)	0.94	65602.2	10320.00
41	23025.89	184.06	0.522	0.30 ( 0.28)	0.94	65990.1	12000.00
42	20094.29	213.67	0.499	0.30 ( 0.28)	0.94	66607.1	10100.00

TOTAL AREA (ACRES) = 66607.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE (CFS) = 28671.73 Tc (MIN.) = 121.806  
 EFFECTIVE AREA (ACRES) = 50581.20 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
 TOTAL AREA (ACRES) = 66607.1  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

END OF STUDY SUMMARY:  
 TOTAL AREA (ACRES) = 66607.1 TC (MIN.) = 121.81  
 EFFECTIVE AREA (ACRES) = 50581.20 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.922  
 PEAK FLOW RATE (CFS) = 28671.73

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14227.27	12.42	2.194	0.30 ( 0.23)	0.78	2912.9	429.00
2	14929.76	14.06	1.981	0.30 ( 0.23)	0.78	3373.5	425.00
3	15003.32	14.34	1.945	0.30 ( 0.23)	0.78	3450.8	400.00
4	15224.24	15.97	1.807	0.30 ( 0.23)	0.78	3901.2	300.00
5	16686.33	21.45	1.531	0.30 ( 0.23)	0.78	5409.2	210.00

6	17170.08	23.35	1.455	0.30	( 0.23)	0.78	5912.5	50800.00
7	17191.50	23.43	1.451	0.30	( 0.23)	0.78	5934.8	410.00
8	17462.24	24.67	1.401	0.30	( 0.23)	0.78	6255.2	200.00
9	17581.88	25.36	1.378	0.30	( 0.23)	0.78	6434.9	230.00
10	17664.23	25.97	1.361	0.30	( 0.23)	0.78	6586.2	50700.00
11	17735.60	26.52	1.345	0.30	( 0.23)	0.78	6720.7	220.50
12	17767.99	26.89	1.335	0.30	( 0.23)	0.78	6807.2	50600.00
13	17800.88	27.03	1.331	0.30	( 0.23)	0.78	6850.3	50500.00
14	18677.12	31.26	1.225	0.30	( 0.23)	0.78	8091.4	110.00
15	19192.88	33.64	1.182	0.30	( 0.23)	0.78	8833.9	100.00
16	19452.73	34.89	1.159	0.30	( 0.23)	0.78	9218.3	110.00
17	19478.62	35.01	1.157	0.30	( 0.23)	0.78	9265.0	100.00
18	20194.63	38.29	1.097	0.30	( 0.24)	0.79	10594.3	130.00
19	20713.77	40.68	1.058	0.30	( 0.24)	0.79	11552.9	10100.00
20	20939.84	41.75	1.045	0.30	( 0.24)	0.79	11967.7	100.00
21	21455.46	44.69	1.011	0.30	( 0.24)	0.79	13174.4	150.00
22	22482.57	53.33	0.919	0.30	( 0.25)	0.82	16867.3	20100.00
23	22832.98	56.50	0.891	0.30	( 0.25)	0.83	18159.9	31100.00
24	23153.50	59.77	0.862	0.30	( 0.25)	0.83	19645.1	13600.00
25	23293.60	61.17	0.854	0.30	( 0.25)	0.84	20268.8	390.00
26	24783.46	75.83	0.782	0.30	( 0.26)	0.87	26649.7	13100.00
27	25143.18	82.80	0.748	0.30	( 0.26)	0.88	29292.2	11801.00
28	26148.28	96.18	0.694	0.30	( 0.27)	0.89	35200.7	11530.00
29	26589.16	100.48	0.682	0.30	( 0.27)	0.90	37704.8	13510.00
30	27313.15	107.75	0.662	0.30	( 0.27)	0.91	41808.3	13010.00
31	27816.82	111.67	0.651	0.30	( 0.27)	0.91	44245.2	13500.00
32	28073.34	113.71	0.645	0.30	( 0.27)	0.91	45494.1	11330.00
33	28671.73	121.81	0.624	0.30	( 0.28)	0.92	50581.2	10630.00
34	28423.24	127.41	0.614	0.30	( 0.28)	0.93	53171.1	12330.00
35	28166.24	134.04	0.603	0.30	( 0.28)	0.93	56313.5	11600.00
36	27792.83	139.85	0.593	0.30	( 0.28)	0.93	58547.8	11111.00
37	27378.49	146.02	0.583	0.30	( 0.28)	0.93	60481.7	12201.00
38	26465.04	155.04	0.567	0.30	( 0.28)	0.93	62569.9	12231.00
39	25627.74	162.61	0.555	0.30	( 0.28)	0.94	63981.5	10400.00
40	24291.93	174.18	0.535	0.30	( 0.28)	0.94	65602.2	10320.00
41	23025.89	184.06	0.522	0.30	( 0.28)	0.94	65990.1	12000.00
42	20094.29	213.67	0.499	0.30	( 0.28)	0.94	66607.1	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S36- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV36.DAT  
TIME/DATE OF STUDY: 15:57 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.720
- 2) 10.00; 2.487
- 3) 15.00; 1.851
- 4) 20.00; 1.582
- 5) 25.00; 1.382
- 6) 30.00; 1.244
- 7) 40.00; 1.061
- 8) 50.00; 0.944
- 9) 60.00; 0.855
- 10) 90.00; 0.707
- 11) 120.00; 0.622
- 12) 180.00; 0.520
- 13) 360.00; 0.381
- 14) 1200.00; 0.166

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61  
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.360  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	-	3.39	0.30	1.000	69	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 6.29  
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 6.29

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32  
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.35  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.101  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.45	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.34  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.41  
AVERAGE FLOW DEPTH(FEET) = 0.34 TRAVEL TIME(MIN.) = 2.04  
Tc(MIN.) = 13.04  
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 12.07  
EFFECTIVE AREA(ACRES) = 10.84 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 10.8 PEAK FLOW RATE(CFS) = 17.57  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.42 FLOW VELOCITY(FEET/SEC.) = 3.89  
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13601.00 = 906.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13601.00 TO NODE 13602.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 707.32 DOWNSTREAM(FEET) = 657.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 777.60 CHANNEL SLOPE = 0.0646  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.77  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.806

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.32	0.30	1.000	-
USER-DEFINED	-	4.70	0.30	1.000	-
USER-DEFINED	-	25.05	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	0.44	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38.61

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.62

AVERAGE FLOW DEPTH(FEET) = 0.73 TRAVEL TIME(MIN.) = 2.81

Tc(MIN.) = 15.84

SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 41.96  
EFFECTIVE AREA(ACRES) = 41.80 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 41.8 PEAK FLOW RATE(CFS) = 56.64  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.91 FLOW VELOCITY(FEET/SEC.) = 5.26

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13602.00 = 1684.51 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13602.00 TO NODE 13603.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 657.12 DOWNSTREAM(FEET) = 584.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1186.54 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.07  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.614

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.03	0.30	1.000	-
USER-DEFINED	-	2.51	0.30	1.000	-

USER-DEFINED - 1.52 0.30 1.000 -  
USER-DEFINED - 12.30 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 70.48

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.56

AVERAGE FLOW DEPTH(FEET) = 1.05 TRAVEL TIME(MIN.) = 3.56

Tc(MIN.) = 19.40

SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 27.63  
EFFECTIVE AREA(ACRES) = 65.16 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 65.2 PEAK FLOW RATE(CFS) = 77.08  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.10 FLOW VELOCITY(FEET/SEC.) = 5.72

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13603.00 = 2871.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 584.58 DOWNSTREAM(FEET) = 544.91  
CHANNEL LENGTH THRU SUBAREA(FEET) = 860.98 CHANNEL SLOPE = 0.0461  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.30  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.500

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	10.22	0.30	1.000	-
USER-DEFINED	-	4.19	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-
USER-DEFINED	-	0.09	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 88.56

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.44

AVERAGE FLOW DEPTH(FEET) = 1.29 TRAVEL TIME(MIN.) = 2.64

Tc(MIN.) = 22.04

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 22.95  
EFFECTIVE AREA(ACRES) = 86.40 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) = 93.35  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.33 FLOW VELOCITY(FEET/SEC.) = 5.53

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

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*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 10
-----
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 2 <<<<<
=====
PEAK FLOWRATE TABLE FILE NAME: S35X10.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1         688.52  58.84  0.30( 0.28) 0.95    1509.5  13510.00
  2         640.29  69.13  0.30( 0.28) 0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8
*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 14.0
-----
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
=====
MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1         688.52  58.84  0.30( 0.28) 0.95    1509.5  13510.00
  2         640.29  69.13  0.30( 0.28) 0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8
*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13620.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 632.19  DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 2062.96  CHANNEL SLOPE = 0.0423
GIVEN CHANNEL BASE(FEET) = 30.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000  MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.87
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.844
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED          -        17.68    0.30    1.000    -
USER-DEFINED          -         2.36    0.30    1.000    -
USER-DEFINED          -         0.60    0.30    1.000    -
USER-DEFINED          -         0.22    0.30    1.000    -
USER-DEFINED          -         2.22    0.30    1.000    -
USER-DEFINED          -         3.42    0.30    1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 695.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.42

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AVERAGE FLOW DEPTH(FEET) = 1.87  TRAVEL TIME(MIN.) = 3.30
Tc(MIN.) = 62.14
SUBAREA AREA(ACRES) = 26.50  SUBAREA RUNOFF(CFS) = 12.99
EFFECTIVE AREA(ACRES) = 1535.98  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1606.3  PEAK FLOW RATE(CFS) = 774.35
GIVEN CHANNEL BASE(FEET) = 30.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000  MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.99

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.99  FLOW VELOCITY(FEET/SEC.) = 10.79
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc  Intensity  Fp(Fm)  Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1         774.35  62.14    0.844  0.30( 0.28) 0.95    1536.0  13510.00
  2         736.87  72.51    0.793  0.30( 0.28) 0.95    1606.3  13500.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 774.35  Tc(MIN.) = 62.14
AREA-AVERAGED Fm(INCH/HR) = 0.28  AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.95  EFFECTIVE AREA(ACRES) = 1535.98
*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 62.14
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.844
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B         1.44    0.30    1.000    65
NATURAL FAIR COVER
"WOODLAND,GRASS"      B         0.01    0.30    1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.45  SUBAREA RUNOFF(CFS) = 0.71
EFFECTIVE AREA(ACRES) = 1537.43  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1607.8  PEAK FLOW RATE(CFS) = 775.06
*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)  Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1         775.06  62.14    0.844  0.30( 0.28) 0.95    1537.4  13510.00
  2         737.52  72.51    0.793  0.30( 0.28) 0.95    1607.8  13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

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\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	93.35	22.04	1.500	0.30( 0.30)	1.00	86.4	13600.00

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	690.20	22.04	1.500	0.30( 0.29)	0.96	631.7	13600.00
2	817.40	62.14	0.844	0.30( 0.29)	0.95	1623.8	13510.00
3	775.88	72.51	0.793	0.30( 0.28)	0.95	1694.2	13500.00

TOTAL AREA (ACRES) = 1694.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 817.40 Tc(MIN.) = 62.136  
EFFECTIVE AREA(ACRES) = 1623.83 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA (ACRES) = 1694.2  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13620.00 TO NODE 13640.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 544.91 DOWNSTREAM(FEET) = 489.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1384.37 CHANNEL SLOPE = 0.0404  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.10

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.834  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.39	0.30	1.000	-
USER-DEFINED	-	16.30	0.30	1.000	-
USER-DEFINED	-	4.08	0.30	1.000	-
USER-DEFINED	-	12.36	0.30	1.000	-
USER-DEFINED	-	11.23	0.30	1.000	-
USER-DEFINED	-	5.16	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 830.51  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.89  
AVERAGE FLOW DEPTH(FEET) = 2.10 TRAVEL TIME(MIN.) = 2.12  
Tc(MIN.) = 64.26  
SUBAREA AREA(ACRES) = 54.52 SUBAREA RUNOFF(CFS) = 26.21  
EFFECTIVE AREA(ACRES) = 1678.35 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1748.7 PEAK FLOW RATE(CFS) = 828.33  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 2.10 FLOW VELOCITY(FEET/SEC.) = 10.90

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	694.12	24.27	1.411	0.30( 0.29)	0.96	686.3	13600.00
2	828.33	64.26	0.834	0.30( 0.29)	0.95	1678.3	13510.00
3	783.33	74.67	0.783	0.30( 0.28)	0.95	1748.7	13500.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE(CFS) = 828.33 Tc(MIN.) = 64.26  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 1678.35

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 64.26  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.834  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.93	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	3.98	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 58.36 SUBAREA RUNOFF(CFS) = 28.05  
EFFECTIVE AREA(ACRES) = 1736.71 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1807.1 PEAK FLOW RATE(CFS) = 856.39

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 3 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: P201XX10.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	158.08	17.90	0.30( 0.26)	0.85	133.8	20100.00

TOTAL AREA(ACRES) = 133.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 11  
-----

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

=====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	752.50	24.27	1.411	0.30( 0.29)	0.96	744.6	13600.00
2	856.39	64.26	0.834	0.30( 0.29)	0.95	1736.7	13510.00
3	808.68	74.67	0.783	0.30( 0.29)	0.95	1807.1	13500.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 158.08 17.90 1.695 0.30( 0.26) 0.85 133.8 20100.00
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 13640.00 = 5247.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 853.43 17.90 1.695 0.30( 0.28) 0.94 683.2 20100.00
2 879.44 24.27 1.411 0.30( 0.28) 0.95 878.4 13600.00
3 919.88 64.26 0.834 0.30( 0.28) 0.95 1870.5 13510.00
4 866.53 74.67 0.783 0.30( 0.28) 0.94 1940.9 13500.00
TOTAL AREA (ACRES) = 1940.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 919.88 Tc (MIN.) = 64.255
EFFECTIVE AREA (ACRES) = 1870.51 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 1940.9
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 489.00 DOWNSTREAM (FEET) = 436.89
CHANNEL LENGTH THRU SUBAREA (FEET) = 2994.52 CHANNEL SLOPE = 0.0174
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.85

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.805

SUBAREA LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/, LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various area and flow values.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 935.24

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.51

AVERAGE FLOW DEPTH (FEET) = 2.85 TRAVEL TIME (MIN.) = 5.86

Tc (MIN.) = 70.12

SUBAREA AREA (ACRES) = 67.58 SUBAREA RUNOFF (CFS) = 30.72

EFFECTIVE AREA (ACRES) = 1938.09 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA (ACRES) = 2008.4 PEAK FLOW RATE (CFS) = 919.88

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 2.83 FLOW VELOCITY (FEET/SEC.) = 8.46
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13641.00 = 25056.61 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 853.43 23.86 1.428 0.30( 0.28) 0.95 750.8 20100.00
2 879.44 30.19 1.241 0.30( 0.28) 0.95 946.0 13600.00
3 919.88 70.12 0.805 0.30( 0.28) 0.95 1938.1 13510.00
4 866.53 80.65 0.753 0.30( 0.28) 0.95 2008.4 13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 919.88 Tc (MIN.) = 70.12

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA (ACRES) = 1938.09

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 70.12

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.805

SUBAREA LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/, LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various area and flow values.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 104.70 SUBAREA RUNOFF (CFS) = 47.60

EFFECTIVE AREA (ACRES) = 2042.79 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA (ACRES) = 2113.1 PEAK FLOW RATE (CFS) = 955.58

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 70.12

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.805

SUBAREA LOSS RATE DATA (AMC II):

Table with 7 columns: DEVELOPMENT TYPE/, LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include USER-DEFINED entries with various area and flow values.

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 8.03 SUBAREA RUNOFF (CFS) = 3.65

EFFECTIVE AREA (ACRES) = 2050.82 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA (ACRES) = 2121.2 PEAK FLOW RATE (CFS) = 959.23

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 436.89 DOWNSTREAM(FEET) = 394.80

CHANNEL LENGTH THRU SUBAREA(FEET) = 2814.16 CHANNEL SLOPE = 0.0150

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.10

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.777

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	24.24	0.30	1.000	-
USER-DEFINED	-	1.34	0.30	1.000	-
USER-DEFINED	-	74.98	0.30	1.000	-
USER-DEFINED	-	101.12	0.30	1.000	-
USER-DEFINED	-	16.90	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1006.31

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.26

AVERAGE FLOW DEPTH(FEET) = 3.10 TRAVEL TIME(MIN.) = 5.68

Tc(MIN.) = 75.80

SUBAREA AREA(ACRES) = 219.25 SUBAREA RUNOFF(CFS) = 94.15

EFFECTIVE AREA(ACRES) = 2270.07 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96

TOTAL AREA(ACRES) = 2340.4 PEAK FLOW RATE(CFS) = 1001.67

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.09 FLOW VELOCITY(FEET/SEC.) = 8.26

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13642.00 = 27870.77 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	942.27	29.58	1.256	0.30( 0.29)	0.96	1082.8	20100.00
2	974.92	35.88	1.136	0.30( 0.29)	0.96	1278.0	13600.00
3	1001.67	75.80	0.777	0.30( 0.29)	0.96	2270.1	13510.00
4	923.24	86.45	0.725	0.30( 0.29)	0.95	2340.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1001.67 Tc(MIN.) = 75.80

AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA(ACRES) = 2270.07

\*\*\*\*\*

FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 75.80

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.777

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	9.95	0.30	1.000	-
USER-DEFINED	-	10.02	0.30	1.000	-
USER-DEFINED	-	4.45	0.30	1.000	-
USER-DEFINED	-	179.37	0.30	1.000	-
USER-DEFINED	-	11.47	0.30	1.000	-
USER-DEFINED	-	0.17	0.30	0.850	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 215.43 SUBAREA RUNOFF(CFS) = 92.52

EFFECTIVE AREA(ACRES) = 2485.50 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96

TOTAL AREA(ACRES) = 2555.9 PEAK FLOW RATE(CFS) = 1094.18

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	1127.58	29.58	1.256	0.30( 0.29)	0.97	1298.2	20100.00
2	1137.09	35.88	1.136	0.30( 0.29)	0.97	1493.4	13600.00
3	1094.18	75.80	0.777	0.30( 0.29)	0.96	2485.5	13510.00
4	1005.57	86.45	0.725	0.30( 0.29)	0.96	2555.9	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1137.09 Tc(MIN.) = 35.88

AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1493.41

\*\*\*\*\*

FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 35.88

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.136

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.03	0.30	0.850	-
USER-DEFINED	-	5.14	0.30	1.000	-
USER-DEFINED	-	11.22	0.30	1.000	-
USER-DEFINED	-	0.33	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 16.72 SUBAREA RUNOFF(CFS) = 12.59

EFFECTIVE AREA(ACRES) = 1510.13 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 2572.6 PEAK FLOW RATE(CFS) = 1149.68

\*\*\*\*\*

FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 394.80 DOWNSTREAM(FEET) = 342.39

CHANNEL LENGTH THRU SUBAREA(FEET) = 2913.57 CHANNEL SLOPE = 0.0180

GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.25  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.048  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	2.17	0.30	1.000	-
USER-DEFINED	-	9.19	0.30	1.000	-
USER-DEFINED	-	67.57	0.30	1.000	-
USER-DEFINED	-	35.19	0.30	1.000	-
USER-DEFINED	-	30.67	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1198.50  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.29  
 AVERAGE FLOW DEPTH (FEET) = 3.25 TRAVEL TIME (MIN.) = 5.22  
 Tc (MIN.) = 41.11  
 SUBAREA AREA (ACRES) = 145.01 SUBAREA RUNOFF (CFS) = 97.63  
 EFFECTIVE AREA (ACRES) = 1655.14 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 2717.6 PEAK FLOW RATE (CFS) = 1149.68  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.17 FLOW VELOCITY (FEET/SEC.) = 9.18  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1141.97	34.79	1.156	0.30 ( 0.29)	0.97	1459.9	20100.00
2	1149.68	41.11	1.048	0.30 ( 0.29)	0.97	1655.1	13600.00
3	1101.36	81.12	0.751	0.30 ( 0.29)	0.96	2647.2	13510.00
4	1011.96	91.91	0.702	0.30 ( 0.29)	0.96	2717.6	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 1149.68 Tc (MIN.) = 41.11  
 AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA (ACRES) = 1655.14

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 41.11  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.048

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.30	1.000	-
USER-DEFINED	-	20.65	0.30	1.000	-
USER-DEFINED	-	2.69	0.30	1.000	-
USER-DEFINED	-	8.45	0.30	1.000	-

USER-DEFINED - 96.93 0.30 1.000 -  
 USER-DEFINED - 13.19 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 142.80 SUBAREA RUNOFF (CFS) = 96.14  
 EFFECTIVE AREA (ACRES) = 1797.94 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 2860.4 PEAK FLOW RATE (CFS) = 1223.45

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1246.17	34.79	1.156	0.30 ( 0.29)	0.97	1602.7	20100.00
2	1223.45	41.11	1.048	0.30 ( 0.29)	0.97	1797.9	13600.00
3	1159.10	81.12	0.751	0.30 ( 0.29)	0.96	2790.0	13510.00
4	1062.94	91.91	0.702	0.30 ( 0.29)	0.96	2860.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 1246.17 Tc (MIN.) = 34.79  
 AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA (ACRES) = 1602.73

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 34.79  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.156

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	42.54	0.30	1.000	-
USER-DEFINED	-	16.96	0.30	1.000	-
USER-DEFINED	-	80.60	0.30	1.000	-
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	2.00	0.30	1.000	-
USER-DEFINED	-	3.11	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 146.77 SUBAREA RUNOFF (CFS) = 113.12  
 EFFECTIVE AREA (ACRES) = 1749.50 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 3007.2 PEAK FLOW RATE (CFS) = 1359.28

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM (FEET) = 342.39 DOWNSTREAM (FEET) = 300.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1591.23 CHANNEL SLOPE = 0.0266  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.15  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.113  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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LAND USE            GROUP    (ACRES)    (INCH/HR)    (DECIMAL)    CN  
 USER-DEFINED       -        0.89        0.30        1.000       -  
 USER-DEFINED       -        23.73       0.30        1.000       -  
 USER-DEFINED       -        0.27        0.30        1.000       -  
 USER-DEFINED       -        19.87       0.30        1.000       -  
 USER-DEFINED       -        6.40        0.30        1.000       -  
 USER-DEFINED       -        3.14        0.30        1.000       -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1379.14  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 11.11  
 AVERAGE FLOW DEPTH( FEET) = 3.15    TRAVEL TIME(MIN.) = 2.39  
 Tc(MIN.) = 37.18  
 SUBAREA AREA(ACRES) = 54.30        SUBAREA RUNOFF(CFS) = 39.72  
 EFFECTIVE AREA(ACRES) = 1803.80    AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30    AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 3061.5        PEAK FLOW RATE(CFS) = 1359.28  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE( FEET) = 30.00    CHANNEL FREEBOARD( FEET) = 0.0  
 "Z" FACTOR = 3.000    MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT( FEET) = 3.12  
  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH( FEET) = 3.12    FLOW VELOCITY( FEET/SEC.) = 11.08  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1359.28	37.18	1.113	0.30( 0.29)	0.98	1803.8	20100.00
2	1322.27	43.52	1.020	0.30( 0.29)	0.98	1999.0	13600.00
3	1218.66	83.59	0.739	0.30( 0.29)	0.97	2991.1	13510.00
4	1115.99	94.45	0.694	0.30( 0.29)	0.96	3061.5	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1359.28    Tc(MIN.) = 37.18  
 AREA-AVERAGED Fm(INCH/HR) = 0.29    AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98    EFFECTIVE AREA(ACRES) = 1803.80

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 37.18  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.113

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	9.52	0.30	1.000	-
USER-DEFINED	-	0.71	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	39.42	0.30	1.000	-
USER-DEFINED	-	0.62	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 51.16        SUBAREA RUNOFF(CFS) = 37.42  
 EFFECTIVE AREA(ACRES) = 1854.96    AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30    AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 3112.6        PEAK FLOW RATE(CFS) = 1367.67

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 37.18  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.113

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.11	0.30	1.000	-
USER-DEFINED	-	0.77	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	2.69	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 3.79        SUBAREA RUNOFF(CFS) = 2.77  
 EFFECTIVE AREA(ACRES) = 1858.75    AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30    AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 3116.4        PEAK FLOW RATE(CFS) = 1370.44

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 2P10EVAA.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	369.81	15.08	0.30( 0.11)	0.36	172.7	110.00
2	370.44	17.62	0.30( 0.11)	0.37	203.0	100.00
3	361.39	19.04	0.30( 0.11)	0.38	213.7	100.00
4	316.02	22.37	0.30( 0.12)	0.40	221.1	130.00
TOTAL AREA(ACRES) =		221.1				

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM( FEET) = 338.00    DOWNSTREAM( FEET) = 300.00  
 FLOW LENGTH( FEET) = 881.07    MANNING'S N = 0.013  
 DEPTH OF FLOW IN 87.0 INCH PIPE IS 70.7 INCHES  
 PIPE-FLOW VELOCITY( FEET/SEC.) = 38.17  
 ESTIMATED PIPE DIAMETER( INCH) = 87.00    NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 1370.44  
 PIPE TRAVEL TIME(MIN.) = 0.38    Tc(MIN.) = 37.56



LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1370.44	37.56	1.106	0.30( 0.29)	0.98	1858.7	20100.00
2	1343.78	43.90	1.015	0.30( 0.29)	0.98	2054.0	13600.00
3	1229.56	83.98	0.737	0.30( 0.29)	0.97	3046.0	13510.00
4	1135.31	94.85	0.693	0.30( 0.29)	0.97	3116.4	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	369.81	15.08	1.847	0.30( 0.11)	0.36	172.7	110.00
2	370.44	17.62	1.710	0.30( 0.11)	0.37	203.0	100.00
3	361.39	19.04	1.634	0.30( 0.11)	0.38	213.7	100.00
4	316.02	22.37	1.487	0.30( 0.12)	0.40	221.1	130.00

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1421.87	15.08	1.847	0.30( 0.26)	0.86	918.7	110.00
2	1491.67	17.62	1.710	0.30( 0.26)	0.86	1074.8	100.00
3	1507.68	19.04	1.634	0.30( 0.26)	0.87	1155.9	100.00
4	1515.65	22.37	1.487	0.30( 0.26)	0.88	1328.1	130.00
5	1598.25	37.56	1.106	0.30( 0.28)	0.92	2079.8	20100.00
6	1550.73	43.90	1.015	0.30( 0.28)	0.92	2275.1	13600.00
7	1372.07	83.98	0.737	0.30( 0.28)	0.93	3267.1	13510.00
8	1267.78	94.85	0.693	0.30( 0.28)	0.93	3337.5	13500.00

TOTAL AREA (ACRES) = 3337.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1598.25 Tc(MIN.) = 37.564  
EFFECTIVE AREA(ACRES) = 2079.85 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
TOTAL AREA(ACRES) = 3337.5  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 37.56

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.106

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	1.11	0.30	1.000	86

AGRICULTURAL POOR COVER

"FALLOW"	B	0.44	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.49	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	1.70	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	1.09	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	18.57	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 24.40 SUBAREA RUNOFF(CFS) = 17.69  
EFFECTIVE AREA(ACRES) = 2104.25 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 3361.9 PEAK FLOW RATE(CFS) = 1598.25  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 37.56

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.106

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL FAIR COVER "ORCHARDS"	B	12.39	0.30	1.000	65
AGRICULTURAL FAIR COVER "ORCHARDS"	B	2.30	0.30	1.000	65
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	5.19	0.30	1.000	79
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	28.71	0.30	1.000	81
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.17	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 48.76 SUBAREA RUNOFF(CFS) = 35.35  
EFFECTIVE AREA(ACRES) = 2153.01 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 3410.7 PEAK FLOW RATE(CFS) = 1607.75

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 300.00 DOWNSTREAM(FEET) = 288.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 933.89 CHANNEL SLOPE = 0.0128  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.19  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.22 0.30 1.000 -  
USER-DEFINED - 9.23 0.30 1.000 -  
USER-DEFINED - 0.54 0.30 1.000 -  
USER-DEFINED - 5.66 0.30 1.000 -  
USER-DEFINED - 3.66 0.30 1.000 -  
USER-DEFINED - 0.67 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1614.71  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.06  
AVERAGE FLOW DEPTH(FEET) = 4.19 TRAVEL TIME(MIN.) = 1.72  
Tc(MIN.) = 39.28  
SUBAREA AREA(ACRES) = 19.98 SUBAREA RUNOFF(CFS) = 13.92  
EFFECTIVE AREA(ACRES) = 2172.99 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 3430.6 PEAK FLOW RATE(CFS) = 1607.75  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 4.18 FLOW VELOCITY(FEET/SEC.) = 9.05  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1421.87	16.86	1.751	0.30( 0.26)	0.88	1011.8	110.00
2	1496.44	19.37	1.616	0.30( 0.26)	0.87	1168.0	100.00
3	1516.47	20.79	1.550	0.30( 0.26)	0.88	1249.0	100.00
4	1539.45	24.11	1.418	0.30( 0.27)	0.89	1421.3	130.00
5	1607.75	39.28	1.074	0.30( 0.28)	0.92	2173.0	20100.00
6	1560.66	45.63	0.995	0.30( 0.28)	0.92	2368.2	13600.00
7	1375.63	85.78	0.728	0.30( 0.28)	0.93	3360.3	13510.00
8	1272.00	96.70	0.688	0.30( 0.28)	0.93	3430.6	13500.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE(CFS) = 1607.75 Tc(MIN.) = 39.28  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 2172.99

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 39.28  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 1.56 0.30 1.000 -  
USER-DEFINED - 9.40 0.30 1.000 -  
USER-DEFINED - 2.76 0.30 1.000 -  
USER-DEFINED - 17.38 0.30 1.000 -  
USER-DEFINED - 2.46 0.30 1.000 -

USER-DEFINED - 5.56 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 39.12 SUBAREA RUNOFF(CFS) = 27.26  
EFFECTIVE AREA(ACRES) = 2212.11 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 3469.8 PEAK FLOW RATE(CFS) = 1607.75  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 39.28  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.65 0.30 1.000 -  
USER-DEFINED - 1.70 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 2.35 SUBAREA RUNOFF(CFS) = 1.64  
EFFECTIVE AREA(ACRES) = 2214.46 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 3472.1 PEAK FLOW RATE(CFS) = 1607.75  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 3 <<<<<

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 39.28  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 5.29 0.30 1.000 -  
USER-DEFINED - 31.25 0.30 1.000 -  
USER-DEFINED - 0.22 0.30 1.000 -  
USER-DEFINED - 6.26 0.30 1.000 -  
USER-DEFINED - 0.07 0.30 1.000 -  
USER-DEFINED - 0.22 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 43.31 SUBAREA RUNOFF(CFS) = 30.18  
EFFECTIVE AREA(ACRES) = 2257.77 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 3515.4 PEAK FLOW RATE(CFS) = 1619.86

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*****
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 39.28
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         2.47     0.30     0.850    -
USER-DEFINED        -         3.06     0.30     0.850    -
USER-DEFINED        -        17.76     0.30     0.500    -
USER-DEFINED        -         7.31     0.30     0.500    -
USER-DEFINED        -         0.34     0.30     1.000    -
USER-DEFINED        -         8.22     0.30     1.000    -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.659
SUBAREA AREA(ACRES) = 39.16      SUBAREA RUNOFF(CFS) = 30.89
EFFECTIVE AREA(ACRES) = 2296.93  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3554.6      PEAK FLOW RATE(CFS) = 1650.76

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*****
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 39.28
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.53     0.30     1.000    -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 0.53      SUBAREA RUNOFF(CFS) = 0.37
EFFECTIVE AREA(ACRES) = 2297.46  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3555.1      PEAK FLOW RATE(CFS) = 1651.13

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*****
FLOW PROCESS FROM NODE 13680.00 TO NODE 13682.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 288.00  DOWNSTREAM(FEET) = 242.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.77  CHANNEL SLOPE = 0.0161
GIVEN CHANNEL BASE(FEET) = 30.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000  MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.99
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.22     0.30     1.000    -
USER-DEFINED        -         5.28     0.30     1.000    -

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USER-DEFINED        -         0.52     0.30     1.000    -
USER-DEFINED        -         3.61     0.30     1.000    -
USER-DEFINED        -         0.67     0.30     1.000    -
USER-DEFINED        -         1.37     0.30     1.000    -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1654.87
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.87
AVERAGE FLOW DEPTH(FEET) = 3.99  TRAVEL TIME(MIN.) = 4.83
Tc(MIN.) = 44.11
SUBAREA AREA(ACRES) = 11.67      SUBAREA RUNOFF(CFS) = 7.49
EFFECTIVE AREA(ACRES) = 2309.13  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3566.8      PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000  MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.99

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.99  FLOW VELOCITY(FEET/SEC.) = 9.87
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.

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** PEAK FLOW RATE TABLE **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1  1521.80  21.81  1.510  0.30( 0.26) 0.88  1148.0  110.00
2  1573.72  24.27  1.411  0.30( 0.26) 0.88  1304.1  100.00
3  1590.73  25.67  1.363  0.30( 0.26) 0.88  1385.2  100.00
4  1600.63  28.98  1.272  0.30( 0.27) 0.89  1557.4  130.00
5  1651.13  44.11  1.013  0.30( 0.28) 0.92  2309.1  20100.00
6  1611.81  50.50  0.940  0.30( 0.28) 0.92  2504.3  13600.00
7  1408.16  90.85  0.705  0.30( 0.28) 0.93  3496.4  13510.00
8  1310.02  101.87 0.673  0.30( 0.28) 0.93  3566.8  13500.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1651.13  Tc(MIN.) = 44.11
AREA-AVERAGED Fm(INCH/HR) = 0.28  AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.92  EFFECTIVE AREA(ACRES) = 2309.13

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*****
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 44.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         6.90     0.30     1.000    -
USER-DEFINED        -        23.04     0.30     1.000    -
USER-DEFINED        -         1.18     0.30     1.000    -
USER-DEFINED        -         1.56     0.30     1.000    -
USER-DEFINED        -        53.20     0.30     1.000    -
USER-DEFINED        -         2.08     0.30     1.000    -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 87.96      SUBAREA RUNOFF(CFS) = 56.44

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EFFECTIVE AREA (ACRES) = 2397.09 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3654.7 PEAK FLOW RATE (CFS) = 1651.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 44.11  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.013  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	0.18	0.30	1.000	-
USER-DEFINED	-	0.38	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	7.73	0.30	1.000	-
USER-DEFINED	-	4.37	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 12.89 SUBAREA RUNOFF (CFS) = 8.27  
EFFECTIVE AREA (ACRES) = 2409.98 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3667.6 PEAK FLOW RATE (CFS) = 1651.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 44.11  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.013  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	2.57	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	1.97	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.98	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.39	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	1.67	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 12.58 SUBAREA RUNOFF (CFS) = 8.07  
EFFECTIVE AREA (ACRES) = 2422.56 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3680.2 PEAK FLOW RATE (CFS) = 1651.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 44.11  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.013  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.44	0.30	1.000	66
PUBLIC PARK	B	2.65	0.30	0.850	56
PUBLIC PARK	B	1.16	0.30	0.850	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.47	0.30	0.500	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.25	0.30	0.500	56
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	20.24	0.30	1.000	81

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.963  
SUBAREA AREA (ACRES) = 25.21 SUBAREA RUNOFF (CFS) = 16.43  
EFFECTIVE AREA (ACRES) = 2447.77 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3705.4 PEAK FLOW RATE (CFS) = 1651.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 44.11  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.013  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.08	0.30	1.000	-
USER-DEFINED	-	6.75	0.30	1.000	-
USER-DEFINED	-	0.02	0.30	1.000	-
USER-DEFINED	-	0.93	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 14.78 SUBAREA RUNOFF (CFS) = 9.48  
EFFECTIVE AREA (ACRES) = 2462.55 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3720.2 PEAK FLOW RATE (CFS) = 1651.13  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 242.00 DOWNSTREAM (FEET) = 208.53

CHANNEL LENGTH THRU SUBAREA (FEET) = 2526.22 CHANNEL SLOPE = 0.0132  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 4.22  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.30	1.000	-
USER-DEFINED	-	13.31	0.30	1.000	-
USER-DEFINED	-	0.87	0.30	1.000	-
USER-DEFINED	-	20.26	0.30	1.000	-
USER-DEFINED	-	1.21	0.30	1.000	-
USER-DEFINED	-	0.05	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1664.24  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.24  
 AVERAGE FLOW DEPTH (FEET) = 4.22 TRAVEL TIME (MIN.) = 4.56  
 Tc (MIN.) = 48.67  
 SUBAREA AREA (ACRES) = 44.19 SUBAREA RUNOFF (CFS) = 26.24  
 EFFECTIVE AREA (ACRES) = 2506.74 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3764.4 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 4.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 4.20 FLOW VELOCITY (FEET/SEC.) = 9.23  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	26.46	1.342	0.30 ( 0.27)	0.90	1345.6	110.00
2	1573.72	28.89	1.275	0.30 ( 0.27)	0.89	1501.7	100.00
3	1590.73	30.27	1.239	0.30 ( 0.27)	0.89	1582.8	100.00
4	1600.63	33.57	1.179	0.30 ( 0.27)	0.90	1755.0	130.00
5	1651.13	48.67	0.960	0.30 ( 0.28)	0.93	2506.7	20100.00
6	1611.81	55.09	0.899	0.30 ( 0.28)	0.93	2701.9	13600.00
7	1408.16	95.63	0.691	0.30 ( 0.28)	0.93	3694.0	13510.00
8	1318.82	106.75	0.660	0.30 ( 0.28)	0.93	3764.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 1651.13 Tc (MIN.) = 48.67  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 2506.74

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 48.67  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
CONDOMINIUMS	B	0.10	0.30	0.350	56
PUBLIC PARK	B	6.90	0.30	0.850	56
PUBLIC PARK	B	0.40	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 12.56 0.30 1.000 -  
 USER-DEFINED - 0.81 0.30 1.000 -  
 USER-DEFINED - 0.01 0.30 1.000 -  
 USER-DEFINED - 1.11 0.30 1.000 -  
 USER-DEFINED - 0.59 0.30 1.000 -  
 USER-DEFINED - 3.04 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 18.12 SUBAREA RUNOFF (CFS) = 10.76  
 EFFECTIVE AREA (ACRES) = 2524.86 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3782.5 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 48.67  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.30	0.30	0.850	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.70	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
PUBLIC PARK	B	2.90	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835  
 SUBAREA AREA (ACRES) = 6.20 SUBAREA RUNOFF (CFS) = 3.96  
 EFFECTIVE AREA (ACRES) = 2531.06 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3788.7 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 48.67  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
CONDOMINIUMS	B	0.10	0.30	0.350	56
PUBLIC PARK	B	6.90	0.30	0.850	56
PUBLIC PARK	B	0.40	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839

SUBAREA AREA (ACRES) = 7.50 SUBAREA RUNOFF (CFS) = 4.78  
 EFFECTIVE AREA (ACRES) = 2538.56 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3796.2 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*MEMORY BANK # 3 IS EMPTY - PROCESS IGNORED.\*\*\*

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.67

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	2.55	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	0.01	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	1.35	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	0.44	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.67	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	1.06	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 6.08 SUBAREA RUNOFF (CFS) = 3.61  
 EFFECTIVE AREA (ACRES) = 2544.64 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3802.3 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.67

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	2.16	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	2.45	0.30	1.000	66

NATURAL FAIR COVER

"OPEN BRUSH"	B	6.15	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	1.34	0.30	1.000	81
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	18.46	0.30	1.000	81
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	4.13	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 34.69 SUBAREA RUNOFF (CFS) = 20.59  
 EFFECTIVE AREA (ACRES) = 2579.33 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3837.0 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.67

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	8.69	0.30	1.000	81
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.73	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.41	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND, GRASS"	B	1.37	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND, GRASS"	B	3.11	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 14.31 SUBAREA RUNOFF (CFS) = 8.49  
 EFFECTIVE AREA (ACRES) = 2593.64 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3851.3 PEAK FLOW RATE (CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13685.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 208.53 DOWNSTREAM (FEET) = 194.24  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 289.01 CHANNEL SLOPE = 0.0494  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.92  
 CHANNEL FLOW THRU SUBAREA (CFS) = 1651.13  
 FLOW VELOCITY (FEET/SEC.) = 14.56 FLOW DEPTH (FEET) = 2.92  
 TRAVEL TIME (MIN.) = 0.33 Tc (MIN.) = 49.00  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13685.00 = 39866.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	26.80	1.332	0.30 ( 0.27)	0.90	1432.5	110.00
2	1573.72	29.22	1.265	0.30 ( 0.27)	0.90	1588.6	100.00
3	1590.73	30.61	1.233	0.30 ( 0.27)	0.90	1669.7	100.00
4	1600.63	33.91	1.172	0.30 ( 0.27)	0.91	1841.9	130.00
5	1651.13	49.00	0.956	0.30 ( 0.28)	0.93	2593.6	20100.00
6	1611.81	55.42	0.896	0.30 ( 0.28)	0.93	2788.8	13600.00
7	1408.16	95.98	0.690	0.30 ( 0.28)	0.93	3780.9	13510.00
8	1318.82	107.10	0.659	0.30 ( 0.28)	0.93	3851.3	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1651.13 Tc(MIN.) = 49.00  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2593.64

\*\*\*\*\*

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

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

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.75  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.918

SUBAREA LOSS RATE DATA(AMC II):

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

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1653.46  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.87  
 AVERAGE FLOW DEPTH(FEET) = 4.75 TRAVEL TIME(MIN.) = 3.91  
 Tc(MIN.) = 52.91  
 SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 4.67  
 EFFECTIVE AREA(ACRES) = 2602.03 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 1651.13  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.75

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.75 FLOW VELOCITY(FEET/SEC.) = 7.86  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	1521.80	30.81	1.229	0.30 ( 0.27)	0.90	1440.9
2	1573.72	33.19	1.186	0.30 ( 0.27)	0.90	1597.0
3	1590.73	34.56	1.161	0.30 ( 0.27)	0.90	1678.1
4	1600.63	37.85	1.100	0.30 ( 0.27)	0.91	1850.3
5	1651.13	52.91	0.918	0.30 ( 0.28)	0.93	2602.0
6	1611.81	59.35	0.861	0.30 ( 0.28)	0.93	2797.2
7	1408.16	100.08	0.678	0.30 ( 0.28)	0.93	3789.3
8	1318.82	111.28	0.647	0.30 ( 0.28)	0.93	3859.7

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1651.13 Tc(MIN.) = 52.91  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2602.03

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 52.91  
 EFFECTIVE AREA(ACRES) = 2602.03 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.927  
 PEAK FLOW RATE(CFS) = 1651.13

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1521.80	30.81	1.229	0.30 ( 0.27)	0.90	1440.9	110.00
2	1573.72	33.19	1.186	0.30 ( 0.27)	0.90	1597.0	100.00
3	1590.73	34.56	1.161	0.30 ( 0.27)	0.90	1678.1	100.00
4	1600.63	37.85	1.100	0.30 ( 0.27)	0.91	1850.3	130.00
5	1651.13	52.91	0.918	0.30 ( 0.28)	0.93	2602.0	20100.00
6	1611.81	59.35	0.861	0.30 ( 0.28)	0.93	2797.2	13600.00
7	1408.16	100.08	0.678	0.30 ( 0.28)	0.93	3789.3	13510.00
8	1318.82	111.28	0.647	0.30 ( 0.28)	0.93	3859.7	13500.00

END OF RATIONAL METHOD ANALYSIS





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

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S37- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV37.DAT  
TIME/DATE OF STUDY: 15:57 04/01/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.709
- 2) 10.00; 2.481
- 3) 15.00; 1.848
- 4) 20.00; 1.580
- 5) 25.00; 1.381
- 6) 30.00; 1.243
- 7) 40.00; 1.060
- 8) 50.00; 0.942
- 9) 60.00; 0.854
- 10) 90.00; 0.706
- 11) 120.00; 0.620
- 12) 180.00; 0.519
- 13) 360.00; 0.379
- 14) 1200.00; 0.165

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES: LIP (FT)	MANNING HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV34.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15224.24	15.97	0.30 ( 0.23)	0.78	3901.2	300.00
2	18677.12	31.26	0.30 ( 0.23)	0.78	8091.4	110.00
3	20194.63	38.29	0.30 ( 0.24)	0.79	10594.3	130.00
4	21455.46	44.69	0.30 ( 0.24)	0.79	13174.4	150.00
5	23293.60	61.17	0.30 ( 0.25)	0.84	20268.8	390.00
6	24783.46	75.83	0.30 ( 0.26)	0.87	26649.7	13100.00
7	25143.18	82.80	0.30 ( 0.26)	0.88	29292.2	11801.00
8	26589.16	100.48	0.30 ( 0.27)	0.90	37704.8	13510.00
9	27313.15	107.75	0.30 ( 0.27)	0.91	41808.3	13010.00
10	28073.34	113.71	0.30 ( 0.27)	0.91	45494.1	11330.00
11	28671.73	121.81	0.30 ( 0.28)	0.92	50581.2	10630.00
12	28423.24	127.41	0.30 ( 0.28)	0.93	53171.1	12330.00
13	28166.24	134.04	0.30 ( 0.28)	0.93	56313.5	11600.00
14	27792.83	139.85	0.30 ( 0.28)	0.93	58547.8	11111.00
15	27378.49	146.02	0.30 ( 0.28)	0.93	60481.7	12201.00
16	26465.04	155.04	0.30 ( 0.28)	0.93	62569.9	12231.00
17	25627.74	162.61	0.30 ( 0.28)	0.94	63981.5	10400.00
18	24291.93	174.18	0.30 ( 0.28)	0.94	65602.2	10320.00
19	23025.89	184.06	0.30 ( 0.28)	0.94	65990.1	12000.00
20	20094.29	213.67	0.30 ( 0.28)	0.94	66607.1	10100.00
TOTAL AREA (ACRES) =						66607.1

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15224.24	15.97	0.30 ( 0.23)	0.78	3901.2	300.00
2	18677.12	31.26	0.30 ( 0.23)	0.78	8091.4	110.00
3	20194.63	38.29	0.30 ( 0.24)	0.79	10594.3	130.00
4	21455.46	44.69	0.30 ( 0.24)	0.79	13174.4	150.00
5	23293.60	61.17	0.30 ( 0.25)	0.84	20268.8	390.00
6	24783.46	75.83	0.30 ( 0.26)	0.87	26649.7	13100.00
7	25143.18	82.80	0.30 ( 0.26)	0.88	29292.2	11801.00
8	26589.16	100.48	0.30 ( 0.27)	0.90	37704.8	13510.00
9	27313.15	107.75	0.30 ( 0.27)	0.91	41808.3	13010.00
10	28073.34	113.71	0.30 ( 0.27)	0.91	45494.1	11330.00
11	28671.73	121.81	0.30 ( 0.28)	0.92	50581.2	10630.00
12	28423.24	127.41	0.30 ( 0.28)	0.93	53171.1	12330.00
13	28166.24	134.04	0.30 ( 0.28)	0.93	56313.5	11600.00

14 27792.83 139.85 0.30( 0.28) 0.93 58547.8 11111.00  
 15 27378.49 146.02 0.30( 0.28) 0.93 60481.7 12201.00  
 16 26465.04 155.04 0.30( 0.28) 0.93 62569.9 12231.00  
 17 25627.74 162.61 0.30( 0.28) 0.94 63981.5 10400.00  
 18 24291.93 174.18 0.30( 0.28) 0.94 65602.2 10320.00  
 19 23025.89 184.06 0.30( 0.28) 0.94 65990.1 12000.00  
 20 20094.29 213.67 0.30( 0.28) 0.94 66607.1 10100.00  
 TOTAL AREA(ACRES) = 66607.1

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM( FEET ) = 170.00 DOWNSTREAM( FEET ) = 165.51  
 CHANNEL LENGTH THRU SUBAREA( FEET ) = 1891.83 CHANNEL SLOPE = 0.0024  
 GIVEN CHANNEL BASE( FEET ) = 200.00 CHANNEL FREEBOARD( FEET ) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT( FEET ) = 10.88  
 CHANNEL FLOW THRU SUBAREA( CFS ) = 28671.73  
 FLOW VELOCITY( FEET/SEC. ) = 10.36 FLOW DEPTH( FEET ) = 10.88  
 TRAVEL TIME( MIN. ) = 3.04 Tc( MIN. ) = 124.85  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15224.24	19.71	1.595	0.30( 0.23)	0.78	3901.2	300.00
2	18677.12	34.76	1.156	0.30( 0.23)	0.78	8091.4	110.00
3	20194.63	41.70	1.040	0.30( 0.24)	0.79	10594.3	130.00
4	21455.46	48.04	0.965	0.30( 0.24)	0.79	13174.4	150.00
5	23293.60	64.42	0.832	0.30( 0.25)	0.84	20268.8	390.00
6	24783.46	79.02	0.760	0.30( 0.26)	0.87	26649.7	13100.00
7	25143.18	85.97	0.726	0.30( 0.26)	0.88	29292.2	11801.00
8	26589.16	103.59	0.667	0.30( 0.27)	0.90	37704.8	13510.00
9	27313.15	110.84	0.646	0.30( 0.27)	0.91	41808.3	13010.00
10	28073.34	116.77	0.629	0.30( 0.27)	0.91	45494.1	11330.00
11	28671.73	124.85	0.612	0.30( 0.28)	0.92	50581.2	10630.00
12	28423.24	130.46	0.602	0.30( 0.28)	0.93	53171.1	12330.00
13	28166.24	137.10	0.591	0.30( 0.28)	0.93	56313.5	11600.00
14	27792.83	142.92	0.581	0.30( 0.28)	0.93	58547.8	11111.00
15	27378.49	149.10	0.571	0.30( 0.28)	0.93	60481.7	12201.00
16	26465.04	158.16	0.556	0.30( 0.28)	0.93	62569.9	12231.00
17	25627.74	165.77	0.543	0.30( 0.28)	0.94	63981.5	10400.00
18	24291.93	177.39	0.523	0.30( 0.28)	0.94	65602.2	10320.00
19	23025.89	187.33	0.513	0.30( 0.28)	0.94	65990.1	12000.00
20	20094.29	217.09	0.490	0.30( 0.28)	0.94	66607.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE( CFS ) = 28671.73 Tc( MIN. ) = 124.85  
 AREA-AVERAGED Fm( INCH/HR ) = 0.28 AREA-AVERAGED Fp( INCH/HR ) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA( ACRES ) = 50581.20

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0506102E.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	239.83	16.06	0.30( 0.29)	0.96	193.8	10230.00
2	217.18	25.14	0.30( 0.29)	0.95	240.5	10250.00
3	216.13	25.45	0.30( 0.29)	0.95	241.8	10200.00
4	200.96	29.41	0.30( 0.29)	0.95	246.3	10220.00

TOTAL AREA( ACRES ) = 246.3

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15224.24	19.71	1.595	0.30( 0.23)	0.78	3901.2	300.00
2	18677.12	34.76	1.156	0.30( 0.23)	0.78	8091.4	110.00
3	20194.63	41.70	1.040	0.30( 0.24)	0.79	10594.3	130.00
4	21455.46	48.04	0.965	0.30( 0.24)	0.79	13174.4	150.00
5	23293.60	64.42	0.832	0.30( 0.25)	0.84	20268.8	390.00
6	24783.46	79.02	0.760	0.30( 0.26)	0.87	26649.7	13100.00
7	25143.18	85.97	0.726	0.30( 0.26)	0.88	29292.2	11801.00
8	26589.16	103.59	0.667	0.30( 0.27)	0.90	37704.8	13510.00
9	27313.15	110.84	0.646	0.30( 0.27)	0.91	41808.3	13010.00
10	28073.34	116.77	0.629	0.30( 0.27)	0.91	45494.1	11330.00
11	28671.73	124.85	0.612	0.30( 0.28)	0.92	50581.2	10630.00
12	28423.24	130.46	0.602	0.30( 0.28)	0.93	53171.1	12330.00
13	28166.24	137.10	0.591	0.30( 0.28)	0.93	56313.5	11600.00
14	27792.83	142.92	0.581	0.30( 0.28)	0.93	58547.8	11111.00
15	27378.49	149.10	0.571	0.30( 0.28)	0.93	60481.7	12201.00
16	26465.04	158.16	0.556	0.30( 0.28)	0.93	62569.9	12231.00
17	25627.74	165.77	0.543	0.30( 0.28)	0.94	63981.5	10400.00
18	24291.93	177.39	0.523	0.30( 0.28)	0.94	65602.2	10320.00
19	23025.89	187.33	0.513	0.30( 0.28)	0.94	65990.1	12000.00
20	20094.29	217.09	0.490	0.30( 0.28)	0.94	66607.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	239.83	16.06	1.791	0.30( 0.29)	0.96	193.8	10230.00
2	217.18	25.14	1.377	0.30( 0.29)	0.95	240.5	10250.00
3	216.13	25.45	1.369	0.30( 0.29)	0.95	241.8	10200.00
4	200.96	29.41	1.259	0.30( 0.29)	0.95	246.3	10220.00

LONGEST FLOWPATH FROM NODE 10200.00 TO NODE 13720.00 = 9099.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	14428.29	16.06	1.791	0.30 ( 0.24)	0.79	3373.2 10230.00
2	15454.97	19.71	1.595	0.30 ( 0.24)	0.79	4113.8 300.00
3	16687.60	25.14	1.377	0.30 ( 0.24)	0.79	5654.0 10250.00
4	16757.53	25.45	1.369	0.30 ( 0.24)	0.79	5741.4 10200.00
5	17650.94	29.41	1.259	0.30 ( 0.24)	0.79	6848.5 10220.00
6	18856.74	34.76	1.156	0.30 ( 0.24)	0.79	8337.6 110.00
7	20350.31	41.70	1.040	0.30 ( 0.24)	0.79	10840.5 130.00
8	21595.70	48.04	0.965	0.30 ( 0.24)	0.80	13420.7 150.00
9	23406.38	64.42	0.832	0.30 ( 0.25)	0.84	20515.0 390.00
10	24881.37	79.02	0.760	0.30 ( 0.26)	0.87	26895.9 13100.00
11	25234.00	85.97	0.726	0.30 ( 0.26)	0.88	29538.4 11801.00
12	26667.83	103.59	0.667	0.30 ( 0.27)	0.90	37951.0 13510.00
13	27387.53	110.84	0.646	0.30 ( 0.27)	0.91	42054.5 13010.00
14	28144.21	116.77	0.629	0.30 ( 0.27)	0.91	45740.3 11330.00
15	28739.00	124.85	0.612	0.30 ( 0.28)	0.92	50827.5 10630.00
16	28488.57	130.46	0.602	0.30 ( 0.28)	0.93	53417.3 12330.00
17	28229.26	137.10	0.591	0.30 ( 0.28)	0.93	56559.8 11600.00
18	27853.82	142.92	0.581	0.30 ( 0.28)	0.93	58794.1 11111.00
19	27437.33	149.10	0.571	0.30 ( 0.28)	0.93	60727.9 12201.00
20	26520.74	158.16	0.556	0.30 ( 0.28)	0.93	62816.2 12231.00
21	25680.79	165.77	0.543	0.30 ( 0.28)	0.94	64227.7 10400.00
22	24340.94	177.39	0.523	0.30 ( 0.28)	0.94	65848.5 10320.00
23	23072.81	187.33	0.513	0.30 ( 0.28)	0.94	66236.3 12000.00
24	20136.44	217.09	0.490	0.30 ( 0.28)	0.94	66853.3 10100.00
TOTAL AREA (ACRES) = 66853.3						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28739.00 Tc(MIN.) = 124.849  
EFFECTIVE AREA(ACRES) = 50827.45 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88  
TOTAL AREA(ACRES) = 66853.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 165.51 DOWNSTREAM(FEET) = 161.03  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2067.54 CHANNEL SLOPE = 0.0022  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 11.17  
CHANNEL FLOW THRU SUBAREA(CFS) = 28739.00  
FLOW VELOCITY(FEET/SEC.) = 10.05 FLOW DEPTH(FEET) = 11.17  
TRAVEL TIME(MIN.) = 3.43 Tc(MIN.) = 128.28  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14428.29	20.36	1.566	0.30 ( 0.24)	0.79	3373.2	10230.00
2	15454.97	23.91	1.424	0.30 ( 0.24)	0.79	4113.8	300.00
3	16687.60	29.24	1.264	0.30 ( 0.24)	0.79	5654.0	10250.00
4	16757.53	29.54	1.256	0.30 ( 0.24)	0.79	5741.4	10200.00
5	17650.94	33.43	1.180	0.30 ( 0.24)	0.79	6848.5	10220.00

6	18856.74	38.69	1.084	0.30 ( 0.24)	0.79	8337.6	110.00
7	20350.31	45.53	0.995	0.30 ( 0.24)	0.79	10840.5	130.00
8	21595.70	51.80	0.926	0.30 ( 0.24)	0.80	13420.7	150.00
9	23406.38	68.08	0.814	0.30 ( 0.25)	0.84	20515.0	390.00
10	24881.37	82.61	0.742	0.30 ( 0.26)	0.87	26895.9	13100.00
11	25234.00	89.55	0.708	0.30 ( 0.26)	0.88	29538.4	11801.00
12	26667.83	107.11	0.657	0.30 ( 0.27)	0.90	37951.0	13510.00
13	27387.53	114.32	0.636	0.30 ( 0.27)	0.91	42054.5	13010.00
14	28144.21	120.22	0.620	0.30 ( 0.27)	0.91	45740.3	11330.00
15	28739.00	128.28	0.606	0.30 ( 0.28)	0.92	50827.5	10630.00
16	28488.57	133.90	0.597	0.30 ( 0.28)	0.93	53417.3	12330.00
17	28229.26	140.55	0.585	0.30 ( 0.28)	0.93	56559.8	11600.00
18	27853.82	146.38	0.576	0.30 ( 0.28)	0.93	58794.1	11111.00
19	27437.33	152.58	0.565	0.30 ( 0.28)	0.93	60727.9	12201.00
20	26520.74	161.68	0.550	0.30 ( 0.28)	0.93	62816.2	12231.00
21	25680.79	169.32	0.537	0.30 ( 0.28)	0.94	64227.7	10400.00
22	24340.94	181.00	0.518	0.30 ( 0.28)	0.94	65848.5	10320.00
23	23072.81	191.01	0.510	0.30 ( 0.28)	0.94	66236.3	12000.00
24	20136.44	220.93	0.487	0.30 ( 0.28)	0.94	66853.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 28739.00 Tc(MIN.) = 128.28  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 50827.45

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 3 <<<<<<  
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\*\*\*\*\*  
FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<<  
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PEAK FLOWRATE TABLE FILE NAME: 0506103E.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	489.59	19.32	0.30 ( 0.23)	0.76	401.6	10300.00
2	490.14	20.03	0.30 ( 0.23)	0.76	412.9	10380.00
3	480.40	22.78	0.30 ( 0.23)	0.76	441.7	10320.00
4	464.91	24.67	0.30 ( 0.23)	0.76	451.8	10360.00
5	436.74	27.62	0.30 ( 0.23)	0.76	460.8	10340.00
TOTAL AREA(ACRES) = 460.8						

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14428.29	20.36	1.566	0.30 ( 0.24)	0.79	3373.2	10230.00
2	15454.97	23.91	1.424	0.30 ( 0.24)	0.79	4113.8	300.00
3	16687.60	29.24	1.264	0.30 ( 0.24)	0.79	5654.0	10250.00

4	16757.53	29.54	1.256	0.30 ( 0.24)	0.79	5741.4	10200.00
5	17650.94	33.43	1.180	0.30 ( 0.24)	0.79	6848.5	10220.00
6	18856.74	38.69	1.084	0.30 ( 0.24)	0.79	8337.6	110.00
7	20350.31	45.53	0.995	0.30 ( 0.24)	0.79	10840.5	130.00
8	21595.70	51.80	0.926	0.30 ( 0.24)	0.80	13420.7	150.00
9	23406.38	68.08	0.814	0.30 ( 0.25)	0.84	20515.0	390.00
10	24881.37	82.61	0.742	0.30 ( 0.26)	0.87	26895.9	13100.00
11	25234.00	89.55	0.708	0.30 ( 0.26)	0.88	29538.4	11801.00
12	26667.83	107.11	0.657	0.30 ( 0.27)	0.90	37951.0	13510.00
13	27387.53	114.32	0.636	0.30 ( 0.27)	0.91	42054.5	13010.00
14	28144.21	120.22	0.620	0.30 ( 0.27)	0.91	45740.3	11330.00
15	28739.00	128.28	0.606	0.30 ( 0.28)	0.92	50827.5	10630.00
16	28488.57	133.90	0.597	0.30 ( 0.28)	0.93	53417.3	12330.00
17	28229.26	140.55	0.585	0.30 ( 0.28)	0.93	56559.8	11600.00
18	27853.82	146.38	0.576	0.30 ( 0.28)	0.93	58794.1	11111.00
19	27437.33	152.58	0.565	0.30 ( 0.28)	0.93	60727.9	12201.00
20	26520.74	161.68	0.550	0.30 ( 0.28)	0.93	62816.2	12231.00
21	25680.79	169.32	0.537	0.30 ( 0.28)	0.94	64227.7	10400.00
22	24340.94	181.00	0.518	0.30 ( 0.28)	0.94	65848.5	10320.00
23	23072.81	191.01	0.510	0.30 ( 0.28)	0.94	66236.3	12000.00
24	20136.44	220.93	0.487	0.30 ( 0.28)	0.94	66853.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	489.59	19.32	1.617	0.30 ( 0.23)	0.76	401.6	10300.00
2	490.14	20.03	1.579	0.30 ( 0.23)	0.76	412.9	10380.00
3	480.40	22.78	1.469	0.30 ( 0.23)	0.76	441.7	10320.00
4	464.91	24.67	1.394	0.30 ( 0.23)	0.76	451.8	10360.00
5	436.74	27.62	1.309	0.30 ( 0.23)	0.76	460.8	10340.00

LONGEST FLOWPATH FROM NODE 10320.00 TO NODE 13740.00 = 8457.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14703.38	19.32	1.617	0.30 ( 0.24)	0.79	3601.9	10300.00
2	14825.49	20.03	1.579	0.30 ( 0.24)	0.79	3731.8	10380.00
3	14917.27	20.36	1.566	0.30 ( 0.24)	0.79	3789.5	10230.00
4	15607.96	22.78	1.469	0.30 ( 0.24)	0.79	4319.3	10320.00
5	15926.09	23.91	1.424	0.30 ( 0.24)	0.79	4561.6	300.00
6	16095.40	24.67	1.394	0.30 ( 0.24)	0.79	4784.9	10360.00
7	16750.41	27.62	1.309	0.30 ( 0.24)	0.79	5647.6	10340.00
8	17106.30	29.24	1.264	0.30 ( 0.24)	0.79	6114.8	10250.00
9	17172.86	29.54	1.256	0.30 ( 0.24)	0.79	6202.2	10200.00
10	18035.72	33.43	1.180	0.30 ( 0.24)	0.78	7309.3	10220.00
11	19202.59	38.69	1.084	0.30 ( 0.24)	0.78	8798.4	110.00
12	20660.04	45.53	0.995	0.30 ( 0.24)	0.79	11301.3	130.00
13	21877.71	51.80	0.926	0.30 ( 0.24)	0.80	13881.5	150.00
14	23643.05	68.08	0.814	0.30 ( 0.25)	0.84	20975.8	390.00
15	25089.05	82.61	0.742	0.30 ( 0.26)	0.87	27356.7	13100.00
16	25427.85	89.55	0.708	0.30 ( 0.26)	0.87	29999.2	11801.00
17	26840.93	107.11	0.657	0.30 ( 0.27)	0.90	38411.8	13510.00
18	27552.27	114.32	0.636	0.30 ( 0.27)	0.90	42515.3	13010.00
19	28302.21	120.22	0.620	0.30 ( 0.27)	0.91	46201.1	11330.00
20	28891.52	128.28	0.606	0.30 ( 0.28)	0.92	51288.3	10630.00
21	28637.26	133.90	0.597	0.30 ( 0.28)	0.92	53878.1	12330.00
22	28373.42	140.55	0.585	0.30 ( 0.28)	0.93	57020.6	11600.00
23	27994.01	146.38	0.576	0.30 ( 0.28)	0.93	59254.9	11111.00

23	27994.01	146.38	0.576	0.30 ( 0.28)	0.93	59254.9	11111.00
24	27573.29	152.58	0.565	0.30 ( 0.28)	0.93	61188.7	12201.00
25	26650.51	161.68	0.550	0.30 ( 0.28)	0.93	63277.0	12231.00
26	25805.35	169.32	0.537	0.30 ( 0.28)	0.93	64688.5	10400.00
27	24457.92	181.00	0.518	0.30 ( 0.28)	0.94	66309.3	10320.00
28	23186.65	191.01	0.510	0.30 ( 0.28)	0.94	66697.1	12000.00
29	20240.85	220.93	0.487	0.30 ( 0.28)	0.94	67314.1	10100.00

TOTAL AREA (ACRES) = 67314.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 28891.52 Tc (MIN.) = 128.277  
EFFECTIVE AREA (ACRES) = 51288.25 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 67314.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

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FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 161.03 DOWNSTREAM (FEET) = 141.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 364.08 CHANNEL SLOPE = 0.0550  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.48  
CHANNEL FLOW THRU SUBAREA (CFS) = 28891.52  
FLOW VELOCITY (FEET/SEC.) = 35.41 FLOW DEPTH (FEET) = 6.48  
TRAVEL TIME (MIN.) = 0.17 Tc (MIN.) = 128.45  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14703.38	19.53	1.605	0.30 ( 0.24)	0.79	3601.9	10300.00
2	14825.49	20.25	1.570	0.30 ( 0.24)	0.79	3731.8	10380.00
3	14917.27	20.57	1.557	0.30 ( 0.24)	0.79	3789.5	10230.00
4	15607.96	22.99	1.461	0.30 ( 0.24)	0.79	4319.3	10320.00
5	15926.09	24.12	1.416	0.30 ( 0.24)	0.79	4561.6	300.00
6	16095.40	24.88	1.386	0.30 ( 0.24)	0.79	4784.9	10360.00
7	16750.41	27.83	1.303	0.30 ( 0.24)	0.79	5647.6	10340.00
8	17106.30	29.44	1.258	0.30 ( 0.24)	0.79	6114.8	10250.00
9	17172.86	29.74	1.250	0.30 ( 0.24)	0.79	6202.2	10200.00
10	18035.72	33.63	1.177	0.30 ( 0.24)	0.78	7309.3	10220.00
11	19202.59	38.88	1.080	0.30 ( 0.24)	0.78	8798.4	110.00
12	20660.04	45.72	0.992	0.30 ( 0.24)	0.79	11301.3	130.00
13	21877.71	51.98	0.925	0.30 ( 0.24)	0.80	13881.5	150.00
14	23643.05	68.27	0.813	0.30 ( 0.25)	0.84	20975.8	390.00
15	25089.05	82.79	0.742	0.30 ( 0.26)	0.87	27356.7	13100.00
16	25427.85	89.72	0.707	0.30 ( 0.26)	0.87	29999.2	11801.00
17	26840.93	107.28	0.656	0.30 ( 0.27)	0.90	38411.8	13510.00
18	27552.27	114.49	0.636	0.30 ( 0.27)	0.90	42515.3	13010.00
19	28302.21	120.39	0.619	0.30 ( 0.27)	0.91	46201.1	11330.00
20	28891.52	128.45	0.606	0.30 ( 0.28)	0.92	51288.3	10630.00
21	28637.26	134.07	0.596	0.30 ( 0.28)	0.92	53878.1	12330.00
22	28373.42	140.72	0.585	0.30 ( 0.28)	0.93	57020.6	11600.00
23	27994.01	146.56	0.575	0.30 ( 0.28)	0.93	59254.9	11111.00

24	27573.29	152.76	0.565	0.30 ( 0.28)	0.93	61188.7	12201.00
25	26650.51	161.85	0.550	0.30 ( 0.28)	0.93	63277.0	12231.00
26	25805.35	169.50	0.537	0.30 ( 0.28)	0.93	64688.5	10400.00
27	24457.92	181.18	0.518	0.30 ( 0.28)	0.94	66309.3	10320.00
28	23186.65	191.19	0.510	0.30 ( 0.28)	0.94	66697.1	12000.00
29	20240.85	221.13	0.487	0.30 ( 0.28)	0.94	67314.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 28891.52 Tc(MIN.) = 128.45  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 51288.25

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506104E.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	49.20	20.74	0.30 ( 0.24)	0.80	44.3	10400.00
TOTAL AREA(ACRES) =						44.3

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14703.38	19.53	1.605	0.30 ( 0.24)	0.79	3601.9	10300.00
2	14825.49	20.25	1.570	0.30 ( 0.24)	0.79	3731.8	10380.00
3	14917.27	20.57	1.557	0.30 ( 0.24)	0.79	3789.5	10230.00
4	15607.96	22.99	1.461	0.30 ( 0.24)	0.79	4319.3	10320.00
5	15926.09	24.12	1.416	0.30 ( 0.24)	0.79	4561.6	300.00
6	16095.40	24.88	1.386	0.30 ( 0.24)	0.79	4784.9	10360.00
7	16750.41	27.83	1.303	0.30 ( 0.24)	0.79	5647.6	10340.00
8	17106.30	29.44	1.258	0.30 ( 0.24)	0.79	6114.8	10250.00
9	17172.86	29.74	1.250	0.30 ( 0.24)	0.79	6202.2	10200.00
10	18035.72	33.63	1.177	0.30 ( 0.24)	0.78	7309.3	10220.00
11	19202.59	38.88	1.080	0.30 ( 0.24)	0.78	8798.4	110.00
12	20660.04	45.72	0.992	0.30 ( 0.24)	0.79	11301.3	130.00
13	21877.71	51.98	0.925	0.30 ( 0.24)	0.80	13881.5	150.00
14	23643.05	68.27	0.813	0.30 ( 0.25)	0.84	20975.8	390.00
15	25089.05	82.79	0.742	0.30 ( 0.26)	0.87	27356.7	13100.00
16	25427.85	89.72	0.707	0.30 ( 0.26)	0.87	29999.2	11801.00
17	26840.93	107.28	0.656	0.30 ( 0.27)	0.90	38411.8	13510.00
18	27552.27	114.49	0.636	0.30 ( 0.27)	0.90	42515.3	13010.00
19	28302.21	120.39	0.619	0.30 ( 0.27)	0.91	46201.1	11330.00
20	28891.52	128.45	0.606	0.30 ( 0.28)	0.92	51288.3	10630.00

21	28637.26	134.07	0.596	0.30 ( 0.28)	0.92	53878.1	12330.00
22	28373.42	140.72	0.585	0.30 ( 0.28)	0.93	57020.6	11600.00
23	27994.01	146.56	0.575	0.30 ( 0.28)	0.93	59254.9	11111.00
24	27573.29	152.76	0.565	0.30 ( 0.28)	0.93	61188.7	12201.00
25	26650.51	161.85	0.550	0.30 ( 0.28)	0.93	63277.0	12231.00
26	25805.35	169.50	0.537	0.30 ( 0.28)	0.93	64688.5	10400.00
27	24457.92	181.18	0.518	0.30 ( 0.28)	0.94	66309.3	10320.00
28	23186.65	191.19	0.510	0.30 ( 0.28)	0.94	66697.1	12000.00
29	20240.85	221.13	0.487	0.30 ( 0.28)	0.94	67314.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	49.20	20.74	1.551	0.30 ( 0.24)	0.80	44.3	10400.00
LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 =							6237.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14751.65	19.53	1.605	0.30 ( 0.24)	0.79	3643.7	10300.00
2	14874.25	20.25	1.570	0.30 ( 0.24)	0.79	3775.0	10380.00
3	14966.33	20.57	1.557	0.30 ( 0.24)	0.79	3833.5	10230.00
4	15012.56	20.74	1.551	0.30 ( 0.24)	0.79	3869.2	10400.00
5	15653.79	22.99	1.461	0.30 ( 0.24)	0.79	4363.6	10320.00
6	15970.24	24.12	1.416	0.30 ( 0.24)	0.79	4605.9	300.00
7	16138.41	24.88	1.386	0.30 ( 0.24)	0.79	4829.2	10360.00
8	16790.32	27.83	1.303	0.30 ( 0.24)	0.79	5691.9	10340.00
9	17144.54	29.44	1.258	0.30 ( 0.24)	0.79	6159.1	10250.00
10	17210.78	29.74	1.250	0.30 ( 0.24)	0.79	6246.5	10200.00
11	18070.89	33.63	1.177	0.30 ( 0.24)	0.79	7353.6	10220.00
12	19234.15	38.88	1.080	0.30 ( 0.24)	0.78	8842.7	110.00
13	20688.29	45.72	0.992	0.30 ( 0.24)	0.79	11345.6	130.00
14	21903.42	51.98	0.925	0.30 ( 0.24)	0.80	13925.8	150.00
15	23664.58	68.27	0.813	0.30 ( 0.25)	0.84	21020.1	390.00
16	25107.89	82.79	0.742	0.30 ( 0.26)	0.87	27401.0	13100.00
17	25445.40	89.72	0.707	0.30 ( 0.26)	0.87	30043.5	11801.00
18	26856.58	107.28	0.656	0.30 ( 0.27)	0.90	38456.1	13510.00
19	27567.14	114.49	0.636	0.30 ( 0.27)	0.90	42559.6	13010.00
20	28316.47	120.39	0.619	0.30 ( 0.27)	0.91	46245.4	11330.00
21	28905.26	128.45	0.606	0.30 ( 0.28)	0.92	51332.6	10630.00
22	28650.65	134.07	0.596	0.30 ( 0.28)	0.92	53922.4	12330.00
23	28386.39	140.72	0.585	0.30 ( 0.28)	0.93	57064.9	11600.00
24	28006.61	146.56	0.575	0.30 ( 0.28)	0.93	59299.2	11111.00
25	27585.50	152.76	0.565	0.30 ( 0.28)	0.93	61233.0	12201.00
26	26662.14	161.85	0.550	0.30 ( 0.28)	0.93	63321.3	12231.00
27	25816.51	169.50	0.537	0.30 ( 0.28)	0.93	64732.8	10400.00
28	24468.38	181.18	0.518	0.30 ( 0.28)	0.94	66353.6	10320.00
29	23196.81	191.19	0.510	0.30 ( 0.28)	0.94	66741.4	12000.00
30	20250.14	221.13	0.487	0.30 ( 0.28)	0.94	67358.4	10100.00
TOTAL AREA(ACRES) =						67358.4	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28905.26 Tc(MIN.) = 128.448  
 EFFECTIVE AREA(ACRES) = 51332.55 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
 TOTAL AREA(ACRES) = 67358.4  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM( FEET ) = 141.00 DOWNSTREAM( FEET ) = 135.00
CHANNEL LENGTH THRU SUBAREA( FEET ) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE( FEET ) = 100.00 CHANNEL FREEBOARD( FEET ) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT( FEET ) = 13.34
CHANNEL FLOW THRU SUBAREA( CFS ) = 28905.26
FLOW VELOCITY( FEET/SEC. ) = 14.13 FLOW DEPTH( FEET ) = 13.34
TRAVEL TIME( MIN. ) = 1.81 Tc( MIN. ) = 130.26
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 30 rows of data.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE( CFS ) = 28905.26 Tc( MIN. ) = 130.26
AREA-AVERAGED Fm( INCH/HR ) = 0.28 AREA-AVERAGED Fp( INCH/HR ) = 0.30
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA( ACRES ) = 51332.55

\*\*\*\*\*

FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506105L.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 3 rows of data.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 30 rows of data.

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	263.73	15.21	1.837	0.30( 0.27)	0.90	203.7	10520.00
2	303.03	33.18	1.185	0.30( 0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13223.97	15.21	1.837	0.30( 0.24)	0.79	2753.1	10520.00
2	15029.66	21.74	1.511	0.30( 0.24)	0.80	3920.0	10300.00
3	15153.81	22.45	1.483	0.30( 0.24)	0.80	4059.3	10380.00
4	15246.59	22.77	1.470	0.30( 0.24)	0.80	4121.3	10230.00
5	15293.17	22.93	1.463	0.30( 0.24)	0.80	4158.8	10400.00
6	15939.28	25.16	1.377	0.30( 0.24)	0.79	4678.0	10320.00
7	16258.16	26.27	1.346	0.30( 0.24)	0.79	4932.7	300.00
8	16427.98	27.03	1.325	0.30( 0.24)	0.79	5164.4	10360.00
9	17086.28	29.95	1.244	0.30( 0.24)	0.79	6059.5	10340.00
10	17443.99	31.55	1.215	0.30( 0.24)	0.79	6544.5	10250.00
11	17510.89	31.85	1.209	0.30( 0.24)	0.79	6635.2	10200.00
12	17811.43	33.18	1.185	0.30( 0.24)	0.79	7033.2	10500.00
13	18358.49	35.71	1.139	0.30( 0.24)	0.79	7757.2	10220.00
14	19491.85	40.92	1.049	0.30( 0.24)	0.79	9246.3	110.00
15	20919.19	47.72	0.969	0.30( 0.24)	0.79	11749.2	130.00
16	22113.72	53.94	0.907	0.30( 0.24)	0.80	14329.4	150.00
17	23840.29	70.18	0.804	0.30( 0.25)	0.84	21423.7	390.00
18	25259.70	84.68	0.732	0.30( 0.26)	0.87	27804.6	13100.00
19	25586.90	91.60	0.701	0.30( 0.26)	0.88	30447.1	11801.00
20	26981.29	109.13	0.651	0.30( 0.27)	0.90	38859.7	13510.00
21	27684.95	116.33	0.631	0.30( 0.27)	0.90	42963.2	13010.00
22	28429.52	122.21	0.616	0.30( 0.27)	0.91	46649.0	11330.00
23	29013.79	130.26	0.603	0.30( 0.28)	0.92	51736.2	10630.00
24	28756.01	135.88	0.593	0.30( 0.28)	0.92	54326.0	12330.00
25	28488.00	142.54	0.582	0.30( 0.28)	0.93	57468.5	11600.00
26	28104.94	148.38	0.572	0.30( 0.28)	0.93	59702.8	11111.00
27	27680.34	154.59	0.562	0.30( 0.28)	0.93	61636.6	12201.00
28	26751.85	163.71	0.546	0.30( 0.28)	0.93	63724.9	12231.00
29	25901.90	171.37	0.534	0.30( 0.28)	0.93	65136.4	10400.00
30	24548.12	183.08	0.517	0.30( 0.28)	0.94	66757.2	10320.00
31	23273.94	193.12	0.509	0.30( 0.28)	0.94	67145.0	12000.00
32	20319.47	223.13	0.485	0.30( 0.28)	0.94	67762.0	10100.00

TOTAL AREA (ACRES) = 67762.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 29013.79 Tc(MIN.) = 130.257  
EFFECTIVE AREA(ACRES) = 51736.16 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90  
TOTAL AREA(ACRES) = 67762.0  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0097

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.50  
CHANNEL FLOW THRU SUBAREA(CFS) = 29013.79  
FLOW VELOCITY(FEET/SEC.) = 19.45 FLOW DEPTH(FEET) = 10.50  
TRAVEL TIME(MIN.) = 0.18 Tc(MIN.) = 130.43  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13223.97	15.44	1.825	0.30( 0.24)	0.79	2753.1	10520.00
2	15029.66	21.96	1.502	0.30( 0.24)	0.80	3920.0	10300.00
3	15153.81	22.67	1.474	0.30( 0.24)	0.80	4059.3	10380.00
4	15246.59	22.99	1.461	0.30( 0.24)	0.80	4121.3	10230.00
5	15293.17	23.15	1.455	0.30( 0.24)	0.80	4158.8	10400.00
6	15939.28	25.37	1.371	0.30( 0.24)	0.79	4678.0	10320.00
7	16258.16	26.49	1.340	0.30( 0.24)	0.79	4932.7	300.00
8	16427.98	27.24	1.319	0.30( 0.24)	0.79	5164.4	10360.00
9	17086.28	30.16	1.240	0.30( 0.24)	0.79	6059.5	10340.00
10	17443.99	31.76	1.211	0.30( 0.24)	0.79	6544.5	10250.00
11	17510.89	32.06	1.205	0.30( 0.24)	0.79	6635.2	10200.00
12	17811.43	33.39	1.181	0.30( 0.24)	0.79	7033.2	10500.00
13	18358.49	35.91	1.135	0.30( 0.24)	0.79	7757.2	10220.00
14	19491.85	41.12	1.047	0.30( 0.24)	0.79	9246.3	110.00
15	20919.19	47.91	0.967	0.30( 0.24)	0.79	11749.2	130.00
16	22113.72	54.14	0.906	0.30( 0.24)	0.80	14329.4	150.00
17	23840.29	70.37	0.803	0.30( 0.25)	0.84	21423.7	390.00
18	25259.70	84.86	0.731	0.30( 0.26)	0.87	27804.6	13100.00
19	25586.90	91.79	0.701	0.30( 0.26)	0.88	30447.1	11801.00
20	26981.29	109.31	0.651	0.30( 0.27)	0.90	38859.7	13510.00
21	27684.95	116.51	0.630	0.30( 0.27)	0.90	42963.2	13010.00
22	28429.52	122.39	0.616	0.30( 0.27)	0.91	46649.0	11330.00
23	29013.79	130.43	0.602	0.30( 0.28)	0.92	51736.2	10630.00
24	28756.01	136.06	0.593	0.30( 0.28)	0.92	54326.0	12330.00
25	28488.00	142.72	0.582	0.30( 0.28)	0.93	57468.5	11600.00
26	28104.94	148.56	0.572	0.30( 0.28)	0.93	59702.8	11111.00
27	27680.34	154.77	0.561	0.30( 0.28)	0.93	61636.6	12201.00
28	26751.85	163.89	0.546	0.30( 0.28)	0.93	63724.9	12231.00
29	25901.90	171.55	0.533	0.30( 0.28)	0.93	65136.4	10400.00
30	24548.12	183.27	0.516	0.30( 0.28)	0.94	66757.2	10320.00
31	23273.94	193.31	0.509	0.30( 0.28)	0.94	67145.0	12000.00
32	20319.47	223.33	0.485	0.30( 0.28)	0.94	67762.0	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 29013.79 Tc(MIN.) = 130.43  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 51736.16

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FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506106E.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.15	18.06	0.30	(0.20)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =							36.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13223.97	15.44	1.825	0.30 (0.24)	0.79	2753.1	10520.00
2	15029.66	21.96	1.502	0.30 (0.24)	0.80	3920.0	10300.00
3	15153.81	22.67	1.474	0.30 (0.24)	0.80	4059.3	10380.00
4	15246.59	22.99	1.461	0.30 (0.24)	0.80	4121.3	10230.00
5	15293.17	23.15	1.455	0.30 (0.24)	0.80	4158.8	10400.00
6	15939.28	25.37	1.371	0.30 (0.24)	0.79	4678.0	10320.00
7	16258.16	26.49	1.340	0.30 (0.24)	0.79	4932.7	300.00
8	16427.98	27.24	1.319	0.30 (0.24)	0.79	5164.4	10360.00
9	17086.28	30.16	1.240	0.30 (0.24)	0.79	6059.5	10340.00
10	17443.99	31.76	1.211	0.30 (0.24)	0.79	6544.5	10250.00
11	17510.89	32.06	1.205	0.30 (0.24)	0.79	6635.2	10200.00
12	17811.43	33.39	1.181	0.30 (0.24)	0.79	7033.2	10500.00
13	18358.49	35.91	1.135	0.30 (0.24)	0.79	7757.2	10220.00
14	19491.85	41.12	1.047	0.30 (0.24)	0.79	9246.3	110.00
15	20919.19	47.91	0.967	0.30 (0.24)	0.79	11749.2	130.00
16	22113.72	54.14	0.906	0.30 (0.24)	0.80	14329.4	150.00
17	23840.29	70.37	0.803	0.30 (0.25)	0.84	21423.7	390.00
18	25259.70	84.86	0.731	0.30 (0.26)	0.87	27804.6	13100.00
19	25586.90	91.79	0.701	0.30 (0.26)	0.88	30447.1	11801.00
20	26981.29	109.31	0.651	0.30 (0.27)	0.90	38859.7	13510.00
21	27684.95	116.51	0.630	0.30 (0.27)	0.90	42963.2	13010.00
22	28429.52	122.39	0.616	0.30 (0.27)	0.91	46649.0	11330.00
23	29013.79	130.43	0.602	0.30 (0.28)	0.92	51736.2	10630.00
24	28756.01	136.06	0.593	0.30 (0.28)	0.92	54326.0	12330.00
25	28488.00	142.72	0.582	0.30 (0.28)	0.93	57468.5	11600.00
26	28104.94	148.56	0.572	0.30 (0.28)	0.93	59702.8	11111.00
27	27680.34	154.77	0.561	0.30 (0.28)	0.93	61636.6	12201.00
28	26751.85	163.89	0.546	0.30 (0.28)	0.93	63724.9	12231.00
29	25901.90	171.55	0.533	0.30 (0.28)	0.93	65136.4	10400.00
30	24548.12	183.27	0.516	0.30 (0.28)	0.94	66757.2	10320.00
31	23273.94	193.31	0.509	0.30 (0.28)	0.94	67145.0	12000.00
32	20319.47	223.33	0.485	0.30 (0.28)	0.94	67762.0	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 =							130616.05 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.15	18.06	1.684	0.30 (0.20)	0.67	36.9	10600.00
LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 =							1713.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13266.23	15.44	1.825	0.30 (0.24)	0.79	2784.7	10520.00
2	13996.58	18.06	1.684	0.30 (0.24)	0.79	3260.1	10600.00
3	15069.29	21.96	1.502	0.30 (0.24)	0.79	3956.9	10300.00
4	15192.57	22.67	1.474	0.30 (0.24)	0.79	4096.2	10380.00
5	15284.96	22.99	1.461	0.30 (0.24)	0.79	4158.2	10230.00
6	15331.35	23.15	1.455	0.30 (0.24)	0.79	4195.7	10400.00
7	15974.90	25.37	1.371	0.30 (0.24)	0.79	4714.9	10320.00
8	16292.85	26.49	1.340	0.30 (0.24)	0.79	4969.6	300.00
9	16462.04	27.24	1.319	0.30 (0.24)	0.79	5201.3	10360.00
10	17117.92	30.16	1.240	0.30 (0.24)	0.79	6096.4	10340.00
11	17474.74	31.76	1.211	0.30 (0.24)	0.79	6581.4	10250.00
12	17541.48	32.06	1.205	0.30 (0.24)	0.79	6672.1	10200.00
13	17841.27	33.39	1.181	0.30 (0.24)	0.79	7070.1	10500.00
14	18386.93	35.91	1.135	0.30 (0.24)	0.79	7794.1	10220.00
15	19517.60	41.12	1.047	0.30 (0.24)	0.79	9283.2	110.00
16	20942.51	47.91	0.967	0.30 (0.24)	0.79	11786.1	130.00
17	22135.18	54.14	0.906	0.30 (0.24)	0.80	14366.3	150.00
18	23858.62	70.37	0.803	0.30 (0.25)	0.84	21460.6	390.00
19	25275.85	84.86	0.731	0.30 (0.26)	0.87	27841.5	13100.00
20	25602.13	91.79	0.701	0.30 (0.26)	0.88	30484.0	11801.00
21	26994.98	109.31	0.651	0.30 (0.27)	0.90	38896.6	13510.00
22	27698.02	116.51	0.630	0.30 (0.27)	0.90	43000.1	13010.00
23	28442.16	122.39	0.616	0.30 (0.27)	0.91	46685.9	11330.00
24	29026.01	130.43	0.602	0.30 (0.28)	0.92	51773.1	10630.00
25	28767.94	136.06	0.593	0.30 (0.28)	0.92	54362.9	12330.00
26	28499.60	142.72	0.582	0.30 (0.28)	0.93	57505.4	11600.00
27	28116.23	148.56	0.572	0.30 (0.28)	0.93	59739.7	11111.00
28	27691.32	154.77	0.561	0.30 (0.28)	0.93	61673.5	12201.00
29	26762.36	163.89	0.546	0.30 (0.28)	0.93	63761.8	12231.00
30	25912.02	171.55	0.533	0.30 (0.28)	0.93	65173.3	10400.00
31	24557.72	183.27	0.516	0.30 (0.28)	0.94	66794.1	10320.00
32	23283.31	193.31	0.509	0.30 (0.28)	0.94	67181.9	12000.00
33	20328.13	223.33	0.485	0.30 (0.28)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 29026.01 Tc (MIN.) = 130.434  
 EFFECTIVE AREA (ACRES) = 51773.05 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
 TOTAL AREA (ACRES) = 67798.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 67798.9 TC (MIN.) = 130.43  
 EFFECTIVE AREA (ACRES) = 51773.05 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 PEAK FLOW RATE (CFS) = 29026.01

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13266.23	15.44	1.825	0.30 (0.24)	0.79	2784.7	10520.00
2	13996.58	18.06	1.684	0.30 (0.24)	0.79	3260.1	10600.00
3	15069.29	21.96	1.502	0.30 (0.24)	0.79	3956.9	10300.00
4	15192.57	22.67	1.474	0.30 (0.24)	0.79	4096.2	10380.00
5	15284.96	22.99	1.461	0.30 (0.24)	0.79	4158.2	10230.00



6	15331.35	23.15	1.455	0.30	( 0.24)	0.79	4195.7	10400.00
7	15974.90	25.37	1.371	0.30	( 0.24)	0.79	4714.9	10320.00
8	16292.85	26.49	1.340	0.30	( 0.24)	0.79	4969.6	300.00
9	16462.04	27.24	1.319	0.30	( 0.24)	0.79	5201.3	10360.00
10	17117.92	30.16	1.240	0.30	( 0.24)	0.79	6096.4	10340.00
11	17474.74	31.76	1.211	0.30	( 0.24)	0.79	6581.4	10250.00
12	17541.48	32.06	1.205	0.30	( 0.24)	0.79	6672.1	10200.00
13	17841.27	33.39	1.181	0.30	( 0.24)	0.79	7070.1	10500.00
14	18386.93	35.91	1.135	0.30	( 0.24)	0.79	7794.1	10220.00
15	19517.60	41.12	1.047	0.30	( 0.24)	0.79	9283.2	110.00
16	20942.51	47.91	0.967	0.30	( 0.24)	0.79	11786.1	130.00
17	22135.18	54.14	0.906	0.30	( 0.24)	0.80	14366.3	150.00
18	23858.62	70.37	0.803	0.30	( 0.25)	0.84	21460.6	390.00
19	25275.85	84.86	0.731	0.30	( 0.26)	0.87	27841.5	13100.00
20	25602.13	91.79	0.701	0.30	( 0.26)	0.88	30484.0	11801.00
21	26994.98	109.31	0.651	0.30	( 0.27)	0.90	38896.6	13510.00
22	27698.02	116.51	0.630	0.30	( 0.27)	0.90	43000.1	13010.00
23	28442.16	122.39	0.616	0.30	( 0.27)	0.91	46685.9	11330.00
24	29026.01	130.43	0.602	0.30	( 0.28)	0.92	51773.1	10630.00
25	28767.94	136.06	0.593	0.30	( 0.28)	0.92	54362.9	12330.00
26	28499.60	142.72	0.582	0.30	( 0.28)	0.93	57505.4	11600.00
27	28116.23	148.56	0.572	0.30	( 0.28)	0.93	59739.7	11111.00
28	27691.32	154.77	0.561	0.30	( 0.28)	0.93	61673.5	12201.00
29	26762.36	163.89	0.546	0.30	( 0.28)	0.93	63761.8	12231.00
30	25912.02	171.55	0.533	0.30	( 0.28)	0.93	65173.3	10400.00
31	24557.72	183.27	0.516	0.30	( 0.28)	0.94	66794.1	10320.00
32	23283.31	193.31	0.509	0.30	( 0.28)	0.94	67181.9	12000.00
33	20328.13	223.33	0.485	0.30	( 0.28)	0.94	67798.9	10100.00

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S38- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV38.DAT  
TIME/DATE OF STUDY: 15:58 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.698
- 2) 10.00; 2.475
- 3) 15.00; 1.846
- 4) 20.00; 1.578
- 5) 25.00; 1.379
- 6) 30.00; 1.242
- 7) 40.00; 1.059
- 8) 50.00; 0.941
- 9) 60.00; 0.852
- 10) 90.00; 0.704
- 11) 120.00; 0.619
- 12) 180.00; 0.517
- 13) 360.00; 0.378
- 14) 1200.00; 0.165

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU10EV37.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15331.35	23.15	0.30 ( 0.24)	0.79	4195.7	10400.00
2	17117.92	30.16	0.30 ( 0.24)	0.79	6096.4	10340.00
3	19517.60	41.12	0.30 ( 0.24)	0.79	9283.2	110.00
4	20942.51	47.91	0.30 ( 0.24)	0.79	11786.1	130.00
5	22135.18	54.14	0.30 ( 0.24)	0.80	14366.3	150.00
6	23858.62	70.37	0.30 ( 0.25)	0.84	21460.6	390.00
7	25275.85	84.86	0.30 ( 0.26)	0.87	27841.5	13100.00
8	25602.13	91.79	0.30 ( 0.26)	0.88	30484.0	11801.00
9	26994.98	109.31	0.30 ( 0.27)	0.90	38896.6	13510.00
10	28442.16	122.39	0.30 ( 0.27)	0.91	46685.9	11330.00
11	29026.01	130.43	0.30 ( 0.28)	0.92	51773.1	10630.00
12	28767.94	136.06	0.30 ( 0.28)	0.92	54362.9	12330.00
13	28499.60	142.72	0.30 ( 0.28)	0.93	57505.4	11600.00
14	28116.23	148.56	0.30 ( 0.28)	0.93	59739.7	11111.00
15	27691.32	154.77	0.30 ( 0.28)	0.93	61673.5	12201.00
16	26762.36	163.89	0.30 ( 0.28)	0.93	63761.8	12231.00
17	25912.02	171.55	0.30 ( 0.28)	0.93	65173.3	10400.00
18	24557.72	183.27	0.30 ( 0.28)	0.94	66794.1	10320.00
19	23283.31	193.31	0.30 ( 0.28)	0.94	67181.9	12000.00
20	20328.13	223.33	0.30 ( 0.28)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15331.35	23.15	0.30 ( 0.24)	0.79	4195.7	10400.00
2	17117.92	30.16	0.30 ( 0.24)	0.79	6096.4	10340.00
3	19517.60	41.12	0.30 ( 0.24)	0.79	9283.2	110.00
4	20942.51	47.91	0.30 ( 0.24)	0.79	11786.1	130.00
5	22135.18	54.14	0.30 ( 0.24)	0.80	14366.3	150.00
6	23858.62	70.37	0.30 ( 0.25)	0.84	21460.6	390.00
7	25275.85	84.86	0.30 ( 0.26)	0.87	27841.5	13100.00
8	25602.13	91.79	0.30 ( 0.26)	0.88	30484.0	11801.00
9	26994.98	109.31	0.30 ( 0.27)	0.90	38896.6	13510.00
10	28442.16	122.39	0.30 ( 0.27)	0.91	46685.9	11330.00
11	29026.01	130.43	0.30 ( 0.28)	0.92	51773.1	10630.00
12	28767.94	136.06	0.30 ( 0.28)	0.92	54362.9	12330.00
13	28499.60	142.72	0.30 ( 0.28)	0.93	57505.4	11600.00

14	28116.23	148.56	0.30	( 0.28)	0.93	59739.7	11111.00
15	27691.32	154.77	0.30	( 0.28)	0.93	61673.5	12201.00
16	26762.36	163.89	0.30	( 0.28)	0.93	63761.8	12231.00
17	25912.02	171.55	0.30	( 0.28)	0.93	65173.3	10400.00
18	24557.72	183.27	0.30	( 0.28)	0.94	66794.1	10320.00
19	23283.31	193.31	0.30	( 0.28)	0.94	67181.9	12000.00
20	20328.13	223.33	0.30	( 0.28)	0.94	67798.9	10100.00

TOTAL AREA (ACRES) = 67798.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 140.00 DOWNSTREAM (FEET) = 137.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 926.91 CHANNEL SLOPE = 0.0032  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 14.05

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.599

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.44	0.30	0.983	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.983

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 29030.32

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.23

AVERAGE FLOW DEPTH (FEET) = 14.05 TRAVEL TIME (MIN.) = 1.17

Tc (MIN.) = 131.60

SUBAREA AREA (ACRES) = 31.44 SUBAREA RUNOFF (CFS) = 8.61

EFFECTIVE AREA (ACRES) = 51804.50 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 67830.4 PEAK FLOW RATE (CFS) = 29026.01

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 14.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 14.05 FLOW VELOCITY (FEET/SEC.) = 13.23

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15331.35	24.56	1.397	0.30 ( 0.24)	0.80	4227.1	10400.00
2	17117.92	31.52	1.214	0.30 ( 0.24)	0.79	6127.9	10340.00
3	19517.60	42.43	1.030	0.30 ( 0.24)	0.79	9314.7	110.00
4	20942.51	49.20	0.950	0.30 ( 0.24)	0.79	11817.6	130.00
5	22135.18	55.40	0.893	0.30 ( 0.24)	0.80	14397.7	150.00
6	23858.62	71.61	0.795	0.30 ( 0.25)	0.84	21492.1	390.00
7	25275.85	86.08	0.723	0.30 ( 0.26)	0.87	27872.9	13100.00
8	25602.13	93.00	0.696	0.30 ( 0.26)	0.88	30515.5	11801.00
9	26994.98	110.50	0.646	0.30 ( 0.27)	0.90	38928.1	13510.00
10	28442.16	123.57	0.613	0.30 ( 0.27)	0.91	46717.4	11330.00
11	29026.01	131.60	0.599	0.30 ( 0.28)	0.92	51804.5	10630.00

12	28767.94	137.23	0.590	0.30 ( 0.28)	0.92	54394.4	12330.00
13	28499.60	143.89	0.578	0.30 ( 0.28)	0.93	57536.8	11600.00
14	28116.23	149.74	0.568	0.30 ( 0.28)	0.93	59771.1	11111.00
15	27691.32	155.95	0.558	0.30 ( 0.28)	0.93	61705.0	12201.00
16	26762.36	165.08	0.542	0.30 ( 0.28)	0.93	63793.2	12231.00
17	25912.02	172.76	0.529	0.30 ( 0.28)	0.93	65204.8	10400.00
18	24557.72	184.49	0.514	0.30 ( 0.28)	0.94	66825.5	10320.00
19	23283.31	194.55	0.506	0.30 ( 0.28)	0.94	67213.4	12000.00
20	20328.13	224.63	0.483	0.30 ( 0.28)	0.94	67830.4	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 29026.01 Tc (MIN.) = 131.60

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 51804.50

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION (MIN.) = 131.60

RAINFALL INTENSITY (INCH/HR) = 0.60

AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92

EFFECTIVE STREAM AREA (ACRES) = 51804.50

TOTAL STREAM AREA (ACRES) = 67830.36

PEAK FLOW RATE (CFS) AT CONFLUENCE = 29026.01

\*\*\*\*\*

FLOW PROCESS FROM NODE 13810.00 TO NODE 13811.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 648.54

ELEVATION DATA: UPSTREAM (FEET) = 756.46 DOWNSTREAM (FEET) = 586.02

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20

SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.293

\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.187

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	-	5.58	0.30	1.000	65	12.29

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF (CFS) = 9.47

TOTAL AREA (ACRES) = 5.58 PEAK FLOW RATE (CFS) = 9.47

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

\*\*\*\*\*

ELEVATION DATA: UPSTREAM(FEET) = 586.02 DOWNSTREAM(FEET) = 437.69  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 696.28 CHANNEL SLOPE = 0.2130  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.37  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.914  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 14.79 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.28  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.35  
 AVERAGE FLOW DEPTH(FEET) = 0.35 TRAVEL TIME(MIN.) = 2.17  
 Tc(MIN.) = 14.46  
 SUBAREA AREA(ACRES) = 14.79 SUBAREA RUNOFF(CFS) = 21.48  
 EFFECTIVE AREA(ACRES) = 20.37 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 20.4 PEAK FLOW RATE(CFS) = 29.59  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.44  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.44 FLOW VELOCITY(FEET/SEC.) = 6.19  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 437.69 DOWNSTREAM(FEET) = 402.36  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 681.04 CHANNEL SLOPE = 0.0519  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.83  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.737  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 18.41 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41.51  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.40  
 AVERAGE FLOW DEPTH(FEET) = 0.81 TRAVEL TIME(MIN.) = 2.58  
 Tc(MIN.) = 17.04  
 SUBAREA AREA(ACRES) = 18.41 SUBAREA RUNOFF(CFS) = 23.81  
 EFFECTIVE AREA(ACRES) = 38.78 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 38.8 PEAK FLOW RATE(CFS) = 50.14  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.90 FLOW VELOCITY(FEET/SEC.) = 4.70  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13812.00 = 2025.86 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 402.36 DOWNSTREAM(FEET) = 259.72  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1282.56 CHANNEL SLOPE = 0.1112  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.86  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.568  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 27.87 0.30 0.858 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.858  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 66.60  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.68  
 AVERAGE FLOW DEPTH(FEET) = 0.85 TRAVEL TIME(MIN.) = 3.20  
 Tc(MIN.) = 20.24  
 SUBAREA AREA(ACRES) = 27.87 SUBAREA RUNOFF(CFS) = 32.89  
 EFFECTIVE AREA(ACRES) = 66.65 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA(ACRES) = 66.7 PEAK FLOW RATE(CFS) = 77.16  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.93 FLOW VELOCITY(FEET/SEC.) = 7.01  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31

-----  
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00  
 FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013  
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 18.9 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 20.58  
 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 77.16  
 PIPE TRAVEL TIME(MIN.) = 1.95 Tc(MIN.) = 22.19  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
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=====
MAINLINE Tc(MIN.) = 22.19
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.491
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED           -      83.64    0.30    0.570    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570
SUBAREA AREA(ACRES) = 83.64      SUBAREA RUNOFF(CFS) = 99.35
EFFECTIVE AREA(ACRES) = 150.29   AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 150.3      PEAK FLOW RATE(CFS) = 171.84

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FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
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TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 22.19
RAINFALL INTENSITY(INCH/HR) = 1.49
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.73
EFFECTIVE STREAM AREA(ACRES) = 150.29
TOTAL STREAM AREA(ACRES) = 150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 171.84

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\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15331.35	24.56	1.397	0.30( 0.24)	0.80	4227.1	10400.00
1	17117.92	31.52	1.214	0.30( 0.24)	0.79	6127.9	10340.00
1	19517.60	42.43	1.030	0.30( 0.24)	0.79	9314.7	110.00
1	20942.51	49.20	0.950	0.30( 0.24)	0.79	11817.6	130.00
1	22135.18	55.40	0.893	0.30( 0.24)	0.80	14397.7	150.00
1	23858.62	71.61	0.795	0.30( 0.25)	0.84	21492.1	390.00
1	25275.85	86.08	0.723	0.30( 0.26)	0.87	27872.9	13100.00
1	25602.13	93.00	0.696	0.30( 0.26)	0.88	30515.5	11801.00
1	26994.98	110.50	0.646	0.30( 0.27)	0.90	38928.1	13510.00
1	28442.16	123.57	0.613	0.30( 0.27)	0.91	46717.4	11330.00
1	29026.01	131.60	0.599	0.30( 0.28)	0.92	51804.5	10630.00
1	28767.94	137.23	0.590	0.30( 0.28)	0.92	54394.4	12330.00
1	28499.60	143.89	0.578	0.30( 0.28)	0.93	57536.8	11600.00
1	28116.23	149.74	0.568	0.30( 0.28)	0.93	59771.1	11111.00
1	27691.32	155.95	0.558	0.30( 0.28)	0.93	61705.0	12201.00
1	26762.36	165.08	0.542	0.30( 0.28)	0.93	63793.2	12231.00
1	25912.02	172.76	0.529	0.30( 0.28)	0.93	65204.8	10400.00
1	24557.72	184.49	0.514	0.30( 0.28)	0.94	66825.5	10320.00
1	23283.31	194.55	0.506	0.30( 0.28)	0.94	67213.4	12000.00
1	20328.13	224.63	0.483	0.30( 0.28)	0.94	67830.4	10100.00
2	171.84	22.19	1.491	0.30( 0.22)	0.73	150.3	13810.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15153.02	22.19	1.491	0.30( 0.24)	0.79	3970.5	13810.00
2	15490.47	24.56	1.397	0.30( 0.24)	0.79	4377.4	10400.00
3	17252.36	31.52	1.214	0.30( 0.24)	0.79	6278.2	10340.00
4	19627.17	42.43	1.030	0.30( 0.24)	0.79	9465.0	110.00
5	21041.27	49.20	0.950	0.30( 0.24)	0.79	11967.8	130.00
6	22226.16	55.40	0.893	0.30( 0.24)	0.80	14548.0	150.00
7	23936.32	71.61	0.795	0.30( 0.25)	0.84	21642.4	390.00
8	25343.90	86.08	0.723	0.30( 0.26)	0.87	28023.2	13100.00
9	25666.41	93.00	0.696	0.30( 0.26)	0.87	30665.8	11801.00
10	27052.56	110.50	0.646	0.30( 0.27)	0.90	39078.4	13510.00
11	28495.27	123.57	0.613	0.30( 0.27)	0.91	46867.6	11330.00
12	29077.28	131.60	0.599	0.30( 0.28)	0.92	51954.8	10630.00
13	28817.92	137.23	0.590	0.30( 0.28)	0.92	54544.7	12330.00
14	28548.04	143.89	0.578	0.30( 0.28)	0.93	57687.1	11600.00
15	28163.33	149.74	0.568	0.30( 0.28)	0.93	59921.4	11111.00
16	27736.98	155.95	0.558	0.30( 0.28)	0.93	61855.3	12201.00
17	26805.93	165.08	0.542	0.30( 0.28)	0.93	63943.5	12231.00
18	25953.82	172.76	0.529	0.30( 0.28)	0.93	65355.1	10400.00
19	24597.39	184.49	0.514	0.30( 0.28)	0.93	66975.8	10320.00
20	23321.93	194.55	0.506	0.30( 0.28)	0.94	67363.7	12000.00
21	20363.61	224.63	0.483	0.30( 0.28)	0.94	67980.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

PEAK FLOW RATE(CFS) = 29077.28      Tc(MIN.) = 131.60
EFFECTIVE AREA(ACRES) = 51954.79   AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 67980.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

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*****
FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 137.00  DOWNSTREAM(FEET) = 133.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34  CHANNEL SLOPE = 0.0032
GIVEN CHANNEL BASE(FEET) = 100.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000  MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.14
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.597
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED           -      31.60    0.30    0.683    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29082.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.14
AVERAGE FLOW DEPTH(FEET) = 14.14  TRAVEL TIME(MIN.) = 1.60
Tc(MIN.) = 133.20
SUBAREA AREA(ACRES) = 31.60      SUBAREA RUNOFF(CFS) = 11.14
EFFECTIVE AREA(ACRES) = 51986.39  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92

```

TOTAL AREA (ACRES) = 68012.2 PEAK FLOW RATE (CFS) = 29077.28  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 14.14

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 14.14 FLOW VELOCITY (FEET/SEC.) = 13.13  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15153.02	24.13	1.414	0.30 ( 0.24)	0.79	4002.1	13810.00
2	15490.47	26.48	1.338	0.30 ( 0.24)	0.79	4409.0	10400.00
3	17252.36	33.39	1.180	0.30 ( 0.24)	0.79	6309.8	10340.00
4	19627.17	44.23	1.009	0.30 ( 0.24)	0.79	9496.5	110.00
5	21041.27	50.96	0.932	0.30 ( 0.24)	0.79	11999.4	130.00
6	22226.16	57.13	0.878	0.30 ( 0.24)	0.80	14579.6	150.00
7	23936.32	73.30	0.786	0.30 ( 0.25)	0.84	21674.0	390.00
8	25343.90	87.74	0.715	0.30 ( 0.26)	0.87	28054.8	13100.00
9	25666.41	94.66	0.691	0.30 ( 0.26)	0.87	30697.4	11801.00
10	27052.56	112.14	0.641	0.30 ( 0.27)	0.90	39110.0	13510.00
11	28495.27	125.17	0.610	0.30 ( 0.27)	0.91	46899.2	11330.00
12	29077.28	133.20	0.597	0.30 ( 0.28)	0.92	51986.4	10630.00
13	28817.92	138.84	0.587	0.30 ( 0.28)	0.92	54576.3	12330.00
14	28548.04	145.50	0.576	0.30 ( 0.28)	0.93	57718.7	11600.00
15	28163.33	151.36	0.566	0.30 ( 0.28)	0.93	59953.0	11111.00
16	27736.98	157.57	0.555	0.30 ( 0.28)	0.93	61886.9	12201.00
17	26805.93	166.72	0.540	0.30 ( 0.28)	0.93	63975.1	12231.00
18	25953.82	174.41	0.527	0.30 ( 0.28)	0.93	65386.7	10400.00
19	24597.39	186.17	0.512	0.30 ( 0.28)	0.93	67007.4	10320.00
20	23321.93	196.26	0.504	0.30 ( 0.28)	0.94	67395.3	12000.00
21	20363.61	226.40	0.481	0.30 ( 0.28)	0.94	68012.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 29077.28 Tc (MIN.) = 133.20  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 51986.39

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 133.20  
 RAINFALL INTENSITY (INCH/HR) = 0.60  
 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA (ACRES) = 51986.39  
 TOTAL STREAM AREA (ACRES) = 68012.25  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 29077.28

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 744.71  
 ELEVATION DATA: UPSTREAM (FEET) = 1100.95 DOWNSTREAM (FEET) = 959.21

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.858  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.990

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL, BROADLEAF"	-	5.06	0.30	1.000	65	13.86
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30						
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000						
SUBAREA RUNOFF (CFS) = 7.70						
TOTAL AREA (ACRES) = 5.06 PEAK FLOW RATE (CFS) = 7.70						

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 959.21 DOWNSTREAM (FEET) = 832.83  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1076.71 CHANNEL SLOPE = 0.1174  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.55  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.716

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	32.57	0.30	1.000	-
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 28.59					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.04					
AVERAGE FLOW DEPTH (FEET) = 0.51 TRAVEL TIME (MIN.) = 3.56					
Tc (MIN.) = 17.42					
SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 41.52					
EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00					
TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 47.97					
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0					
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060					
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.70					

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.70 FLOW VELOCITY (FEET/SEC.) = 6.04  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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=====
ELEVATION DATA: UPSTREAM(FEET) = 832.83 DOWNSTREAM(FEET) = 572.49
CHANNEL LENGTH THRU SUBAREA(FEET) = 1883.58 CHANNEL SLOPE = 0.1382
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.81
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.505
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -        32.23    0.30     1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 65.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.10
AVERAGE FLOW DEPTH(FEET) = 0.80 TRAVEL TIME(MIN.) = 4.42
Tc(MIN.) = 21.84
SUBAREA AREA(ACRES) = 32.23 SUBAREA RUNOFF(CFS) = 34.95
EFFECTIVE AREA(ACRES) = 69.86 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 69.9 PEAK FLOW RATE(CFS) = 75.75
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.86

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.86 FLOW VELOCITY(FEET/SEC.) = 7.47
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

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*****
FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 572.49 DOWNSTREAM(FEET) = 471.65
CHANNEL LENGTH THRU SUBAREA(FEET) = 943.78 CHANNEL SLOPE = 0.1068
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.03
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.418
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -        27.51    0.30     1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 89.60
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.25
AVERAGE FLOW DEPTH(FEET) = 1.03 TRAVEL TIME(MIN.) = 2.17
Tc(MIN.) = 24.01
SUBAREA AREA(ACRES) = 27.51 SUBAREA RUNOFF(CFS) = 27.69
EFFECTIVE AREA(ACRES) = 97.37 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 97.4 PEAK FLOW RATE(CFS) = 98.02
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.08

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.08 FLOW VELOCITY(FEET/SEC.) = 7.46
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

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*****
FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 471.65 DOWNSTREAM(FEET) = 347.06
CHANNEL LENGTH THRU SUBAREA(FEET) = 1647.45 CHANNEL SLOPE = 0.0756
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.49
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.305
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -        94.21    0.30     1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 140.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.45
AVERAGE FLOW DEPTH(FEET) = 1.46 TRAVEL TIME(MIN.) = 3.69
Tc(MIN.) = 27.70
SUBAREA AREA(ACRES) = 94.21 SUBAREA RUNOFF(CFS) = 85.23
EFFECTIVE AREA(ACRES) = 191.58 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 191.6 PEAK FLOW RATE(CFS) = 173.31
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.64

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.64 FLOW VELOCITY(FEET/SEC.) = 7.94
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

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*****
FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<

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=====
ELEVATION DATA: UPSTREAM(FEET) = 347.06 DOWNSTREAM(FEET) = 269.29
CHANNEL LENGTH THRU SUBAREA(FEET) = 1696.71 CHANNEL SLOPE = 0.0458
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.44
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.216
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -        233.25  0.30     1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 269.53

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TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.59  
 AVERAGE FLOW DEPTH (FEET) = 2.40 TRAVEL TIME (MIN.) = 3.72  
 Tc (MIN.) = 31.42  
 SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 192.31  
 EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 350.25  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.76 FLOW VELOCITY (FEET/SEC.) = 8.18  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.31  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.111

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 134.70 0.30 0.880 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 401.61  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.35  
 AVERAGE FLOW DEPTH (FEET) = 3.29 TRAVEL TIME (MIN.) = 5.73  
 Tc (MIN.) = 37.15  
 SUBAREA AREA (ACRES) = 134.70 SUBAREA RUNOFF (CFS) = 102.70  
 EFFECTIVE AREA (ACRES) = 559.53 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 559.5 PEAK FLOW RATE (CFS) = 412.84  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.34 FLOW VELOCITY (FEET/SEC.) = 7.41  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13837.00 = 10522.15 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 191.87 DOWNSTREAM (FEET) = 133.00  
 FLOW LENGTH (FEET) = 1151.02 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 54.0 INCH PIPE IS 43.2 INCHES

PIPE-FLOW VELOCITY (FEET/SEC.) = 30.24  
 ESTIMATED PIPE DIAMETER (INCH) = 54.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 412.84  
 PIPE TRAVEL TIME (MIN.) = 0.63 Tc (MIN.) = 37.79  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 37.79  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.099  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 5.97 0.30 0.622 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622  
 SUBAREA AREA (ACRES) = 5.97 SUBAREA RUNOFF (CFS) = 4.91

EFFECTIVE AREA (ACRES) = 565.50 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 565.5 PEAK FLOW RATE (CFS) = 412.84  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 37.79  
 RAINFALL INTENSITY (INCH/HR) = 1.10  
 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97  
 EFFECTIVE STREAM AREA (ACRES) = 565.50  
 TOTAL STREAM AREA (ACRES) = 565.50  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 412.84

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15153.02	24.13	1.414	0.30 ( 0.24)	0.79	4002.1	13810.00
1	15490.47	26.48	1.338	0.30 ( 0.24)	0.79	4409.0	10400.00
1	17252.36	33.39	1.180	0.30 ( 0.24)	0.79	6309.8	10340.00
1	19627.17	44.23	1.009	0.30 ( 0.24)	0.79	9496.5	110.00
1	21041.27	50.96	0.932	0.30 ( 0.24)	0.79	11999.4	130.00
1	22226.16	57.13	0.878	0.30 ( 0.24)	0.80	14579.6	150.00
1	23936.32	73.30	0.786	0.30 ( 0.25)	0.84	21674.0	390.00
1	25343.90	87.74	0.715	0.30 ( 0.26)	0.87	28054.8	13100.00
1	25666.41	94.66	0.691	0.30 ( 0.26)	0.87	30697.4	11801.00
1	27052.56	112.14	0.641	0.30 ( 0.27)	0.90	39110.0	13510.00
1	28495.27	125.17	0.610	0.30 ( 0.27)	0.91	46899.2	11330.00
1	29077.28	133.20	0.597	0.30 ( 0.28)	0.92	51986.4	10630.00
1	28817.92	138.84	0.587	0.30 ( 0.28)	0.92	54576.3	12330.00



1	28548.04	145.50	0.576	0.30	( 0.28)	0.93	57718.7	11600.00
1	28163.33	151.36	0.566	0.30	( 0.28)	0.93	59953.0	11111.00
1	27736.98	157.57	0.555	0.30	( 0.28)	0.93	61886.9	12201.00
1	26805.93	166.72	0.540	0.30	( 0.28)	0.93	63975.1	12231.00
1	25953.82	174.41	0.527	0.30	( 0.28)	0.93	65386.7	10400.00
1	24597.39	186.17	0.512	0.30	( 0.28)	0.93	67007.4	10320.00
1	23321.93	196.26	0.504	0.30	( 0.28)	0.94	67395.3	12000.00
1	20363.61	226.40	0.481	0.30	( 0.28)	0.94	68012.2	10100.00
2	412.84	37.79	1.099	0.30	( 0.29)	0.97	565.5	13830.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15518.98	24.13	1.414	0.30	( 0.24)	0.81	4363.2 13810.00
2	15865.20	26.48	1.338	0.30	( 0.24)	0.81	4805.3 10400.00
3	17653.41	33.39	1.180	0.30	( 0.24)	0.81	6809.4 10340.00
4	18629.43	37.79	1.099	0.30	( 0.24)	0.80	8169.2 13830.00
5	19993.91	44.23	1.009	0.30	( 0.24)	0.80	10062.0 110.00
6	21368.93	50.96	0.932	0.30	( 0.24)	0.80	12564.9 130.00
7	22525.79	57.13	0.878	0.30	( 0.24)	0.81	15145.1 150.00
8	24189.45	73.30	0.786	0.30	( 0.25)	0.84	22239.5 390.00
9	25560.69	87.74	0.715	0.30	( 0.26)	0.87	28620.3 13100.00
10	25870.79	94.66	0.691	0.30	( 0.26)	0.88	31262.9 11801.00
11	27231.67	112.14	0.641	0.30	( 0.27)	0.90	39675.5 13510.00
12	28658.53	125.17	0.610	0.30	( 0.27)	0.91	47464.7 11330.00
13	29233.57	133.20	0.597	0.30	( 0.28)	0.92	52551.9 10630.00
14	28969.33	138.84	0.587	0.30	( 0.28)	0.92	55141.8 12330.00
15	28693.67	145.50	0.576	0.30	( 0.28)	0.93	58284.2 11600.00
16	28303.88	151.36	0.566	0.30	( 0.28)	0.93	60518.5 11111.00
17	27872.14	157.57	0.555	0.30	( 0.28)	0.93	62452.4 12201.00
18	26933.16	166.72	0.540	0.30	( 0.28)	0.93	64540.6 12231.00
19	26074.38	174.41	0.527	0.30	( 0.28)	0.93	65952.2 10400.00
20	24710.67	186.17	0.512	0.30	( 0.28)	0.94	67572.9 10320.00
21	23431.23	196.26	0.504	0.30	( 0.28)	0.94	67960.8 12000.00
22	20461.04	226.40	0.481	0.30	( 0.28)	0.94	68577.8 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 29233.57 Tc(MIN.) = 133.20  
EFFECTIVE AREA(ACRES) = 52551.89 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68577.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 12.87  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.595

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	6.61	0.30	0.975	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29234.47  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.00  
AVERAGE FLOW DEPTH(FEET) = 12.87 TRAVEL TIME(MIN.) = 0.73  
Tc(MIN.) = 133.93  
SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 1.80  
EFFECTIVE AREA(ACRES) = 52558.50 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68584.4 PEAK FLOW RATE(CFS) = 29233.57  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 12.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 12.87 FLOW VELOCITY(FEET/SEC.) = 15.00  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15518.98	25.01	1.379	0.30	( 0.24)	0.81	4369.9 13810.00
2	15865.20	27.35	1.314	0.30	( 0.24)	0.81	4811.9 10400.00
3	17653.41	34.23	1.165	0.30	( 0.24)	0.81	6816.0 10340.00
4	18629.43	38.62	1.084	0.30	( 0.24)	0.80	8175.8 13830.00
5	19993.91	45.04	1.000	0.30	( 0.24)	0.80	10068.7 110.00
6	21368.93	51.75	0.925	0.30	( 0.24)	0.80	12571.6 130.00
7	22525.79	57.92	0.871	0.30	( 0.24)	0.81	15151.7 150.00
8	24189.45	74.07	0.783	0.30	( 0.25)	0.84	22246.1 390.00
9	25560.69	88.50	0.711	0.30	( 0.26)	0.87	28626.9 13100.00
10	25870.79	95.41	0.689	0.30	( 0.26)	0.88	31269.5 11801.00
11	27231.67	112.88	0.639	0.30	( 0.27)	0.90	39682.1 13510.00
12	28658.53	125.91	0.609	0.30	( 0.27)	0.91	47471.4 11330.00
13	29233.57	133.93	0.595	0.30	( 0.28)	0.92	52558.5 10630.00
14	28969.33	139.56	0.586	0.30	( 0.28)	0.92	55148.4 12330.00
15	28693.67	146.23	0.574	0.30	( 0.28)	0.93	58290.8 11600.00
16	28303.88	152.09	0.564	0.30	( 0.28)	0.93	60525.1 11111.00
17	27872.14	158.31	0.554	0.30	( 0.28)	0.93	62459.0 12201.00
18	26933.16	167.47	0.538	0.30	( 0.28)	0.93	64547.2 12231.00
19	26074.38	175.16	0.525	0.30	( 0.28)	0.93	65958.8 10400.00
20	24710.67	186.94	0.512	0.30	( 0.28)	0.94	67579.5 10320.00
21	23431.23	197.03	0.504	0.30	( 0.28)	0.94	67967.4 12000.00
22	20461.04	227.21	0.481	0.30	( 0.28)	0.94	68584.4 10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 29233.57 Tc(MIN.) = 133.93  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 52558.50

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 133.93  
 RAINFALL INTENSITY (INCH/HR) = 0.60  
 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA (ACRES) = 52558.50  
 TOTAL STREAM AREA (ACRES) = 68584.36  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 29233.57

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----  
 INITIAL SUBAREA FLOW-LENGTH (FEET) = 617.57  
 ELEVATION DATA: UPSTREAM (FEET) = 646.95 DOWNSTREAM (FEET) = 490.10

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.137  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.206  
 SUBAREA Tc AND LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	-	4.95	0.30	1.000	65	12.14

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF (CFS) = 8.49  
 TOTAL AREA (ACRES) = 4.95 PEAK FLOW RATE (CFS) = 8.49

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 490.10 DOWNSTREAM (FEET) = 440.98  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 351.14 CHANNEL SLOPE = 0.1399  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.29  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.015  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.02	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 11.59  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.85  
 AVERAGE FLOW DEPTH (FEET) = 0.29 TRAVEL TIME (MIN.) = 1.52  
 Tc (MIN.) = 13.66  
 SUBAREA AREA (ACRES) = 4.02 SUBAREA RUNOFF (CFS) = 6.20  
 EFFECTIVE AREA (ACRES) = 8.97 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 9.0 PEAK FLOW RATE (CFS) = 13.84  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.32  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.32 FLOW VELOCITY (FEET/SEC.) = 4.10  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 440.98 DOWNSTREAM (FEET) = 395.76  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 512.91 CHANNEL SLOPE = 0.0882  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.45  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.803  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.17	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 18.69  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.98  
 AVERAGE FLOW DEPTH (FEET) = 0.43 TRAVEL TIME (MIN.) = 2.15  
 Tc (MIN.) = 15.80  
 SUBAREA AREA (ACRES) = 7.17 SUBAREA RUNOFF (CFS) = 9.70  
 EFFECTIVE AREA (ACRES) = 16.14 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 16.1 PEAK FLOW RATE (CFS) = 21.83  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.48 FLOW VELOCITY (FEET/SEC.) = 4.19  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 395.76 DOWNSTREAM (FEET) = 354.94  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 443.69 CHANNEL SLOPE = 0.0920  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.52  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.715  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.02	0.30	1.000	-

USER-DEFINED - 6.76 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 26.14  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.52  
AVERAGE FLOW DEPTH (FEET) = 0.52 TRAVEL TIME (MIN.) = 1.64  
Tc (MIN.) = 17.44  
SUBAREA AREA (ACRES) = 6.76 SUBAREA RUNOFF (CFS) = 8.61  
EFFECTIVE AREA (ACRES) = 22.90 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 22.9 PEAK FLOW RATE (CFS) = 29.17  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.56 FLOW VELOCITY (FEET/SEC.) = 4.69  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13853.00 = 1925.31 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13853.00 TO NODE 13854.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 354.94 DOWNSTREAM (FEET) = 263.57  
CHANNEL LENGTH THRU SUBAREA (FEET) = 962.09 CHANNEL SLOPE = 0.0950  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.67  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.559

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	18.16	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 39.46  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.29  
AVERAGE FLOW DEPTH (FEET) = 0.66 TRAVEL TIME (MIN.) = 3.03  
Tc (MIN.) = 20.47  
SUBAREA AREA (ACRES) = 18.16 SUBAREA RUNOFF (CFS) = 20.58  
EFFECTIVE AREA (ACRES) = 41.06 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 41.1 PEAK FLOW RATE (CFS) = 46.54  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.73 FLOW VELOCITY (FEET/SEC.) = 5.58  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13854.00 = 2887.40 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13854.00 TO NODE 13855.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 263.57 DOWNSTREAM (FEET) = 188.74  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1228.77 CHANNEL SLOPE = 0.0609  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.03  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.409

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	38.75	0.30	0.879	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.879  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 66.54  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.43  
AVERAGE FLOW DEPTH (FEET) = 1.02 TRAVEL TIME (MIN.) = 3.77  
Tc (MIN.) = 24.24  
SUBAREA AREA (ACRES) = 38.75 SUBAREA RUNOFF (CFS) = 39.95  
EFFECTIVE AREA (ACRES) = 79.81 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 79.8 PEAK FLOW RATE (CFS) = 80.95  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.13 FLOW VELOCITY (FEET/SEC.) = 5.82  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13855.00 = 4116.17 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 31

-----  
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 188.74 DOWNSTREAM (FEET) = 130.00  
FLOW LENGTH (FEET) = 2092.67 MANNING'S N = 0.013  
ESTIMATED PIPE DIAMETER (INCH) INCREASED TO 36.000  
DEPTH OF FLOW IN 36.0 INCH PIPE IS 23.6 INCHES  
PIPE-FLOW VELOCITY (FEET/SEC.) = 16.52  
ESTIMATED PIPE DIAMETER (INCH) = 36.00 NUMBER OF PIPES = 1  
PIPE-FLOW (CFS) = 80.95  
PIPE TRAVEL TIME (MIN.) = 2.11 Tc (MIN.) = 26.35  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13860.00 = 6208.84 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 81

-----  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 26.35  
\* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.342

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.41	0.30	0.707	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707

SUBAREA AREA (ACRES) = 43.41 SUBAREA RUNOFF (CFS) = 44.14  
 EFFECTIVE AREA (ACRES) = 123.22 AREA-AVERAGED Fm (INCH/HR) = 0.26  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
 TOTAL AREA (ACRES) = 123.2 PEAK FLOW RATE (CFS) = 120.26

\*\*\*\*\*

FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 26.35  
 RAINFALL INTENSITY (INCH/HR) = 1.34  
 AREA-AVERAGED Fm (INCH/HR) = 0.26  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.86  
 EFFECTIVE STREAM AREA (ACRES) = 123.22  
 TOTAL STREAM AREA (ACRES) = 123.22  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 120.26

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15518.98	25.01	1.379	0.30 ( 0.24)	0.81	4369.9	13810.00
1	15865.20	27.35	1.314	0.30 ( 0.24)	0.81	4811.9	10400.00
1	17653.41	34.23	1.165	0.30 ( 0.24)	0.81	6816.0	10340.00
1	18629.43	38.62	1.084	0.30 ( 0.24)	0.80	8175.8	13830.00
1	19993.91	45.04	1.000	0.30 ( 0.24)	0.80	10068.7	110.00
1	21368.93	51.75	0.925	0.30 ( 0.24)	0.80	12571.6	130.00
1	22525.79	57.92	0.871	0.30 ( 0.24)	0.81	15151.7	150.00
1	24189.45	74.07	0.783	0.30 ( 0.25)	0.84	22246.1	390.00
1	25560.69	88.50	0.711	0.30 ( 0.26)	0.87	28626.9	13100.00
1	25870.79	95.41	0.689	0.30 ( 0.26)	0.88	31269.5	11801.00
1	27231.67	112.88	0.639	0.30 ( 0.27)	0.90	39682.1	13510.00
1	28658.53	125.91	0.609	0.30 ( 0.27)	0.91	47471.4	11330.00
1	29233.57	133.93	0.595	0.30 ( 0.28)	0.92	52558.5	10630.00
1	28969.33	139.56	0.586	0.30 ( 0.28)	0.92	55148.4	12330.00
1	28693.67	146.23	0.574	0.30 ( 0.28)	0.93	58290.8	11600.00
1	28303.88	152.09	0.564	0.30 ( 0.28)	0.93	60525.1	11111.00
1	27872.14	158.31	0.554	0.30 ( 0.28)	0.93	62459.0	12201.00
1	26933.16	167.47	0.538	0.30 ( 0.28)	0.93	64547.2	12231.00
1	26074.38	175.16	0.525	0.30 ( 0.28)	0.93	65958.8	10400.00
1	24710.67	186.94	0.512	0.30 ( 0.28)	0.94	67579.5	10320.00
1	23431.23	197.03	0.504	0.30 ( 0.28)	0.94	67967.4	12000.00
1	20461.04	227.21	0.481	0.30 ( 0.28)	0.94	68584.4	10100.00
2	120.26	26.35	1.342	0.30 ( 0.26)	0.86	123.2	13850.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15636.98	25.01	1.379	0.30 ( 0.24)	0.81	4486.8	13810.00
2	15837.52	26.35	1.342	0.30 ( 0.24)	0.81	4746.2	13850.00
3	15982.41	27.35	1.314	0.30 ( 0.24)	0.81	4935.1	10400.00

4	17754.00	34.23	1.165	0.30 ( 0.24)	0.81	6939.2	10340.00
5	18721.12	38.62	1.084	0.30 ( 0.24)	0.80	8299.0	13830.00
6	20076.19	45.04	1.000	0.30 ( 0.24)	0.80	10191.9	110.00
7	21442.99	51.75	0.925	0.30 ( 0.24)	0.80	12694.8	130.00
8	22593.77	57.92	0.871	0.30 ( 0.24)	0.81	15274.9	150.00
9	24247.67	74.07	0.783	0.30 ( 0.25)	0.84	22369.3	390.00
10	25611.02	88.50	0.711	0.30 ( 0.26)	0.87	28750.2	13100.00
11	25918.60	95.41	0.689	0.30 ( 0.26)	0.88	31392.7	11801.00
12	27273.99	112.88	0.639	0.30 ( 0.27)	0.90	39805.3	13510.00
13	28697.50	125.91	0.609	0.30 ( 0.27)	0.91	47594.6	11330.00
14	29271.03	133.93	0.595	0.30 ( 0.28)	0.92	52681.7	10630.00
15	29005.72	139.56	0.586	0.30 ( 0.28)	0.92	55271.6	12330.00
16	28728.81	146.23	0.574	0.30 ( 0.28)	0.93	58414.0	11600.00
17	28337.91	152.09	0.564	0.30 ( 0.28)	0.93	60648.4	11111.00
18	27905.00	158.31	0.554	0.30 ( 0.28)	0.93	62582.2	12201.00
19	26964.29	167.47	0.538	0.30 ( 0.28)	0.93	64670.5	12231.00
20	26104.06	175.16	0.525	0.30 ( 0.28)	0.93	66082.0	10400.00
21	24738.85	186.94	0.512	0.30 ( 0.28)	0.93	67702.8	10320.00
22	23458.55	197.03	0.504	0.30 ( 0.28)	0.94	68090.6	12000.00
23	20485.77	227.21	0.481	0.30 ( 0.28)	0.94	68707.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 29271.03 Tc (MIN.) = 133.93  
 EFFECTIVE AREA (ACRES) = 52681.71 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 68707.6  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 130.00 DOWNSTREAM (FEET) = 120.57  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 610.77 CHANNEL SLOPE = 0.0154  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 9.29  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.595

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.89	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 29271.68  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 22.98  
 AVERAGE FLOW DEPTH (FEET) = 9.29 TRAVEL TIME (MIN.) = 0.44  
 Tc (MIN.) = 134.37

SUBAREA AREA (ACRES) = 4.89 SUBAREA RUNOFF (CFS) = 1.30  
 EFFECTIVE AREA (ACRES) = 52686.61 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 68712.5 PEAK FLOW RATE (CFS) = 29271.03  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 9.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 9.29 FLOW VELOCITY(FEET/SEC.) = 22.98  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15636.98	25.55	1.364	0.30 ( 0.24)	0.81	4491.7	13810.00
2	15837.52	26.89	1.327	0.30 ( 0.24)	0.81	4751.1	13850.00
3	15982.41	27.89	1.300	0.30 ( 0.24)	0.81	4940.0	10400.00
4	17754.00	34.75	1.155	0.30 ( 0.24)	0.81	6944.1	10340.00
5	18721.12	39.13	1.075	0.30 ( 0.24)	0.80	8303.9	13830.00
6	20076.19	45.54	0.994	0.30 ( 0.24)	0.80	10196.8	110.00
7	21442.99	52.24	0.921	0.30 ( 0.24)	0.80	12699.7	130.00
8	22593.77	58.40	0.866	0.30 ( 0.24)	0.81	15279.8	150.00
9	24247.67	74.54	0.780	0.30 ( 0.25)	0.84	22374.2	390.00
10	25611.02	88.96	0.709	0.30 ( 0.26)	0.87	28755.1	13100.00
11	25918.60	95.87	0.687	0.30 ( 0.26)	0.88	31397.6	11801.00
12	27273.99	113.33	0.638	0.30 ( 0.27)	0.90	39810.2	13510.00
13	28697.50	126.35	0.608	0.30 ( 0.27)	0.91	47599.5	11330.00
14	29271.03	134.37	0.595	0.30 ( 0.28)	0.92	52686.6	10630.00
15	29005.72	140.01	0.585	0.30 ( 0.28)	0.92	55276.5	12330.00
16	28728.81	146.68	0.574	0.30 ( 0.28)	0.93	58418.9	11600.00
17	28337.91	152.54	0.564	0.30 ( 0.28)	0.93	60653.2	11111.00
18	27905.00	158.76	0.553	0.30 ( 0.28)	0.93	62587.1	12201.00
19	26964.29	167.92	0.538	0.30 ( 0.28)	0.93	64675.3	12231.00
20	26104.06	175.62	0.524	0.30 ( 0.28)	0.93	66086.9	10400.00
21	24738.85	187.40	0.511	0.30 ( 0.28)	0.93	67707.6	10320.00
22	23458.55	197.51	0.503	0.30 ( 0.28)	0.94	68095.5	12000.00
23	20485.77	227.70	0.480	0.30 ( 0.28)	0.94	68712.5	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 29271.03 Tc(MIN.) = 134.37  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 52686.61

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 134.37  
 RAINFALL INTENSITY(INCH/HR) = 0.59  
 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA(ACRES) = 52686.61  
 TOTAL STREAM AREA(ACRES) = 68712.47  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 29271.03

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13870.00 TO NODE 13871.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 872.65  
 ELEVATION DATA: UPSTREAM(FEET) = 558.52 DOWNSTREAM(FEET) = 436.47

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 15.704  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.808

SUBAREA Tc AND LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
 NATURAL FAIR COVER  
 "GRASS" - 7.32 0.30 1.000 65 15.70  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 9.94  
 TOTAL AREA(ACRES) = 7.32 PEAK FLOW RATE(CFS) = 9.94

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 56  
 -----

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

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 436.47 DOWNSTREAM(FEET) = 337.62  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 827.95 CHANNEL SLOPE = 0.1194  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.40  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.635

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 13.01 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.77  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.27  
 AVERAGE FLOW DEPTH(FEET) = 0.39 TRAVEL TIME(MIN.) = 3.23  
 Tc(MIN.) = 18.93  
 SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 15.63  
 EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.000  
 TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 24.43  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.46 FLOW VELOCITY(FEET/SEC.) = 4.83  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 56  
 -----

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

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.74  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.485  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	32.99	0.30	0.923	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.923  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 42.38  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.13  
 AVERAGE FLOW DEPTH (FEET) = 0.72 TRAVEL TIME (MIN.) = 3.41  
 Tc (MIN.) = 22.34  
 SUBAREA AREA (ACRES) = 32.99 SUBAREA RUNOFF (CFS) = 35.86  
 EFFECTIVE AREA (ACRES) = 53.32 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 53.3 PEAK FLOW RATE (CFS) = 57.54  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.86 FLOW VELOCITY (FEET/SEC.) = 5.67  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 253.88 DOWNSTREAM (FEET) = 160.73  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1518.60 CHANNEL SLOPE = 0.0613  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.86  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.358  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	30.94	0.30	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 72.69  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.37  
 AVERAGE FLOW DEPTH (FEET) = 0.84 TRAVEL TIME (MIN.) = 3.43  
 Tc (MIN.) = 25.78  
 SUBAREA AREA (ACRES) = 30.94 SUBAREA RUNOFF (CFS) = 30.29  
 EFFECTIVE AREA (ACRES) = 84.26 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 84.3 PEAK FLOW RATE (CFS) = 81.74  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.90 FLOW VELOCITY (FEET/SEC.) = 7.67

LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 160.73 DOWNSTREAM (FEET) = 158.14  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 582.74 CHANNEL SLOPE = 0.0044  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.31  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.281  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	73.67	0.30	0.930	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 114.96  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.46  
 AVERAGE FLOW DEPTH (FEET) = 2.28 TRAVEL TIME (MIN.) = 2.81  
 Tc (MIN.) = 28.59  
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 66.42  
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 142.31  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.56 FLOW VELOCITY (FEET/SEC.) = 3.68  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57  
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 45.0 INCH PIPE IS 32.5 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 16.65  
 ESTIMATED PIPE DIAMETER (INCH) = 45.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 142.31  
 PIPE TRAVEL TIME (MIN.) = 1.86 Tc (MIN.) = 30.45  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 30.45  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.234

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 34.90 0.30 0.743 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.743  
 SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 31.76  
 EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 167.41

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 30.45  
 RAINFALL INTENSITY(INCH/HR) = 1.23  
 AREA-AVERAGED Fm(INCH/HR) = 0.27  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.90  
 EFFECTIVE STREAM AREA(ACRES) = 192.83  
 TOTAL STREAM AREA(ACRES) = 192.83  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 167.41

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15636.98	25.55	1.364	0.30( 0.24)	0.81	4491.7	13810.00
1	15837.52	26.89	1.327	0.30( 0.24)	0.81	4751.1	13850.00
1	15982.41	27.89	1.300	0.30( 0.24)	0.81	4940.0	10400.00
1	17754.00	34.75	1.155	0.30( 0.24)	0.81	6944.1	10340.00
1	18721.12	39.13	1.075	0.30( 0.24)	0.80	8303.9	13830.00
1	20076.19	45.54	0.994	0.30( 0.24)	0.80	10196.8	110.00
1	21442.99	52.24	0.921	0.30( 0.24)	0.80	12699.7	130.00
1	22593.77	58.40	0.866	0.30( 0.24)	0.81	15279.8	150.00
1	24247.67	74.54	0.780	0.30( 0.25)	0.84	22374.2	390.00
1	25611.02	88.96	0.709	0.30( 0.26)	0.87	28755.1	13100.00
1	25918.60	95.87	0.687	0.30( 0.26)	0.88	31397.6	11801.00
1	27273.99	113.33	0.638	0.30( 0.27)	0.90	39810.2	13510.00
1	28697.50	126.35	0.608	0.30( 0.27)	0.91	47599.5	11330.00
1	29271.03	134.37	0.595	0.30( 0.28)	0.92	52686.6	10630.00
1	29005.72	140.01	0.585	0.30( 0.28)	0.92	55276.5	12330.00
1	28728.81	146.68	0.574	0.30( 0.28)	0.93	58418.9	11600.00
1	28337.91	152.54	0.564	0.30( 0.28)	0.93	60653.2	11111.00
1	27905.00	158.76	0.553	0.30( 0.28)	0.93	62587.1	12201.00
1	26964.29	167.92	0.538	0.30( 0.28)	0.93	64675.3	12231.00
1	26104.06	175.62	0.524	0.30( 0.28)	0.93	66086.9	10400.00
1	24738.85	187.40	0.511	0.30( 0.28)	0.93	67707.6	10320.00
1	23458.55	197.51	0.503	0.30( 0.28)	0.94	68095.5	12000.00
1	20485.77	227.70	0.480	0.30( 0.28)	0.94	68712.5	10100.00
2	167.41	30.45	1.234	0.30( 0.27)	0.90	192.8	13870.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15796.41	25.55	1.364	0.30( 0.24)	0.81	4653.5	13810.00
2	15999.69	26.89	1.327	0.30( 0.24)	0.81	4921.4	13850.00
3	16146.26	27.89	1.300	0.30( 0.24)	0.81	5116.7	10400.00
4	16810.07	30.45	1.234	0.30( 0.24)	0.81	5879.8	13870.00
5	17907.75	34.75	1.155	0.30( 0.24)	0.81	7136.9	10340.00
6	18860.95	39.13	1.075	0.30( 0.24)	0.81	8496.7	13830.00
7	20201.92	45.54	0.994	0.30( 0.24)	0.80	10389.6	110.00
8	21556.12	52.24	0.921	0.30( 0.24)	0.80	12892.5	130.00
9	22697.39	58.40	0.866	0.30( 0.24)	0.81	15472.7	150.00
10	24336.37	74.54	0.780	0.30( 0.25)	0.84	22567.0	390.00
11	25687.37	88.96	0.709	0.30( 0.26)	0.87	28947.9	13100.00
12	25991.17	95.87	0.687	0.30( 0.26)	0.88	31590.4	11801.00
13	27337.97	113.33	0.638	0.30( 0.27)	0.90	40003.0	13510.00
14	28756.34	126.35	0.608	0.30( 0.27)	0.91	47792.3	11330.00
15	29327.50	134.37	0.595	0.30( 0.28)	0.92	52879.4	10630.00
16	29060.53	140.01	0.585	0.30( 0.28)	0.92	55469.3	12330.00
17	28781.65	146.68	0.574	0.30( 0.28)	0.93	58611.8	11600.00
18	28389.02	152.54	0.564	0.30( 0.28)	0.93	60846.1	11111.00
19	27954.28	158.76	0.553	0.30( 0.28)	0.93	62779.9	12201.00
20	27010.86	167.92	0.538	0.30( 0.28)	0.93	64868.2	12231.00
21	26148.36	175.62	0.524	0.30( 0.28)	0.93	66279.7	10400.00
22	24780.87	187.40	0.511	0.30( 0.28)	0.93	67900.5	10320.00
23	23499.21	197.51	0.503	0.30( 0.28)	0.94	68288.3	12000.00
24	20522.38	227.70	0.480	0.30( 0.28)	0.94	68905.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 29327.50 Tc(MIN.) = 134.37  
 EFFECTIVE AREA(ACRES) = 52879.43 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 68905.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 20.68  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.590

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.724  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29347.26  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.77  
 AVERAGE FLOW DEPTH(FEET) = 20.68 TRAVEL TIME(MIN.) = 2.55  
 Tc(MIN.) = 136.93

SUBAREA AREA (ACRES) = 117.69 SUBAREA RUNOFF (CFS) = 39.52  
 EFFECTIVE AREA (ACRES) = 52997.12 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 69023.0 PEAK FLOW RATE (CFS) = 29327.50  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 20.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 20.67 FLOW VELOCITY (FEET/SEC.) = 7.77  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15796.41	28.58	1.281	0.30 ( 0.24)	0.81	4771.2	13810.00
2	15999.69	29.91	1.244	0.30 ( 0.24)	0.81	5039.1	13850.00
3	16146.26	30.90	1.225	0.30 ( 0.24)	0.81	5234.4	10400.00
4	16810.07	33.43	1.179	0.30 ( 0.24)	0.81	5997.4	13870.00
5	17907.75	37.68	1.102	0.30 ( 0.24)	0.81	7254.6	10340.00
6	18860.95	42.01	1.035	0.30 ( 0.24)	0.81	8614.4	13830.00
7	20201.92	48.37	0.960	0.30 ( 0.24)	0.80	10507.3	110.00
8	21556.12	55.02	0.896	0.30 ( 0.24)	0.80	13010.2	130.00
9	22697.39	61.14	0.846	0.30 ( 0.24)	0.81	15590.3	150.00
10	24336.37	77.23	0.767	0.30 ( 0.25)	0.84	22684.7	390.00
11	25687.37	91.61	0.699	0.30 ( 0.26)	0.87	29065.6	13100.00
12	25991.17	98.51	0.680	0.30 ( 0.26)	0.88	31708.1	11801.00
13	27337.97	115.93	0.631	0.30 ( 0.27)	0.90	40120.7	13510.00
14	28756.34	128.92	0.604	0.30 ( 0.27)	0.91	47910.0	11330.00
15	29327.50	136.93	0.590	0.30 ( 0.28)	0.92	52997.1	10630.00
16	29060.53	142.57	0.581	0.30 ( 0.28)	0.92	55587.0	12330.00
17	28781.65	149.24	0.569	0.30 ( 0.28)	0.93	58729.4	11600.00
18	28389.02	155.11	0.559	0.30 ( 0.28)	0.93	60963.8	11111.00
19	27954.28	161.35	0.549	0.30 ( 0.28)	0.93	62897.6	12201.00
20	27010.86	170.53	0.533	0.30 ( 0.28)	0.93	64985.9	12231.00
21	26148.36	178.26	0.520	0.30 ( 0.28)	0.93	66397.4	10400.00
22	24780.87	190.08	0.509	0.30 ( 0.28)	0.93	68018.2	10320.00
23	23499.21	200.22	0.501	0.30 ( 0.28)	0.93	68406.0	12000.00
24	20522.38	230.52	0.478	0.30 ( 0.28)	0.94	69023.0	10100.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 29327.50 Tc (MIN.) = 136.93  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 52997.12

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 136.93  
 RAINFALL INTENSITY (INCH/HR) = 0.59  
 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA (ACRES) = 52997.12

TOTAL STREAM AREA (ACRES) = 69022.98  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 29327.50

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

-----  
 INITIAL SUBAREA FLOW-LENGTH (FEET) = 447.89  
 ELEVATION DATA: UPSTREAM (FEET) = 564.89 DOWNSTREAM (FEET) = 421.92

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)]\*\* 0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 6.976  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 3.215

SUBAREA Tc AND LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
 PUBLIC PARK - 3.03 0.30 0.960 65 6.98  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.960  
 SUBAREA RUNOFF (CFS) = 7.98  
 TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 7.98

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
 ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.37  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.825

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 8.12 0.30 0.986 -

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.986  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 17.27  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.56  
 AVERAGE FLOW DEPTH (FEET) = 0.35 TRAVEL TIME (MIN.) = 1.59  
 Tc (MIN.) = 8.57

SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 18.49  
 EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 25.41  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.45 FLOW VELOCITY (FEET/SEC.) = 5.24  
 LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.



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FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 392.64 DOWNSTREAM(FEET) = 324.46
CHANNEL LENGTH THRU SUBAREA(FEET) = 662.40 CHANNEL SLOPE = 0.1029
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.51
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.455
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -       12.50    0.30     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 37.55
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.93
AVERAGE FLOW DEPTH(FEET) = 0.49 TRAVEL TIME(MIN.) = 1.59
Tc(MIN.) = 10.16
SUBAREA AREA(ACRES) = 12.50 SUBAREA RUNOFF(CFS) = 24.24
EFFECTIVE AREA(ACRES) = 23.65 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 23.6 PEAK FLOW RATE(CFS) = 45.93
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.55 FLOW VELOCITY(FEET/SEC.) = 7.46
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

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FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 324.46 DOWNSTREAM(FEET) = 240.82
CHANNEL LENGTH THRU SUBAREA(FEET) = 980.03 CHANNEL SLOPE = 0.0853
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.70
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.187
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -       15.87    0.30     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 59.42
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.67
AVERAGE FLOW DEPTH(FEET) = 0.68 TRAVEL TIME(MIN.) = 2.13
Tc(MIN.) = 12.29
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 26.95
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30

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AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 67.18
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.74

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 7.97
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

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*****
FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 240.82 DOWNSTREAM(FEET) = 163.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1144.35 CHANNEL SLOPE = 0.0680
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.94
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.891
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -       28.41    0.30     0.985    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 87.63
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.12
AVERAGE FLOW DEPTH(FEET) = 0.91 TRAVEL TIME(MIN.) = 2.35
Tc(MIN.) = 14.64
SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 40.81
EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 97.48
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.97

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.97 FLOW VELOCITY(FEET/SEC.) = 8.40
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

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*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013
DEPTH OF FLOW IN 39.0 INCH PIPE IS 27.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 15.93
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 97.48
PIPE TRAVEL TIME(MIN.) = 1.99 Tc(MIN.) = 16.63
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

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*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 16.63
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.759
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED          -      11.69    0.30    0.634   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.634
SUBAREA AREA(ACRES) = 11.69      SUBAREA RUNOFF(CFS) = 16.50
EFFECTIVE AREA(ACRES) = 79.62    AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 79.6        PEAK FLOW RATE(CFS) = 105.88

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*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.63
RAINFALL INTENSITY (INCH/HR) = 1.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 79.62
TOTAL STREAM AREA(ACRES) = 79.62
PEAK FLOW RATE(CFS) AT CONFLUENCE = 105.88

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\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15796.41	28.58	1.281	0.30( 0.24)	0.81	4771.2	13810.00
1	15999.69	29.91	1.244	0.30( 0.24)	0.81	5039.1	13850.00
1	16146.26	30.90	1.225	0.30( 0.24)	0.81	5234.4	10400.00
1	16810.07	33.43	1.179	0.30( 0.24)	0.81	5997.4	13870.00
1	17907.75	37.68	1.102	0.30( 0.24)	0.81	7254.6	10340.00
1	18860.95	42.01	1.035	0.30( 0.24)	0.81	8614.4	13830.00
1	20201.92	48.37	0.960	0.30( 0.24)	0.80	10507.3	110.00
1	21556.12	55.02	0.896	0.30( 0.24)	0.80	13010.2	130.00
1	22697.39	61.14	0.846	0.30( 0.24)	0.81	15590.3	150.00
1	24336.37	77.23	0.767	0.30( 0.25)	0.84	22684.7	390.00
1	25687.37	91.61	0.699	0.30( 0.26)	0.87	29065.6	13100.00
1	25991.17	98.51	0.680	0.30( 0.26)	0.88	31708.1	11801.00
1	27337.97	115.93	0.631	0.30( 0.27)	0.90	40120.7	13510.00
1	28756.34	128.92	0.604	0.30( 0.27)	0.91	47910.0	11330.00
1	29327.50	136.93	0.590	0.30( 0.28)	0.92	52997.1	10630.00
1	29060.53	142.57	0.581	0.30( 0.28)	0.92	55587.0	12330.00
1	28781.65	149.24	0.569	0.30( 0.28)	0.93	58729.4	11600.00
1	28389.02	155.11	0.559	0.30( 0.28)	0.93	60963.8	11111.00
1	27954.28	161.35	0.549	0.30( 0.28)	0.93	62897.6	12201.00

1	27010.86	170.53	0.533	0.30( 0.28)	0.93	64985.9	12231.00
1	26148.36	178.26	0.520	0.30( 0.28)	0.93	66397.4	10400.00
1	24780.87	190.08	0.509	0.30( 0.28)	0.93	68018.2	10320.00
1	23499.21	200.22	0.501	0.30( 0.28)	0.93	68406.0	12000.00
1	20522.38	230.52	0.478	0.30( 0.28)	0.94	69023.0	10100.00
2	105.88	16.63	1.759	0.30( 0.28)	0.94	79.6	13889.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13525.56	16.63	1.759	0.30( 0.24)	0.81	2855.0	13889.00
2	15868.04	28.58	1.281	0.30( 0.24)	0.81	4850.8	13810.00
3	16068.71	29.91	1.244	0.30( 0.24)	0.81	5118.8	13850.00
4	16213.92	30.90	1.225	0.30( 0.24)	0.81	5314.0	10400.00
5	16874.42	33.43	1.179	0.30( 0.24)	0.81	6077.1	13870.00
6	17966.52	37.68	1.102	0.30( 0.24)	0.81	7334.3	10340.00
7	18914.98	42.01	1.035	0.30( 0.24)	0.81	8694.0	13830.00
8	20250.57	48.37	0.960	0.30( 0.24)	0.80	10586.9	110.00
9	21600.19	55.02	0.896	0.30( 0.24)	0.80	13089.8	130.00
10	22737.88	61.14	0.846	0.30( 0.24)	0.81	15670.0	150.00
11	24371.17	77.23	0.767	0.30( 0.25)	0.84	22764.3	390.00
12	25717.33	91.61	0.699	0.30( 0.26)	0.87	29145.2	13100.00
13	26019.73	98.51	0.680	0.30( 0.26)	0.88	31787.7	11801.00
14	27363.00	115.93	0.631	0.30( 0.27)	0.90	40200.3	13510.00
15	28779.45	128.92	0.604	0.30( 0.27)	0.91	47989.6	11330.00
16	29349.63	136.93	0.590	0.30( 0.28)	0.92	53076.7	10630.00
17	29081.97	142.57	0.581	0.30( 0.28)	0.92	55666.6	12330.00
18	28802.29	149.24	0.569	0.30( 0.28)	0.93	58809.1	11600.00
19	28408.94	155.11	0.559	0.30( 0.28)	0.93	61043.4	11111.00
20	27973.44	161.35	0.549	0.30( 0.28)	0.93	62977.2	12201.00
21	27028.90	170.53	0.533	0.30( 0.28)	0.93	65065.5	12231.00
22	26165.46	178.26	0.520	0.30( 0.28)	0.93	66477.0	10400.00
23	24797.20	190.08	0.509	0.30( 0.28)	0.93	68097.8	10320.00
24	23514.98	200.22	0.501	0.30( 0.28)	0.93	68485.6	12000.00
25	20536.47	230.52	0.478	0.30( 0.28)	0.94	69102.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 29349.63 Tc(MIN.) = 136.93  
EFFECTIVE AREA(ACRES) = 53076.75 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 69102.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69102.6 TC(MIN.) = 136.93  
EFFECTIVE AREA(ACRES) = 53076.75 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.919  
PEAK FLOW RATE(CFS) = 29349.63

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13525.56	16.63	1.759	0.30( 0.24)	0.81	2855.0	13889.00
2	15868.04	28.58	1.281	0.30( 0.24)	0.81	4850.8	13810.00
3	16068.71	29.91	1.244	0.30( 0.24)	0.81	5118.8	13850.00

4	16213.92	30.90	1.225	0.30	( 0.24)	0.81	5314.0	10400.00
5	16874.42	33.43	1.179	0.30	( 0.24)	0.81	6077.1	13870.00
6	17966.52	37.68	1.102	0.30	( 0.24)	0.81	7334.3	10340.00
7	18914.98	42.01	1.035	0.30	( 0.24)	0.81	8694.0	13830.00
8	20250.57	48.37	0.960	0.30	( 0.24)	0.80	10586.9	110.00
9	21600.19	55.02	0.896	0.30	( 0.24)	0.80	13089.8	130.00
10	22737.88	61.14	0.846	0.30	( 0.24)	0.81	15670.0	150.00
11	24371.17	77.23	0.767	0.30	( 0.25)	0.84	22764.3	390.00
12	25717.33	91.61	0.699	0.30	( 0.26)	0.87	29145.2	13100.00
13	26019.73	98.51	0.680	0.30	( 0.26)	0.88	31787.7	11801.00
14	27363.00	115.93	0.631	0.30	( 0.27)	0.90	40200.3	13510.00
15	28779.45	128.92	0.604	0.30	( 0.27)	0.91	47989.6	11330.00
16	29349.63	136.93	0.590	0.30	( 0.28)	0.92	53076.7	10630.00
17	29081.97	142.57	0.581	0.30	( 0.28)	0.92	55666.6	12330.00
18	28802.29	149.24	0.569	0.30	( 0.28)	0.93	58809.1	11600.00
19	28408.94	155.11	0.559	0.30	( 0.28)	0.93	61043.4	11111.00
20	27973.44	161.35	0.549	0.30	( 0.28)	0.93	62977.2	12201.00
21	27028.90	170.53	0.533	0.30	( 0.28)	0.93	65065.5	12231.00
22	26165.46	178.26	0.520	0.30	( 0.28)	0.93	66477.0	10400.00
23	24797.20	190.08	0.509	0.30	( 0.28)	0.93	68097.8	10320.00
24	23514.98	200.22	0.501	0.30	( 0.28)	0.93	68485.6	12000.00
25	20536.47	230.52	0.478	0.30	( 0.28)	0.94	69102.6	10100.00

=====  
 =====  
 END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S39- FREE DRAINING - ULTIMATE CONDITION \*  
\* 10-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU10EV39.DAT  
TIME/DATE OF STUDY: 15:58 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 10.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 3.695
- 2) 10.00; 2.473
- 3) 15.00; 1.845
- 4) 20.00; 1.577
- 5) 25.00; 1.378
- 6) 30.00; 1.242
- 7) 40.00; 1.058
- 8) 50.00; 0.941
- 9) 60.00; 0.852
- 10) 90.00; 0.704
- 11) 120.00; 0.618
- 12) 180.00; 0.516
- 13) 360.00; 0.377
- 14) 1200.00; 0.164

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13900.00 TO NODE 13901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65  
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.365  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
AGRICULTURAL POOR COVER "FALLOW"	-	4.00	0.30	1.000	65	10.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 7.43  
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 7.43

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 385.16 DOWNSTREAM(FEET) = 288.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.42 CHANNEL SLOPE = 0.1497  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.26  
\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.119  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.47	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.40  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.51  
AVERAGE FLOW DEPTH(FEET) = 0.25 TRAVEL TIME(MIN.) = 1.96  
Tc(MIN.) = 12.82  
SUBAREA AREA(ACRES) = 8.47 SUBAREA RUNOFF(CFS) = 13.87  
EFFECTIVE AREA(ACRES) = 12.47 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) = 20.42  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.31 FLOW VELOCITY(FEET/SEC.) = 6.24  
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13902.00 = 1248.07 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13902.00 TO NODE 13903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.21 DOWNSTREAM(FEET) = 184.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 669.27 CHANNEL SLOPE = 0.1544  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.45

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.943

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.85	0.30	0.982	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.982

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38.14

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.97

AVERAGE FLOW DEPTH(FEET) = 0.44 TRAVEL TIME(MIN.) = 1.40

Tc(MIN.) = 14.22

SUBAREA AREA(ACRES) = 23.85 SUBAREA RUNOFF(CFS) = 35.39

EFFECTIVE AREA(ACRES) = 36.32 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 36.3 PEAK FLOW RATE(CFS) = 53.84

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.54 FLOW VELOCITY(FEET/SEC.) = 9.02

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13903.00 = 1917.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 184.89 DOWNSTREAM(FEET) = 155.08

FLOW LENGTH(FEET) = 876.66 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000

DEPTH OF FLOW IN 36.0 INCH PIPE IS 17.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 16.18

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 53.84

PIPE TRAVEL TIME(MIN.) = 0.90 Tc(MIN.) = 15.12

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13904.00 = 2794.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 15.12

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.839

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	21.29	0.30	0.996	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996

SUBAREA AREA(ACRES) = 21.29 SUBAREA RUNOFF(CFS) = 29.51

EFFECTIVE AREA(ACRES) = 57.61 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 57.6 PEAK FLOW RATE(CFS) = 79.92

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 155.08 DOWNSTREAM(FEET) = 118.00

FLOW LENGTH(FEET) = 1961.38 MANNING'S N = 0.013

DEPTH OF FLOW IN 36.0 INCH PIPE IS 27.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 13.96

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 79.92

PIPE TRAVEL TIME(MIN.) = 2.34 Tc(MIN.) = 17.46

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 17.46

\* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.713

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.53	0.30	0.649	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.649

SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 59.49

EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 132.90

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: RU10EV38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13525.56	16.63	0.30 ( 0.24)	0.81	2855.0	13889.00
2	18914.98	42.01	0.30 ( 0.24)	0.81	8694.0	13830.00
3	20250.57	48.37	0.30 ( 0.24)	0.80	10586.9	110.00
4	21600.19	55.02	0.30 ( 0.24)	0.80	13089.8	130.00
5	22737.88	61.14	0.30 ( 0.24)	0.81	15670.0	150.00
6	24371.17	77.23	0.30 ( 0.25)	0.84	22764.3	390.00
7	25717.33	91.61	0.30 ( 0.26)	0.87	29145.2	13100.00
8	26019.73	98.51	0.30 ( 0.26)	0.88	31787.7	11801.00
9	27363.00	115.93	0.30 ( 0.27)	0.90	40200.3	13510.00
10	28779.45	128.92	0.30 ( 0.27)	0.91	47989.6	11330.00
11	29349.63	136.93	0.30 ( 0.28)	0.92	53076.7	10630.00
12	29081.97	142.57	0.30 ( 0.28)	0.92	55666.6	12330.00
13	28802.29	149.24	0.30 ( 0.28)	0.93	58809.1	11600.00
14	28408.94	155.11	0.30 ( 0.28)	0.93	61043.4	11111.00
15	27973.44	161.35	0.30 ( 0.28)	0.93	62977.2	12201.00
16	27028.90	170.53	0.30 ( 0.28)	0.93	65065.5	12231.00
17	26165.46	178.26	0.30 ( 0.28)	0.93	66477.0	10400.00
18	24797.20	190.08	0.30 ( 0.28)	0.93	68097.8	10320.00
19	23514.98	200.22	0.30 ( 0.28)	0.93	68485.6	12000.00
20	20536.47	230.52	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13525.56	16.63	0.30 ( 0.24)	0.81	2855.0	13889.00
2	18914.98	42.01	0.30 ( 0.24)	0.81	8694.0	13830.00
3	20250.57	48.37	0.30 ( 0.24)	0.80	10586.9	110.00
4	21600.19	55.02	0.30 ( 0.24)	0.80	13089.8	130.00
5	22737.88	61.14	0.30 ( 0.24)	0.81	15670.0	150.00
6	24371.17	77.23	0.30 ( 0.25)	0.84	22764.3	390.00
7	25717.33	91.61	0.30 ( 0.26)	0.87	29145.2	13100.00
8	26019.73	98.51	0.30 ( 0.26)	0.88	31787.7	11801.00
9	27363.00	115.93	0.30 ( 0.27)	0.90	40200.3	13510.00
10	28779.45	128.92	0.30 ( 0.27)	0.91	47989.6	11330.00
11	29349.63	136.93	0.30 ( 0.28)	0.92	53076.7	10630.00
12	29081.97	142.57	0.30 ( 0.28)	0.92	55666.6	12330.00
13	28802.29	149.24	0.30 ( 0.28)	0.93	58809.1	11600.00
14	28408.94	155.11	0.30 ( 0.28)	0.93	61043.4	11111.00
15	27973.44	161.35	0.30 ( 0.28)	0.93	62977.2	12201.00
16	27028.90	170.53	0.30 ( 0.28)	0.93	65065.5	12231.00
17	26165.46	178.26	0.30 ( 0.28)	0.93	66477.0	10400.00
18	24797.20	190.08	0.30 ( 0.28)	0.93	68097.8	10320.00
19	23514.98	200.22	0.30 ( 0.28)	0.93	68485.6	12000.00
20	20536.47	230.52	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1376.26 CHANNEL SLOPE = 0.0012  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 18.12  
 \* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.585  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 96.09 0.30 0.535 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 29367.99  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.39  
 AVERAGE FLOW DEPTH (FEET) = 18.12 TRAVEL TIME (MIN.) = 2.44  
 Tc (MIN.) = 139.37  
 SUBAREA AREA (ACRES) = 96.09 SUBAREA RUNOFF (CFS) = 36.72  
 EFFECTIVE AREA (ACRES) = 53172.84 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 69198.7 PEAK FLOW RATE (CFS) = 29349.63  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 18.12

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 18.12 FLOW VELOCITY (FEET/SEC.) = 9.39  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13525.56	19.67	1.595	0.30 ( 0.24)	0.80	2951.1	13889.00
2	18914.98	44.78	1.002	0.30 ( 0.24)	0.80	8790.1	13830.00
3	20250.57	51.08	0.931	0.30 ( 0.24)	0.80	10683.0	110.00
4	21600.19	57.68	0.873	0.30 ( 0.24)	0.80	13185.9	130.00
5	22737.88	63.76	0.833	0.30 ( 0.24)	0.81	15766.1	150.00
6	24371.17	79.80	0.754	0.30 ( 0.25)	0.84	22860.4	390.00
7	25717.33	94.14	0.692	0.30 ( 0.26)	0.87	29241.3	13100.00
8	26019.73	101.03	0.672	0.30 ( 0.26)	0.87	31883.8	11801.00
9	27363.00	118.42	0.623	0.30 ( 0.27)	0.89	40296.4	13510.00
10	28779.45	131.37	0.599	0.30 ( 0.27)	0.91	48085.7	11330.00
11	29349.63	139.37	0.585	0.30 ( 0.28)	0.92	53172.8	10630.00
12	29081.97	145.02	0.575	0.30 ( 0.28)	0.92	55762.7	12330.00
13	28802.29	151.70	0.564	0.30 ( 0.28)	0.93	58905.2	11600.00
14	28408.94	157.58	0.554	0.30 ( 0.28)	0.93	61139.5	11111.00
15	27973.44	163.82	0.543	0.30 ( 0.28)	0.93	63073.3	12201.00
16	27028.90	173.03	0.528	0.30 ( 0.28)	0.93	65161.6	12231.00
17	26165.46	180.78	0.515	0.30 ( 0.28)	0.93	66573.1	10400.00
18	24797.20	192.64	0.506	0.30 ( 0.28)	0.93	68193.9	10320.00
19	23514.98	202.82	0.498	0.30 ( 0.28)	0.93	68581.7	12000.00
20	20536.47	233.22	0.475	0.30 ( 0.28)	0.93	69198.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 29349.63 Tc (MIN.) = 139.37

AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 53172.84

\*\*\*\*\*

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13525.56	19.67	1.595	0.30( 0.24)	0.80	2951.1	13889.00
2	18914.98	44.78	1.002	0.30( 0.24)	0.80	8790.1	13830.00
3	20250.57	51.08	0.931	0.30( 0.24)	0.80	10683.0	110.00
4	21600.19	57.68	0.873	0.30( 0.24)	0.80	13185.9	130.00
5	22737.88	63.76	0.833	0.30( 0.24)	0.81	15766.1	150.00
6	24371.17	79.80	0.754	0.30( 0.25)	0.84	22860.4	390.00
7	25717.33	94.14	0.692	0.30( 0.26)	0.87	29241.3	13100.00
8	26019.73	101.03	0.672	0.30( 0.26)	0.87	31883.8	11801.00
9	27363.00	118.42	0.623	0.30( 0.27)	0.89	40296.4	13510.00
10	28779.45	131.37	0.599	0.30( 0.27)	0.91	48085.7	11330.00
11	29349.63	139.37	0.585	0.30( 0.28)	0.92	53172.8	10630.00
12	29081.97	145.02	0.575	0.30( 0.28)	0.92	55762.7	12330.00
13	28802.29	151.70	0.564	0.30( 0.28)	0.93	58905.2	11600.00
14	28408.94	157.58	0.554	0.30( 0.28)	0.93	61139.5	11111.00
15	27973.44	163.82	0.543	0.30( 0.28)	0.93	63073.3	12201.00
16	27028.90	173.03	0.528	0.30( 0.28)	0.93	65161.6	12231.00
17	26165.46	180.78	0.515	0.30( 0.28)	0.93	66573.1	10400.00
18	24797.20	192.64	0.506	0.30( 0.28)	0.93	68193.9	10320.00
19	23514.98	202.82	0.498	0.30( 0.28)	0.93	68581.7	12000.00
20	20536.47	233.22	0.475	0.30( 0.28)	0.93	69198.7	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	132.90	17.46	1.713	0.30( 0.25)	0.84	101.1	13900.00

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13189.98	17.46	1.713	0.30( 0.24)	0.81	2721.0	13900.00
2	13647.69	19.67	1.595	0.30( 0.24)	0.81	3052.2	13889.00
3	18983.16	44.78	1.002	0.30( 0.24)	0.80	8891.3	13830.00
4	20312.31	51.08	0.931	0.30( 0.24)	0.80	10784.1	110.00
5	21656.58	57.68	0.873	0.30( 0.24)	0.80	13287.0	130.00
6	22790.71	63.76	0.833	0.30( 0.24)	0.81	15867.2	150.00
7	24416.79	79.80	0.754	0.30( 0.25)	0.84	22961.6	390.00
8	25757.29	94.14	0.692	0.30( 0.26)	0.87	29342.4	13100.00
9	26057.89	101.03	0.672	0.30( 0.26)	0.87	31985.0	11801.00
10	27396.62	118.42	0.623	0.30( 0.27)	0.89	40397.6	13510.00
11	28810.90	131.37	0.599	0.30( 0.27)	0.91	48186.8	11330.00
12	29379.85	139.37	0.585	0.30( 0.28)	0.92	53274.0	10630.00
13	29111.32	145.02	0.575	0.30( 0.28)	0.92	55863.8	12330.00
14	28830.60	151.70	0.564	0.30( 0.28)	0.93	59006.3	11600.00
15	28436.34	157.58	0.554	0.30( 0.28)	0.93	61240.6	11111.00

16	27999.87	163.82	0.543	0.30( 0.28)	0.93	63174.5	12201.00
17	27053.91	173.03	0.528	0.30( 0.28)	0.93	65262.7	12231.00
18	26189.34	180.78	0.515	0.30( 0.28)	0.93	66674.3	10400.00
19	24820.24	192.64	0.506	0.30( 0.28)	0.93	68295.0	10320.00
20	23537.30	202.82	0.498	0.30( 0.28)	0.93	68682.8	12000.00
21	20556.66	233.22	0.475	0.30( 0.28)	0.93	69299.8	10100.00
TOTAL AREA(ACRES) =							69299.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 29379.85 Tc(MIN.) = 139.368  
 EFFECTIVE AREA(ACRES) = 53273.98 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
 TOTAL AREA(ACRES) = 69299.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

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FLOW PROCESS FROM NODE 13920.00 TO NODE 13921.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 118.00 DOWNSTREAM(FEET) = 115.28  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 335.44 CHANNEL SLOPE = 0.0081  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 11.09  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.585

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.30	0.30	0.658	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.658  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29403.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 18.37  
 AVERAGE FLOW DEPTH(FEET) = 11.09 TRAVEL TIME(MIN.) = 0.30  
 Tc(MIN.) = 139.67  
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 46.80  
 EFFECTIVE AREA(ACRES) = 53408.28 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69434.1 PEAK FLOW RATE(CFS) = 29379.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 11.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 11.08 FLOW VELOCITY(FEET/SEC.) = 18.37  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13921.00 = 136971.41 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13189.98	17.85	1.692	0.30( 0.24)	0.80	2855.3	13900.00
2	13647.69	20.05	1.575	0.30( 0.24)	0.80	3186.5	13889.00
3	18983.16	45.12	0.998	0.30( 0.24)	0.80	9025.6	13830.00
4	20312.31	51.42	0.928	0.30( 0.24)	0.80	10918.4	110.00
5	21656.58	58.02	0.870	0.30( 0.24)	0.80	13421.3	130.00

6	22790.71	64.09	0.832	0.30	( 0.24)	0.80	16001.5	150.00
7	24416.79	80.12	0.753	0.30	( 0.25)	0.84	23095.9	390.00
8	25757.29	94.46	0.691	0.30	( 0.26)	0.86	29476.7	13100.00
9	26057.89	101.35	0.671	0.30	( 0.26)	0.87	32119.3	11801.00
10	27396.62	118.73	0.622	0.30	( 0.27)	0.89	40531.9	13510.00
11	28810.90	131.68	0.598	0.30	( 0.27)	0.91	48321.1	11330.00
12	29379.85	139.67	0.585	0.30	( 0.28)	0.92	53408.3	10630.00
13	29111.32	145.32	0.575	0.30	( 0.28)	0.92	55998.1	12330.00
14	28830.60	152.00	0.564	0.30	( 0.28)	0.92	59140.6	11600.00
15	28436.34	157.89	0.554	0.30	( 0.28)	0.93	61374.9	11111.00
16	27999.87	164.13	0.543	0.30	( 0.28)	0.93	63308.8	12201.00
17	27053.91	173.34	0.527	0.30	( 0.28)	0.93	65397.0	12231.00
18	26189.34	181.09	0.515	0.30	( 0.28)	0.93	66808.6	10400.00
19	24820.24	192.96	0.506	0.30	( 0.28)	0.93	68429.3	10320.00
20	23537.30	203.15	0.498	0.30	( 0.28)	0.93	68817.1	12000.00
21	20556.66	233.56	0.475	0.30	( 0.28)	0.93	69434.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 29379.85 Tc(MIN.) = 139.67  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 53408.28

\*\*\*\*\*

FLOW PROCESS FROM NODE 13921.00 TO NODE 14010.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 115.28 DOWNSTREAM(FEET) = 100.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1396.08 CHANNEL SLOPE = 0.0109  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.23  
 \* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.583

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.27	0.30	0.723	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.723  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29395.70  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 20.42  
 AVERAGE FLOW DEPTH(FEET) = 10.22 TRAVEL TIME(MIN.) = 1.14  
 Tc(MIN.) = 140.81  
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 31.69  
 EFFECTIVE AREA(ACRES) = 53504.55 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69530.4 PEAK FLOW RATE(CFS) = 29379.85  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.22

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 10.22 FLOW VELOCITY(FEET/SEC.) = 20.40  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	--------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	13189.98	19.31	1.614	0.30( 0.24)	0.80	2951.5 13900.00
2	13647.69	21.50	1.517	0.30( 0.24)	0.80	3282.8 13889.00
3	18983.16	46.43	0.983	0.30( 0.24)	0.80	9121.8 13830.00
4	20312.31	52.70	0.917	0.30( 0.24)	0.80	11014.7 110.00
5	21656.58	59.27	0.859	0.30( 0.24)	0.80	13517.6 130.00
6	22790.71	65.32	0.826	0.30( 0.24)	0.80	16097.8 150.00
7	24416.79	81.33	0.747	0.30( 0.25)	0.84	23192.1 390.00
8	25757.29	95.64	0.688	0.30( 0.26)	0.86	29573.0 13100.00
9	26057.89	102.53	0.668	0.30( 0.26)	0.87	32215.5 11801.00
10	27396.62	119.90	0.618	0.30( 0.27)	0.89	40628.1 13510.00
11	28810.90	132.83	0.596	0.30( 0.27)	0.91	48417.4 11330.00
12	29379.85	140.81	0.583	0.30( 0.28)	0.92	53504.5 10630.00
13	29111.32	146.47	0.573	0.30( 0.28)	0.92	56094.4 12330.00
14	28830.60	153.15	0.562	0.30( 0.28)	0.92	59236.9 11600.00
15	28436.34	159.04	0.552	0.30( 0.28)	0.93	61471.2 11111.00
16	27999.87	165.29	0.541	0.30( 0.28)	0.93	63405.0 12201.00
17	27053.91	174.51	0.525	0.30( 0.28)	0.93	65493.3 12231.00
18	26189.34	182.27	0.514	0.30( 0.28)	0.93	66904.8 10400.00
19	24820.24	194.16	0.505	0.30( 0.28)	0.93	68525.6 10320.00
20	23537.30	204.37	0.497	0.30( 0.28)	0.93	68913.4 12000.00
21	20556.66	234.83	0.474	0.30( 0.28)	0.93	69530.4 10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 29379.85 Tc(MIN.) = 140.81  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 53504.55

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69530.4 TC(MIN.) = 140.81  
 EFFECTIVE AREA(ACRES) = 53504.55 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.918  
 PEAK FLOW RATE(CFS) = 29379.85

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE	
1	13189.98	19.31	1.614	0.30( 0.24)	0.80	2951.5 13900.00	
2	13647.69	21.50	1.517	0.30( 0.24)	0.80	3282.8 13889.00	
3	18983.16	46.43	0.983	0.30( 0.24)	0.80	9121.8 13830.00	
4	20312.31	52.70	0.917	0.30( 0.24)	0.80	11014.7 110.00	
5	21656.58	59.27	0.859	0.30( 0.24)	0.80	13517.6 130.00	
6	22790.71	65.32	0.826	0.30( 0.24)	0.80	16097.8 150.00	
7	24416.79	81.33	0.747	0.30( 0.25)	0.84	23192.1 390.00	
8	25757.29	95.64	0.688	0.30( 0.26)	0.86	29573.0 13100.00	
9	26057.89	102.53	0.668	0.30( 0.26)	0.87	32215.5 11801.00	
10	27396.62	119.90	0.618	0.30( 0.27)	0.89	40628.1 13510.00	
11	28810.90	132.83	0.596	0.30( 0.27)	0.91	48417.4 11330.00	
12	29379.85	140.81	0.583	0.30( 0.28)	0.92	53504.5 10630.00	
13	29111.32	146.47	0.573	0.30( 0.28)	0.92	56094.4 12330.00	
14	28830.60	153.15	0.562	0.30( 0.28)	0.92	59236.9 11600.00	
15	28436.34	159.04	0.552	0.30( 0.28)	0.93	61471.2 11111.00	
16	27999.87	165.29	0.541	0.30( 0.28)	0.93	63405.0 12201.00	
17	27053.91	174.51	0.525	0.30( 0.28)	0.93	65493.3 12231.00	
18	26189.34	182.27	0.514	0.30( 0.28)	0.93	66904.8 10400.00	
19	24820.24	194.16	0.505	0.30( 0.28)	0.93	68525.6 10320.00	
20	23537.30	204.37	0.497	0.30( 0.28)	0.93	68913.4 12000.00	
21	20556.66	234.83	0.474	0.30( 0.28)	0.93	69530.4 10100.00	



=====  
END OF RATIONAL METHOD ANALYSIS

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* SAN JUAN CREEK WATERSHED STUDY - RATIONAL METHOD \*  
\* REGIONAL WATERSHED S19- FREE DRAINING \*  
\* 25-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV19.DAT  
TIME/DATE OF STUDY: 11:43 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.002
- 2) 10.00; 3.253
- 3) 15.00; 2.474
- 4) 20.00; 2.039
- 5) 25.00; 1.776
- 6) 30.00; 1.555
- 7) 40.00; 1.357
- 8) 50.00; 1.203
- 9) 60.00; 1.080
- 10) 90.00; 0.912
- 11) 120.00; 0.803
- 12) 180.00; 0.673
- 13) 360.00; 0.500
- 14) 1200.00; 0.221

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0312 0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 295.79  
ELEVATION DATA: UPSTREAM(FEET) = 2369.48 DOWNSTREAM(FEET) = 2332.92

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.203  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 4.231  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL ".4 DWELLING/ACRE"	-	1.62	0.30	0.999	0	7.20

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
SUBAREA RUNOFF(CFS) = 5.73  
TOTAL AREA(ACRES) = 1.62 PEAK FLOW RATE(CFS) = 5.73

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11901.00 TO NODE 11902.00 IS CODE = 56  
-----

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

ELEVATION DATA: UPSTREAM(FEET) = 2332.92 DOWNSTREAM(FEET) = 2297.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 664.26 CHANNEL SLOPE = 0.0530  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.53  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.158  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.35	0.30	0.906	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.71  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.25  
AVERAGE FLOW DEPTH(FEET) = 0.47 TRAVEL TIME(MIN.) = 3.41  
Tc(MIN.) = 10.61  
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 21.69  
EFFECTIVE AREA(ACRES) = 9.97 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 25.86  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.61 FLOW VELOCITY(FEET/SEC.) = 3.76  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.00 = 960.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.00 TO NODE 11902.50 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2297.70 DOWNSTREAM(FEET) = 2263.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 928.77 CHANNEL SLOPE = 0.0369  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.21

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.623

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.48	0.30	0.904	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 62.68

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.51

AVERAGE FLOW DEPTH(FEET) = 1.13 TRAVEL TIME(MIN.) = 3.44

Tc(MIN.) = 14.05

SUBAREA AREA(ACRES) = 34.48 SUBAREA RUNOFF(CFS) = 72.97

EFFECTIVE AREA(ACRES) = 44.45 AREA-AVERAGED Fm(INCH/HR) = 0.27

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91

TOTAL AREA(ACRES) = 44.5 PEAK FLOW RATE(CFS) = 94.03

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.42 FLOW VELOCITY(FEET/SEC.) = 5.14

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.50 = 1888.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.50 TO NODE 11903.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2263.40 DOWNSTREAM(FEET) = 2252.14

CHANNEL LENGTH THRU SUBAREA(FEET) = 895.50 CHANNEL SLOPE = 0.0126

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.19

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.210

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.65	0.30	0.958	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.958

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 114.54

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.75

AVERAGE FLOW DEPTH(FEET) = 2.14 TRAVEL TIME(MIN.) = 3.98

Tc(MIN.) = 18.03

SUBAREA AREA(ACRES) = 23.65 SUBAREA RUNOFF(CFS) = 40.93

EFFECTIVE AREA(ACRES) = 68.10 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 68.1 PEAK FLOW RATE(CFS) = 118.47

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.18 FLOW VELOCITY(FEET/SEC.) = 3.77

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11903.00 = 2784.32 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11903.00 TO NODE 11904.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2252.14 DOWNSTREAM(FEET) = 2186.04

CHANNEL LENGTH THRU SUBAREA(FEET) = 1924.35 CHANNEL SLOPE = 0.0343

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.07

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.860

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	68.53	0.30	0.961	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 167.09

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.96

AVERAGE FLOW DEPTH(FEET) = 2.00 TRAVEL TIME(MIN.) = 5.38

Tc(MIN.) = 23.41

SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 96.92

EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 193.88

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.17 FLOW VELOCITY(FEET/SEC.) = 6.22

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34

CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.73

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.707  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 63.15 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 233.88  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.18  
 AVERAGE FLOW DEPTH (FEET) = 1.71 TRAVEL TIME (MIN.) = 3.16  
 Tc (MIN.) = 26.57  
 SUBAREA AREA (ACRES) = 63.15 SUBAREA RUNOFF (CFS) = 79.96  
 EFFECTIVE AREA (ACRES) = 199.78 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 199.8 PEAK FLOW RATE (CFS) = 255.05  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.80 FLOW VELOCITY (FEET/SEC.) = 10.45  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 1957.34 DOWNSTREAM (FEET) = 1244.16  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2498.96 CHANNEL SLOPE = 0.2854  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.57  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.584  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 84.87 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 304.10  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.96  
 AVERAGE FLOW DEPTH (FEET) = 1.55 TRAVEL TIME (MIN.) = 2.78  
 Tc (MIN.) = 29.35  
 SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 98.06  
 EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 330.98  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.63 FLOW VELOCITY (FEET/SEC.) = 15.34  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.49  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.474  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 199.43 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 436.43  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.89  
 AVERAGE FLOW DEPTH (FEET) = 2.46 TRAVEL TIME (MIN.) = 4.72  
 Tc (MIN.) = 34.07  
 SUBAREA AREA (ACRES) = 199.43 SUBAREA RUNOFF (CFS) = 210.79  
 EFFECTIVE AREA (ACRES) = 484.08 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 484.1 PEAK FLOW RATE (CFS) = 513.75  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.68 FLOW VELOCITY (FEET/SEC.) = 12.48  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1

-----  
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 -----

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 34.07  
 RAINFALL INTENSITY (INCH/HR) = 1.47  
 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98  
 EFFECTIVE STREAM AREA (ACRES) = 484.08  
 TOTAL STREAM AREA (ACRES) = 484.08  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 513.75

\*\*\*\*\*

FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21

-----  
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----

INITIAL SUBAREA FLOW-LENGTH (FEET) = 517.62  
 ELEVATION DATA: UPSTREAM (FEET) = 2531.88 DOWNSTREAM (FEET) = 2441.33

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.185  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.913  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	-	3.46	0.30	1.000	0	12.19

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 8.14  
 TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 8.14

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2441.33 DOWNSTREAM(FEET) = 2382.20  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 397.30 CHANNEL SLOPE = 0.1488  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.33  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.669

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.79	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.32  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.24  
 AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 1.56  
 Tc(MIN.) = 13.75  
 SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 12.35  
 EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 19.72  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.38 FLOW VELOCITY(FEET/SEC.) = 4.77  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2382.20 DOWNSTREAM(FEET) = 2263.77  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.47 CHANNEL SLOPE = 0.0626  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.10

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.076  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	54.30	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 63.91  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.41  
 AVERAGE FLOW DEPTH(FEET) = 0.99 TRAVEL TIME(MIN.) = 5.83  
 Tc(MIN.) = 19.58  
 SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 86.79  
 EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 101.57  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.28 FLOW VELOCITY(FEET/SEC.) = 6.29  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2263.77 DOWNSTREAM(FEET) = 1845.23  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1957.31 CHANNEL SLOPE = 0.2138  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.15  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.902

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	65.14	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 148.58  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.79  
 AVERAGE FLOW DEPTH(FEET) = 1.12 TRAVEL TIME(MIN.) = 3.02  
 Tc(MIN.) = 22.60  
 SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 93.93  
 EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 185.57  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.28 FLOW VELOCITY(FEET/SEC.) = 11.58  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.58  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.775

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	78.52	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 237.72

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.60

AVERAGE FLOW DEPTH(FEET) = 1.56 TRAVEL TIME(MIN.) = 2.42

Tc(MIN.) = 25.02

SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 104.24

EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 275.07

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 12.11

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.27  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.630

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	70.48	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 317.28

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.74

AVERAGE FLOW DEPTH(FEET) = 2.25 TRAVEL TIME(MIN.) = 3.27

Tc(MIN.) = 28.29

SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 84.40

EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 332.54  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.31 FLOW VELOCITY(FEET/SEC.) = 9.85

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.29  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.543

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	232.20	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 462.46

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.02

AVERAGE FLOW DEPTH(FEET) = 2.27 TRAVEL TIME(MIN.) = 2.31

Tc(MIN.) = 30.60

SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 259.78

EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 570.46

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.54 FLOW VELOCITY(FEET/SEC.) = 14.91

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.25

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.471

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	70.48	0.30	1.000	-

USER-DEFINED - 110.82 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 628.88  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 11.79  
 AVERAGE FLOW DEPTH( FEET) = 3.24 TRAVEL TIME( MIN.) = 3.62  
 Tc( MIN.) = 34.23  
 SUBAREA AREA( ACRES) = 110.82 SUBAREA RUNOFF( CFS) = 116.83  
 EFFECTIVE AREA( ACRES) = 620.71 AREA-AVERAGED Fm( INCH/HR) = 0.30  
 AREA-AVERAGED Fp( INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA( ACRES) = 620.7 PEAK FLOW RATE( CFS) = 654.35  
 GIVEN CHANNEL BASE( FEET) = 10.00 CHANNEL FREEBOARD( FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT( FEET) = 3.30

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH( FEET) = 3.30 FLOW VELOCITY( FEET/SEC.) = 11.94  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION( MIN.) = 34.23  
 RAINFALL INTENSITY( INCH/HR) = 1.47  
 AREA-AVERAGED Fm( INCH/HR) = 0.30  
 AREA-AVERAGED Fp( INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00  
 EFFECTIVE STREAM AREA( ACRES) = 620.71  
 TOTAL STREAM AREA( ACRES) = 620.71  
 PEAK FLOW RATE( CFS) AT CONFLUENCE = 654.35

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	513.75	34.07	1.474	0.30( 0.30)	0.98	484.1	11900.00
2	654.35	34.23	1.471	0.30( 0.30)	1.00	620.7	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1166.84	34.07	1.474	0.30( 0.30)	0.99	1102.0	11900.00
2	1166.76	34.23	1.471	0.30( 0.30)	0.99	1104.8	11910.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE( CFS) = 1166.84 Tc( MIN.) = 34.07  
 EFFECTIVE AREA( ACRES) = 1101.97 AREA-AVERAGED Fm( INCH/HR) = 0.30  
 AREA-AVERAGED Fp( INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA( ACRES) = 1104.8  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11920.00 TO NODE 11921.00 IS CODE = 56  
 -----

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

-----  
 ELEVATION DATA: UPSTREAM( FEET) = 873.95 DOWNSTREAM( FEET) = 827.94  
 CHANNEL LENGTH THRU SUBAREA( FEET) = 1417.25 CHANNEL SLOPE = 0.0325  
 GIVEN CHANNEL BASE( FEET) = 10.00 CHANNEL FREEBOARD( FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT( FEET) = 5.66  
 \* 25 YEAR RAINFALL INTENSITY( INCH/HR) = 1.428  
 SUBAREA LOSS RATE DATA( AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	107.47	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp( INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW( CFS) = 1221.40  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 10.13  
 AVERAGE FLOW DEPTH( FEET) = 5.66 TRAVEL TIME( MIN.) = 2.33  
 Tc( MIN.) = 36.41  
 SUBAREA AREA( ACRES) = 107.47 SUBAREA RUNOFF( CFS) = 109.12  
 EFFECTIVE AREA( ACRES) = 1209.44 AREA-AVERAGED Fm( INCH/HR) = 0.30  
 AREA-AVERAGED Fp( INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA( ACRES) = 1212.3 PEAK FLOW RATE( CFS) = 1230.16  
 GIVEN CHANNEL BASE( FEET) = 10.00 CHANNEL FREEBOARD( FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT( FEET) = 5.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH( FEET) = 5.68 FLOW VELOCITY( FEET/SEC.) = 10.14  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 56  
 -----

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

-----  
 ELEVATION DATA: UPSTREAM( FEET) = 827.94 DOWNSTREAM( FEET) = 753.55  
 CHANNEL LENGTH THRU SUBAREA( FEET) = 1886.43 CHANNEL SLOPE = 0.0394  
 GIVEN CHANNEL BASE( FEET) = 10.00 CHANNEL FREEBOARD( FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT( FEET) = 5.78  
 \* 25 YEAR RAINFALL INTENSITY( INCH/HR) = 1.373  
 SUBAREA LOSS RATE DATA( AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	344.27	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp( INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW( CFS) = 1396.39  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 11.27  
 AVERAGE FLOW DEPTH( FEET) = 5.76 TRAVEL TIME( MIN.) = 2.79  
 Tc( MIN.) = 39.20  
 SUBAREA AREA( ACRES) = 344.27 SUBAREA RUNOFF( CFS) = 332.46  
 EFFECTIVE AREA( ACRES) = 1553.71 AREA-AVERAGED Fm( INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 1556.5 PEAK FLOW RATE(CFS) = 1502.51  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.96 FLOW VELOCITY(FEET/SEC.) = 11.49  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 753.55 DOWNSTREAM(FEET) = 641.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.88 CHANNEL SLOPE = 0.0391  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.13  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.306  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1577.30  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.60  
AVERAGE FLOW DEPTH(FEET) = 6.12 TRAVEL TIME(MIN.) = 4.11  
Tc(MIN.) = 43.31  
SUBAREA AREA(ACRES) = 165.18 SUBAREA RUNOFF(CFS) = 149.58  
EFFECTIVE AREA(ACRES) = 1718.89 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 1721.7 PEAK FLOW RATE(CFS) = 1558.63  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.08 FLOW VELOCITY(FEET/SEC.) = 11.56  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11923.00 = 19034.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11923.00 TO NODE 11924.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 641.58 DOWNSTREAM(FEET) = 579.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1844.02 CHANNEL SLOPE = 0.0335  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.68  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.264  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 433.73 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1746.79  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.23  
AVERAGE FLOW DEPTH(FEET) = 6.67 TRAVEL TIME(MIN.) = 2.74  
Tc(MIN.) = 46.04  
SUBAREA AREA(ACRES) = 433.73 SUBAREA RUNOFF(CFS) = 376.31  
EFFECTIVE AREA(ACRES) = 2152.62 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2155.4 PEAK FLOW RATE(CFS) = 1869.76  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.88 FLOW VELOCITY(FEET/SEC.) = 11.44  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11924.00 = 20878.18 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11924.00 TO NODE 11925.00 IS CODE = 56  
-----

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

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ELEVATION DATA: UPSTREAM(FEET) = 579.89 DOWNSTREAM(FEET) = 494.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2756.15 CHANNEL SLOPE = 0.0311  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.20  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.202  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	265.42	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1977.47  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.30  
AVERAGE FLOW DEPTH(FEET) = 7.18 TRAVEL TIME(MIN.) = 4.07  
Tc(MIN.) = 50.11  
SUBAREA AREA(ACRES) = 265.42 SUBAREA RUNOFF(CFS) = 215.41  
EFFECTIVE AREA(ACRES) = 2418.04 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2420.9 PEAK FLOW RATE(CFS) = 1964.49  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 7.16 FLOW VELOCITY(FEET/SEC.) = 11.28  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11925.00 = 23634.33 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11925.00 TO NODE 11926.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<



>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 494.12 DOWNSTREAM(FEET) = 458.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1922.70 CHANNEL SLOPE = 0.0186  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.15  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.160  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	97.46	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2002.19  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.35  
AVERAGE FLOW DEPTH(FEET) = 8.14 TRAVEL TIME(MIN.) = 3.43  
Tc(MIN.) = 53.53  
SUBAREA AREA(ACRES) = 97.46 SUBAREA RUNOFF(CFS) = 75.40  
EFFECTIVE AREA(ACRES) = 2515.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2518.3 PEAK FLOW RATE(CFS) = 1964.49  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 8.07 FLOW VELOCITY(FEET/SEC.) = 9.30  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11926.00 = 25557.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 458.40 DOWNSTREAM(FEET) = 399.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2170.13 CHANNEL SLOPE = 0.0274  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.42  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.118  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.83	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1984.31  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.78  
AVERAGE FLOW DEPTH(FEET) = 7.41 TRAVEL TIME(MIN.) = 3.35  
Tc(MIN.) = 56.89  
SUBAREA AREA(ACRES) = 53.83 SUBAREA RUNOFF(CFS) = 39.65  
EFFECTIVE AREA(ACRES) = 2569.33 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2572.1 PEAK FLOW RATE(CFS) = 1964.49  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 7.38 FLOW VELOCITY(FEET/SEC.) = 10.75  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 10  
-----

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<

=====

PEAK FLOWRATE TABLE FILE NAME: P401XX25.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	738.86	26.31	0.30( 0.30)	1.00	624.3	40130.00
2	730.65	28.19	0.30( 0.30)	1.00	654.2	40100.00
TOTAL AREA(ACRES) =						654.2

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 11  
-----

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

\*\*\*\*\*  
\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1964.49	56.89	1.118	0.30( 0.30)	1.00	2569.3	11900.00
2	1962.33	57.06	1.116	0.30( 0.30)	1.00	2572.1	11910.00
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	738.86	26.31	1.718	0.30( 0.30)	1.00	624.3	40130.00
2	730.65	28.19	1.635	0.30( 0.30)	1.00	654.2	40100.00
LONGEST FLOWPATH FROM NODE 40100.00 TO NODE 11927.00 = 10245.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2312.56	26.31	1.718	0.30( 0.30)	1.00	1812.4	40130.00
2	2318.12	28.19	1.635	0.30( 0.30)	1.00	1927.4	40100.00
3	2412.36	56.89	1.118	0.30( 0.30)	1.00	3223.5	11900.00
4	2409.06	57.06	1.116	0.30( 0.30)	1.00	3226.4	11910.00
TOTAL AREA(ACRES) =						3226.4	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
PEAK FLOW RATE(CFS) = 2412.36 Tc(MIN.) = 56.889

EFFECTIVE AREA(ACRES) = 3223.53 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3226.4  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.50 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 399.00 DOWNSTREAM(FEET) = 384.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 986.26 CHANNEL SLOPE = 0.0152  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.28  
CHANNEL FLOW THRU SUBAREA(CFS) = 2412.36  
FLOW VELOCITY(FEET/SEC.) = 9.10 FLOW DEPTH(FEET) = 9.28  
TRAVEL TIME(MIN.) = 1.81 Tc(MIN.) = 58.69  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.50 = 28713.42 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 58.69  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.096  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 2.40 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 1.70 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 1.50 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.30 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.90 0.30 1.000 66  
NATURAL FAIR COVER  
"GRASS" B 0.60 0.30 1.000 69  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 8.40 SUBAREA RUNOFF(CFS) = 6.02  
EFFECTIVE AREA(ACRES) = 3231.93 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3234.8 PEAK FLOW RATE(CFS) = 2412.36  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 58.69  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.096  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.10 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 0.50 SUBAREA RUNOFF(CFS) = 0.36  
EFFECTIVE AREA(ACRES) = 3232.43 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3235.2 PEAK FLOW RATE(CFS) = 2412.36  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 58.69  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.096  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.70 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.20 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.10 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 2.00 SUBAREA RUNOFF(CFS) = 1.43  
EFFECTIVE AREA(ACRES) = 3234.43 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3237.2 PEAK FLOW RATE(CFS) = 2412.36  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11928.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 384.00 DOWNSTREAM(FEET) = 359.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 647.19 CHANNEL SLOPE = 0.0386  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 7.53  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.086  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	78.01	0.30	0.984	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.984  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2440.11  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.92  
 AVERAGE FLOW DEPTH (FEET) = 7.53 TRAVEL TIME (MIN.) = 0.84  
 Tc (MIN.) = 59.53  
 SUBAREA AREA (ACRES) = 78.01 SUBAREA RUNOFF (CFS) = 55.51  
 EFFECTIVE AREA (ACRES) = 3312.44 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3315.3 PEAK FLOW RATE (CFS) = 2412.36  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 7.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 7.49 FLOW VELOCITY (FEET/SEC.) = 12.88  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29360.61 FEET.

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FLOW PROCESS FROM NODE 11928.00 TO NODE 11928.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 59.53  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.086  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND, GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.60	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 1.70 SUBAREA RUNOFF (CFS) = 1.20  
 EFFECTIVE AREA (ACRES) = 3314.14 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3317.0 PEAK FLOW RATE (CFS) = 2412.36  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 359.00 DOWNSTREAM (FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1322.66 CHANNEL SLOPE = 0.0131

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 9.59  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.068  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.18	0.30	0.890	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.890  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2415.31  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.62  
 AVERAGE FLOW DEPTH (FEET) = 9.59 TRAVEL TIME (MIN.) = 2.56  
 Tc (MIN.) = 62.09  
 SUBAREA AREA (ACRES) = 8.18 SUBAREA RUNOFF (CFS) = 5.90  
 EFFECTIVE AREA (ACRES) = 3322.32 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3325.1 PEAK FLOW RATE (CFS) = 2412.36  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 9.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 9.59 FLOW VELOCITY (FEET/SEC.) = 8.62  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

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FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 62.09  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.068  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	1.90	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.60	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 2.50 SUBAREA RUNOFF (CFS) = 1.73  
 EFFECTIVE AREA (ACRES) = 3324.82 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3327.6 PEAK FLOW RATE (CFS) = 2412.36  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<

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FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S18X25.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16891.05	38.90	0.30 ( 0.30)	1.00	7699.7	11831.00
2	17269.04	41.07	0.30 ( 0.30)	1.00	8149.8	11801.00
3	19484.28	52.56	0.30 ( 0.30)	1.00	11111.4	11530.00
4	20384.42	59.71	0.30 ( 0.30)	1.00	13605.9	11000.00
5	22298.73	70.25	0.30 ( 0.30)	1.00	18738.3	11330.00
6	22627.08	72.15	0.30 ( 0.30)	1.00	19721.6	11350.00
7	22975.81	75.44	0.30 ( 0.30)	1.00	21433.1	11300.00
8	23115.65	77.03	0.30 ( 0.30)	1.00	22200.3	11130.00
9	22643.41	86.92	0.30 ( 0.30)	1.00	25590.3	11620.00
10	22485.53	89.04	0.30 ( 0.30)	1.00	26262.8	11600.00
11	22019.00	94.91	0.30 ( 0.30)	1.00	27853.1	11111.00
12	21832.20	97.18	0.30 ( 0.30)	1.00	28360.1	10500.00
13	21473.90	101.65	0.30 ( 0.30)	1.00	29218.6	10710.00
14	21235.80	103.95	0.30 ( 0.30)	1.00	29569.4	10410.00
15	20918.29	108.69	0.30 ( 0.30)	1.00	30244.3	10700.00
16	20477.99	115.41	0.30 ( 0.30)	1.00	31136.9	10400.00
17	20244.15	118.03	0.30 ( 0.30)	1.00	31425.5	10200.00
18	19628.83	124.41	0.30 ( 0.30)	1.00	32019.9	10300.00
19	19047.00	129.43	0.30 ( 0.30)	1.00	32209.8	10210.00
20	16600.03	158.26	0.30 ( 0.30)	1.00	32916.6	10100.00
TOTAL AREA (ACRES) =						32916.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	0.30 ( 0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.30 ( 0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.30 ( 0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.30 ( 0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.30 ( 0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.30 ( 0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.30 ( 0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.30 ( 0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.30 ( 0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.30 ( 0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.30 ( 0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.30 ( 0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.30 ( 0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =						13237.1

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	0.30 ( 0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.30 ( 0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.30 ( 0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.30 ( 0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.30 ( 0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.30 ( 0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.30 ( 0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.30 ( 0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.30 ( 0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.30 ( 0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.30 ( 0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.30 ( 0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.30 ( 0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =			13237.1			

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FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	1.029	0.30 ( 0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.951	0.30 ( 0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.943	0.30 ( 0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.927	0.30 ( 0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.906	0.30 ( 0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.888	0.30 ( 0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.872	0.30 ( 0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.857	0.30 ( 0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.846	0.30 ( 0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.835	0.30 ( 0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.831	0.30 ( 0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.794	0.30 ( 0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.774	0.30 ( 0.29)	0.98	13237.1	12000.00
LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16891.05	38.90	1.379	0.30 ( 0.30)	1.00	7699.7	11831.00
2	17269.04	41.07	1.340	0.30 ( 0.30)	1.00	8149.8	11801.00
3	19484.28	52.56	1.172	0.30 ( 0.30)	1.00	11111.4	11530.00
4	20384.42	59.71	1.084	0.30 ( 0.30)	1.00	13605.9	11000.00
5	22298.73	70.25	1.023	0.30 ( 0.30)	1.00	18738.3	11330.00
6	22627.08	72.15	1.012	0.30 ( 0.30)	1.00	19721.6	11350.00
7	22975.81	75.44	0.994	0.30 ( 0.30)	1.00	21433.1	11300.00
8	23115.65	77.03	0.985	0.30 ( 0.30)	1.00	22200.3	11130.00
9	22643.41	86.92	0.929	0.30 ( 0.30)	1.00	25590.3	11620.00
10	22485.53	89.04	0.917	0.30 ( 0.30)	1.00	26262.8	11600.00
11	22019.00	94.91	0.894	0.30 ( 0.30)	1.00	27853.1	11111.00
12	21832.20	97.18	0.886	0.30 ( 0.30)	1.00	28360.1	10500.00
13	21473.90	101.65	0.870	0.30 ( 0.30)	1.00	29218.6	10710.00

14	21235.80	103.95	0.861	0.30 ( 0.30)	1.00	29569.4	10410.00
15	20918.29	108.69	0.844	0.30 ( 0.30)	1.00	30244.3	10700.00
16	20477.99	115.41	0.820	0.30 ( 0.30)	1.00	31136.9	10400.00
17	20244.15	118.03	0.810	0.30 ( 0.30)	1.00	31425.5	10200.00
18	19628.83	124.41	0.793	0.30 ( 0.30)	1.00	32019.9	10300.00
19	19047.00	129.43	0.783	0.30 ( 0.30)	1.00	32209.8	10210.00
20	16600.03	158.26	0.720	0.30 ( 0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21744.22	38.90	1.379	0.30 ( 0.30)	0.99	11259.4	11831.00
2	22212.18	41.07	1.340	0.30 ( 0.30)	0.99	11908.7	11801.00
3	24786.46	52.56	1.172	0.30 ( 0.30)	0.99	15920.9	11530.00
4	25802.98	59.71	1.084	0.30 ( 0.30)	0.99	19070.2	11000.00
5	27946.32	69.19	1.029	0.30 ( 0.30)	0.99	24553.8	12500.00
6	28196.63	70.25	1.023	0.30 ( 0.30)	0.99	25221.1	11330.00
7	28628.91	72.15	1.012	0.30 ( 0.30)	0.99	26476.2	11350.00
8	29156.91	75.44	0.994	0.30 ( 0.30)	0.99	28656.5	11300.00
9	29383.42	77.03	0.985	0.30 ( 0.30)	0.99	29650.4	11130.00
10	29424.60	83.06	0.951	0.30 ( 0.30)	0.99	32577.0	12300.00
11	29442.55	84.54	0.943	0.30 ( 0.30)	0.99	33382.3	12330.00
12	29439.82	86.92	0.929	0.30 ( 0.30)	0.99	34637.9	11620.00
13	29426.78	87.39	0.927	0.30 ( 0.30)	0.99	34872.4	12410.00
14	29360.88	89.04	0.917	0.30 ( 0.30)	0.99	35673.5	11600.00
15	29241.66	91.70	0.906	0.30 ( 0.30)	0.99	36837.6	12400.00
16	29040.22	94.91	0.894	0.30 ( 0.30)	0.99	38153.0	11111.00
17	28921.00	96.73	0.888	0.30 ( 0.30)	0.99	38811.6	12211.00
18	28895.27	97.18	0.886	0.30 ( 0.30)	0.99	38975.3	10500.00
19	28686.30	100.97	0.872	0.30 ( 0.30)	0.99	40239.2	12201.00
20	28631.67	101.65	0.870	0.30 ( 0.30)	0.99	40445.6	10710.00
21	28393.24	103.95	0.861	0.30 ( 0.30)	0.99	41052.8	10410.00
22	28308.43	105.22	0.857	0.30 ( 0.30)	0.99	41373.2	12111.00
23	28060.91	108.20	0.846	0.30 ( 0.30)	0.99	42132.2	12231.00
24	28018.20	108.69	0.844	0.30 ( 0.30)	0.99	42249.7	10700.00
25	27804.43	111.16	0.835	0.30 ( 0.30)	0.99	42824.2	12101.10
26	27710.28	112.24	0.831	0.30 ( 0.30)	0.99	43065.0	12261.00
27	27382.95	115.41	0.820	0.30 ( 0.30)	0.99	43684.9	10400.00
28	27049.59	118.03	0.810	0.30 ( 0.30)	0.99	44139.1	10200.00
29	26196.32	124.38	0.794	0.30 ( 0.30)	0.99	45131.3	12010.00
30	26191.70	124.41	0.793	0.30 ( 0.30)	0.99	45134.7	10300.00
31	25354.30	129.43	0.783	0.30 ( 0.30)	0.99	45393.9	10210.00
32	24834.19	133.26	0.774	0.30 ( 0.30)	0.99	45540.7	12000.00
33	22023.28	158.26	0.720	0.30 ( 0.30)	0.99	46153.7	10100.00

TOTAL AREA (ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 29442.55 Tc (MIN.) = 84.542  
EFFECTIVE AREA (ACRES) = 33382.26 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 46153.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

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

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 347.47 DOWNSTREAM (FEET) = 341.63  
CHANNEL LENGTH THRU SUBAREA (FEET) = 532.38 CHANNEL SLOPE = 0.0110  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.43

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.939

SUBAREA LOSS RATE DATA (AMC II):

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

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 29446.71  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.43  
AVERAGE FLOW DEPTH (FEET) = 8.43 TRAVEL TIME (MIN.) = 0.61  
Tc (MIN.) = 85.16  
SUBAREA AREA (ACRES) = 14.37 SUBAREA RUNOFF (CFS) = 8.32  
EFFECTIVE AREA (ACRES) = 33396.63 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 46168.0 PEAK FLOW RATE (CFS) = 29442.55

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 8.43 FLOW VELOCITY (FEET/SEC.) = 14.43

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

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21744.22	39.58	1.365	0.30 ( 0.30)	0.99	11273.8	11831.00
2	22212.18	41.75	1.330	0.30 ( 0.30)	0.99	11923.1	11801.00
3	24786.46	53.21	1.164	0.30 ( 0.30)	0.99	15935.3	11530.00
4	25802.98	60.35	1.078	0.30 ( 0.30)	0.99	19084.6	11000.00
5	27946.32	69.81	1.025	0.30 ( 0.30)	0.99	24568.2	12500.00
6	28196.63	70.87	1.019	0.30 ( 0.30)	0.99	25235.5	11330.00
7	28628.91	72.77	1.008	0.30 ( 0.30)	0.99	26490.6	11350.00
8	29156.91	76.06	0.990	0.30 ( 0.30)	0.99	28670.9	11300.00
9	29383.42	77.64	0.981	0.30 ( 0.30)	0.99	29664.8	11130.00
10	29424.60	83.67	0.947	0.30 ( 0.30)	0.99	32591.4	12300.00
11	29442.55	85.16	0.939	0.30 ( 0.30)	0.99	33396.6	12330.00
12	29439.82	87.54	0.926	0.30 ( 0.30)	0.99	34652.2	11620.00
13	29426.78	88.01	0.923	0.30 ( 0.30)	0.99	34886.8	12410.00
14	29360.88	89.66	0.914	0.30 ( 0.30)	0.99	35687.9	11600.00
15	29241.66	92.31	0.904	0.30 ( 0.30)	0.99	36852.0	12400.00
16	29040.22	95.53	0.892	0.30 ( 0.30)	0.99	38167.4	11111.00
17	28921.00	97.35	0.885	0.30 ( 0.30)	0.99	38826.0	12211.00
18	28895.27	97.80	0.884	0.30 ( 0.30)	0.99	38989.7	10500.00

19	28686.30	101.59	0.870	0.30 ( 0.30)	0.99	40253.5	12201.00
20	28631.67	102.27	0.867	0.30 ( 0.30)	0.99	40460.0	10710.00
21	28393.24	104.58	0.859	0.30 ( 0.30)	0.99	41067.2	10410.00
22	28308.43	105.84	0.854	0.30 ( 0.30)	0.99	41387.6	12111.00
23	28060.91	108.83	0.844	0.30 ( 0.30)	0.99	42146.6	12231.00
24	28018.20	109.31	0.842	0.30 ( 0.30)	0.99	42264.1	10700.00
25	27804.43	111.79	0.833	0.30 ( 0.30)	0.99	42838.6	12101.10
26	27710.28	112.87	0.829	0.30 ( 0.30)	0.99	43079.4	12261.00
27	27382.95	116.04	0.817	0.30 ( 0.30)	0.99	43699.3	10400.00
28	27049.59	118.66	0.808	0.30 ( 0.30)	0.99	44153.4	10200.00
29	26196.32	125.02	0.792	0.30 ( 0.30)	0.99	45145.7	12010.00
30	26191.70	125.05	0.792	0.30 ( 0.30)	0.99	45149.1	10300.00
31	25354.30	130.08	0.781	0.30 ( 0.30)	0.99	45408.3	10210.00
32	24834.19	133.91	0.773	0.30 ( 0.30)	0.99	45555.1	12000.00
33	22023.28	158.94	0.719	0.30 ( 0.30)	0.99	46168.0	10100.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2312.56	31.56	1.524	0.30 ( 0.30)	1.00	1913.7	40130.00
2	2318.12	33.44	1.487	0.30 ( 0.30)	1.00	2028.7	40100.00
3	2412.36	62.09	1.068	0.30 ( 0.30)	1.00	3324.8	11900.00
4	2409.06	62.26	1.067	0.30 ( 0.30)	1.00	3327.6	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22229.05	31.56	1.524	0.30 ( 0.30)	0.99	10902.5	40130.00
2	22780.82	33.44	1.487	0.30 ( 0.30)	0.99	11553.3	40100.00
3	24082.55	39.58	1.365	0.30 ( 0.30)	0.99	13580.4	11831.00
4	24557.65	41.75	1.330	0.30 ( 0.30)	0.99	14327.9	11801.00
5	27169.61	53.21	1.164	0.30 ( 0.30)	0.99	18858.4	11530.00
6	28209.64	60.35	1.078	0.30 ( 0.30)	0.99	22331.0	11000.00
7	28607.78	62.09	1.068	0.30 ( 0.30)	0.99	23413.4	11900.00
8	28643.17	62.26	1.067	0.30 ( 0.30)	0.99	23515.2	11910.00
9	30222.67	69.81	1.025	0.30 ( 0.30)	0.99	27895.8	12500.00
10	30454.41	70.87	1.019	0.30 ( 0.30)	0.99	28563.1	11330.00
11	30853.30	72.77	1.008	0.30 ( 0.30)	0.99	29818.2	11350.00
12	31323.67	76.06	0.990	0.30 ( 0.30)	0.99	31998.5	11300.00
13	31522.31	77.64	0.981	0.30 ( 0.30)	0.99	32992.4	11130.00
14	31457.60	83.67	0.947	0.30 ( 0.30)	0.99	35919.0	12300.00
15	31449.52	85.16	0.939	0.30 ( 0.30)	0.99	36724.3	12330.00
16	31404.98	87.54	0.926	0.30 ( 0.30)	0.99	37979.9	11620.00
17	31383.73	88.01	0.923	0.30 ( 0.30)	0.99	38214.4	12410.00
18	31288.81	89.66	0.914	0.30 ( 0.30)	0.99	39015.5	11600.00
19	31137.25	92.31	0.904	0.30 ( 0.30)	0.99	40179.6	12400.00
20	30899.19	95.53	0.892	0.30 ( 0.30)	0.99	41495.0	11111.00
21	30759.23	97.35	0.885	0.30 ( 0.30)	0.99	42153.6	12211.00
22	30728.38	97.80	0.884	0.30 ( 0.30)	0.99	42317.4	10500.00
23	30476.18	101.59	0.870	0.30 ( 0.30)	0.99	43581.2	12201.00
24	30413.79	102.27	0.867	0.30 ( 0.30)	0.99	43787.7	10710.00
25	30149.10	104.58	0.859	0.30 ( 0.30)	0.99	44394.9	10410.00
26	30049.92	105.84	0.854	0.30 ( 0.30)	0.99	44715.2	12111.00
27	29768.36	108.83	0.844	0.30 ( 0.30)	0.99	45474.2	12231.00
28	29720.11	109.31	0.842	0.30 ( 0.30)	0.99	45591.7	10700.00
29	29478.12	111.79	0.833	0.30 ( 0.30)	0.99	46166.3	12101.10

30	29371.65	112.87	0.829	0.30 ( 0.30)	0.99	46407.0	12261.00
31	29008.24	116.04	0.817	0.30 ( 0.30)	0.99	47026.9	10400.00
32	28644.99	118.66	0.808	0.30 ( 0.30)	0.99	47481.1	10200.00
33	27742.38	125.02	0.792	0.30 ( 0.30)	0.99	48473.4	12010.00
34	27737.54	125.05	0.792	0.30 ( 0.30)	0.99	48476.7	10300.00
35	26866.01	130.08	0.781	0.30 ( 0.30)	0.99	48735.9	10210.00
36	26319.85	133.91	0.773	0.30 ( 0.30)	0.99	48882.8	12000.00
37	23338.91	158.94	0.719	0.30 ( 0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 31522.31 Tc (MIN.) = 77.644  
EFFECTIVE AREA (ACRES) = 32992.41 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49495.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 49495.7 TC (MIN.) = 77.64  
EFFECTIVE AREA (ACRES) = 32992.41 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994  
PEAK FLOW RATE (CFS) = 31522.31

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22229.05	31.56	1.524	0.30 ( 0.30)	0.99	10902.5	40130.00
2	22780.82	33.44	1.487	0.30 ( 0.30)	0.99	11553.3	40100.00
3	24082.55	39.58	1.365	0.30 ( 0.30)	0.99	13580.4	11831.00
4	24557.65	41.75	1.330	0.30 ( 0.30)	0.99	14327.9	11801.00
5	27169.61	53.21	1.164	0.30 ( 0.30)	0.99	18858.4	11530.00
6	28209.64	60.35	1.078	0.30 ( 0.30)	0.99	22331.0	11000.00
7	28607.78	62.09	1.068	0.30 ( 0.30)	0.99	23413.4	11900.00
8	28643.17	62.26	1.067	0.30 ( 0.30)	0.99	23515.2	11910.00
9	30222.67	69.81	1.025	0.30 ( 0.30)	0.99	27895.8	12500.00
10	30454.41	70.87	1.019	0.30 ( 0.30)	0.99	28563.1	11330.00
11	30853.30	72.77	1.008	0.30 ( 0.30)	0.99	29818.2	11350.00
12	31323.67	76.06	0.990	0.30 ( 0.30)	0.99	31998.5	11300.00
13	31522.31	77.64	0.981	0.30 ( 0.30)	0.99	32992.4	11130.00
14	31457.60	83.67	0.947	0.30 ( 0.30)	0.99	35919.0	12300.00
15	31449.52	85.16	0.939	0.30 ( 0.30)	0.99	36724.3	12330.00
16	31404.98	87.54	0.926	0.30 ( 0.30)	0.99	37979.9	11620.00
17	31383.73	88.01	0.923	0.30 ( 0.30)	0.99	38214.4	12410.00
18	31288.81	89.66	0.914	0.30 ( 0.30)	0.99	39015.5	11600.00
19	31137.25	92.31	0.904	0.30 ( 0.30)	0.99	40179.6	12400.00
20	30899.19	95.53	0.892	0.30 ( 0.30)	0.99	41495.0	11111.00
21	30759.23	97.35	0.885	0.30 ( 0.30)	0.99	42153.6	12211.00
22	30728.38	97.80	0.884	0.30 ( 0.30)	0.99	42317.4	10500.00
23	30476.18	101.59	0.870	0.30 ( 0.30)	0.99	43581.2	12201.00
24	30413.79	102.27	0.867	0.30 ( 0.30)	0.99	43787.7	10710.00
25	30149.10	104.58	0.859	0.30 ( 0.30)	0.99	44394.9	10410.00
26	30049.92	105.84	0.854	0.30 ( 0.30)	0.99	44715.2	12111.00
27	29768.36	108.83	0.844	0.30 ( 0.30)	0.99	45474.2	12231.00
28	29720.11	109.31	0.842	0.30 ( 0.30)	0.99	45591.7	10700.00
29	29478.12	111.79	0.833	0.30 ( 0.30)	0.99	46166.3	12101.10
30	29371.65	112.87	0.829	0.30 ( 0.30)	0.99	46407.0	12261.00
31	29008.24	116.04	0.817	0.30 ( 0.30)	0.99	47026.9	10400.00
32	28644.99	118.66	0.808	0.30 ( 0.30)	0.99	47481.1	10200.00

33	27742.38	125.02	0.792	0.30	( 0.30)	0.99	48473.4	12010.00
34	27737.54	125.05	0.792	0.30	( 0.30)	0.99	48476.7	10300.00
35	26866.01	130.08	0.781	0.30	( 0.30)	0.99	48735.9	10210.00
36	26319.85	133.91	0.773	0.30	( 0.30)	0.99	48882.8	12000.00
37	23338.91	158.94	0.719	0.30	( 0.30)	0.99	49495.7	10100.00

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END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S26- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV26.DAT  
TIME/DATE OF STUDY: 11:43 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.986
- 2) 10.00; 3.244
- 3) 15.00; 2.468
- 4) 20.00; 2.035
- 5) 25.00; 1.773
- 6) 30.00; 1.553
- 7) 40.00; 1.354
- 8) 50.00; 1.201
- 9) 60.00; 1.077
- 10) 90.00; 0.909
- 11) 120.00; 0.800
- 12) 180.00; 0.670
- 13) 360.00; 0.498
- 14) 1200.00; 0.220

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

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

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV19.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22780.82	33.44	0.30 ( 0.30)	0.99	11553.3	40100.00
2	24557.65	41.75	0.30 ( 0.30)	0.99	14327.9	11801.00
3	27169.61	53.21	0.30 ( 0.30)	0.99	18858.4	11530.00
4	28643.17	62.26	0.30 ( 0.30)	0.99	23515.2	11910.00
5	30853.30	72.77	0.30 ( 0.30)	0.99	29818.2	11350.00
6	31522.31	77.64	0.30 ( 0.30)	0.99	32992.4	11130.00
7	31457.60	83.67	0.30 ( 0.30)	0.99	35919.0	12300.00
8	31404.98	87.54	0.30 ( 0.30)	0.99	37979.9	11620.00
9	31137.25	92.31	0.30 ( 0.30)	0.99	40179.6	12400.00
10	30899.19	95.53	0.30 ( 0.30)	0.99	41495.0	11111.00
11	30476.18	101.59	0.30 ( 0.30)	0.99	43581.2	12201.00
12	30149.10	104.58	0.30 ( 0.30)	0.99	44394.9	10410.00
13	29768.36	108.83	0.30 ( 0.30)	0.99	45474.2	12231.00
14	29478.12	111.79	0.30 ( 0.30)	0.99	46166.3	12101.10
15	29008.24	116.04	0.30 ( 0.30)	0.99	47026.9	10400.00
16	28644.99	118.66	0.30 ( 0.30)	0.99	47481.1	10200.00
17	27742.38	125.02	0.30 ( 0.30)	0.99	48473.4	12010.00
18	26866.01	130.08	0.30 ( 0.30)	0.99	48735.9	10210.00
19	26319.85	133.91	0.30 ( 0.30)	0.99	48882.8	12000.00
20	23338.91	158.94	0.30 ( 0.30)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22780.82	33.44	0.30 ( 0.30)	0.99	11553.3	40100.00
2	24557.65	41.75	0.30 ( 0.30)	0.99	14327.9	11801.00
3	27169.61	53.21	0.30 ( 0.30)	0.99	18858.4	11530.00
4	28643.17	62.26	0.30 ( 0.30)	0.99	23515.2	11910.00
5	30853.30	72.77	0.30 ( 0.30)	0.99	29818.2	11350.00
6	31522.31	77.64	0.30 ( 0.30)	0.99	32992.4	11130.00
7	31457.60	83.67	0.30 ( 0.30)	0.99	35919.0	12300.00
8	31404.98	87.54	0.30 ( 0.30)	0.99	37979.9	11620.00
9	31137.25	92.31	0.30 ( 0.30)	0.99	40179.6	12400.00
10	30899.19	95.53	0.30 ( 0.30)	0.99	41495.0	11111.00
11	30476.18	101.59	0.30 ( 0.30)	0.99	43581.2	12201.00
12	30149.10	104.58	0.30 ( 0.30)	0.99	44394.9	10410.00
13	29768.36	108.83	0.30 ( 0.30)	0.99	45474.2	12231.00



14	29478.12	111.79	0.30	( 0.30)	0.99	46166.3	12101.10
15	29008.24	116.04	0.30	( 0.30)	0.99	47026.9	10400.00
16	28644.99	118.66	0.30	( 0.30)	0.99	47481.1	10200.00
17	27742.38	125.02	0.30	( 0.30)	0.99	48473.4	12010.00
18	26866.01	130.08	0.30	( 0.30)	0.99	48735.9	10210.00
19	26319.85	133.91	0.30	( 0.30)	0.99	48882.8	12000.00
20	23338.91	158.94	0.30	( 0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

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FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 341.63 DOWNSTREAM (FEET) = 325.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1467.93 CHANNEL SLOPE = 0.0113  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 7.37

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.971

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.11	0.30	0.700	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 31527.14

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 18.07

AVERAGE FLOW DEPTH (FEET) = 7.37 TRAVEL TIME (MIN.) = 1.35

Tc (MIN.) = 79.00

SUBAREA AREA (ACRES) = 14.11 SUBAREA RUNOFF (CFS) = 9.66

EFFECTIVE AREA (ACRES) = 33006.52 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 49509.8 PEAK FLOW RATE (CFS) = 31522.31

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 7.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 7.37 FLOW VELOCITY (FEET/SEC.) = 18.07

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3025EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	87.91	16.79	0.30 ( 0.30)	0.98	48.4	600.00

TOTAL AREA (ACRES) = 48.4

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22780.82	34.95	1.454	0.30 ( 0.30)	0.99	11567.4	40100.00
2	24557.65	43.23	1.305	0.30 ( 0.30)	0.99	14342.0	11801.00
3	27169.61	54.63	1.144	0.30 ( 0.30)	0.99	18872.5	11530.00
4	28643.17	63.66	1.057	0.30 ( 0.30)	0.99	23529.3	11910.00
5	30853.30	74.14	0.998	0.30 ( 0.30)	0.99	29832.3	11350.00
6	31522.31	79.00	0.971	0.30 ( 0.30)	0.99	33006.5	11130.00
7	31457.60	85.03	0.937	0.30 ( 0.30)	0.99	35933.1	12300.00
8	31404.98	88.89	0.915	0.30 ( 0.30)	0.99	37994.0	11620.00
9	31137.25	93.67	0.896	0.30 ( 0.30)	0.99	40193.7	12400.00
10	30899.19	96.89	0.884	0.30 ( 0.30)	0.99	41509.1	11111.00
11	30476.18	102.96	0.862	0.30 ( 0.30)	0.99	43595.3	12201.00
12	30149.10	105.95	0.851	0.30 ( 0.30)	0.99	44409.0	10410.00
13	29768.36	110.21	0.836	0.30 ( 0.30)	0.99	45488.3	12231.00
14	29478.12	113.18	0.825	0.30 ( 0.30)	0.99	46180.4	12101.10
15	29008.24	117.43	0.809	0.30 ( 0.30)	0.99	47041.0	10400.00
16	28644.99	120.06	0.800	0.30 ( 0.30)	0.99	47495.2	10200.00
17	27742.38	126.43	0.786	0.30 ( 0.30)	0.99	48487.5	12010.00
18	26866.01	131.51	0.775	0.30 ( 0.30)	0.99	48750.0	10210.00
19	26319.85	135.35	0.767	0.30 ( 0.30)	0.99	48896.9	12000.00
20	23338.91	160.44	0.712	0.30 ( 0.30)	0.99	49509.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	87.91	16.79	2.313	0.30 ( 0.30)	0.98	48.4	600.00

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19152.72	16.79	2.313	0.30 ( 0.30)	0.99	5603.6	600.00
2	22831.32	34.95	1.454	0.30 ( 0.30)	0.99	11615.8	40100.00
3	24601.62	43.23	1.305	0.30 ( 0.30)	0.99	14390.4	11801.00
4	27206.56	54.63	1.144	0.30 ( 0.30)	0.99	18920.9	11530.00
5	28676.34	63.66	1.057	0.30 ( 0.30)	0.99	23577.7	11910.00
6	30883.91	74.14	0.998	0.30 ( 0.30)	0.99	29880.7	11350.00
7	31551.73	79.00	0.971	0.30 ( 0.30)	0.99	33054.9	11130.00
8	31485.55	85.03	0.937	0.30 ( 0.30)	0.99	35981.5	12300.00
9	31431.99	88.89	0.915	0.30 ( 0.30)	0.99	38042.4	11620.00
10	31163.41	93.67	0.896	0.30 ( 0.30)	0.99	40242.1	12400.00
11	30924.84	96.89	0.884	0.30 ( 0.30)	0.99	41557.5	11111.00
12	30500.87	102.96	0.862	0.30 ( 0.30)	0.99	43643.7	12201.00
13	30173.31	105.95	0.851	0.30 ( 0.30)	0.99	44457.4	10410.00
14	29791.90	110.21	0.836	0.30 ( 0.30)	0.99	45536.7	12231.00
15	29501.19	113.18	0.825	0.30 ( 0.30)	0.99	46228.8	12101.10
16	29030.64	117.43	0.809	0.30 ( 0.30)	0.99	47089.4	10400.00
17	28666.97	120.06	0.800	0.30 ( 0.30)	0.99	47543.6	10200.00
18	27763.76	126.43	0.786	0.30 ( 0.30)	0.99	48535.9	12010.00
19	26886.92	131.51	0.775	0.30 ( 0.30)	0.99	48798.4	10210.00
20	26340.39	135.35	0.767	0.30 ( 0.30)	0.99	48945.3	12000.00

21 23357.08 160.44 0.712 0.30( 0.30) 0.99 49558.2 10100.00  
TOTAL AREA (ACRES) = 49558.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 31551.73 Tc(MIN.) = 78.998  
EFFECTIVE AREA(ACRES) = 33054.92 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49558.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

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FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 325.00 DOWNSTREAM(FEET) = 313.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1377.46 CHANNEL SLOPE = 0.0087  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.95  
CHANNEL FLOW THRU SUBAREA(CFS) = 31551.73  
FLOW VELOCITY(FEET/SEC.) = 16.56 FLOW DEPTH(FEET) = 7.95  
TRAVEL TIME(MIN.) = 1.39 Tc(MIN.) = 80.38  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12602.00 = 101245.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 313.00 DOWNSTREAM(FEET) = 310.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 312.40 CHANNEL SLOPE = 0.0096  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.73  
CHANNEL FLOW THRU SUBAREA(CFS) = 31551.73  
FLOW VELOCITY(FEET/SEC.) = 17.10 FLOW DEPTH(FEET) = 7.73  
TRAVEL TIME(MIN.) = 0.30 Tc(MIN.) = 80.69  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

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FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4E25EVRL.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	450.06	9.31	0.30( 0.16)	0.52	148.6	800.00

2 405.04 12.87 0.30( 0.17) 0.57 168.1 818.00  
3 381.73 14.01 0.30( 0.17) 0.58 171.0 810.00  
TOTAL AREA (ACRES) = 171.0

\*\*\*\*\*

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19152.72	18.79	2.140	0.30( 0.30)	0.99	5603.6	600.00
2	22831.32	36.84	1.417	0.30( 0.30)	0.99	11615.8	40100.00
3	24601.62	45.06	1.277	0.30( 0.30)	0.99	14390.4	11801.00
4	27206.56	56.41	1.122	0.30( 0.30)	0.99	18920.9	11530.00
5	28676.34	65.40	1.047	0.30( 0.30)	0.99	23577.7	11910.00
6	30883.91	75.84	0.988	0.30( 0.30)	0.99	29880.7	11350.00
7	31551.73	80.69	0.961	0.30( 0.30)	0.99	33054.9	11130.00
8	31485.55	86.72	0.927	0.30( 0.30)	0.99	35981.5	12300.00
9	31431.99	90.59	0.907	0.30( 0.30)	0.99	38042.4	11620.00
10	31163.41	95.37	0.889	0.30( 0.30)	0.99	40242.1	12400.00
11	30924.84	98.59	0.878	0.30( 0.30)	0.99	41557.5	11111.00
12	30500.87	104.67	0.856	0.30( 0.30)	0.99	43643.7	12201.00
13	30173.31	107.67	0.845	0.30( 0.30)	0.99	44457.4	10410.00
14	29791.90	111.93	0.829	0.30( 0.30)	0.99	45536.7	12231.00
15	29501.19	114.90	0.819	0.30( 0.30)	0.99	46228.8	12101.10
16	29030.64	119.17	0.803	0.30( 0.30)	0.99	47089.4	10400.00
17	28666.97	121.81	0.796	0.30( 0.30)	0.99	47543.6	10200.00
18	27763.76	128.20	0.782	0.30( 0.30)	0.99	48535.9	12010.00
19	26886.92	133.29	0.771	0.30( 0.30)	0.99	48798.4	10210.00
20	26340.39	137.15	0.763	0.30( 0.30)	0.99	48945.3	12000.00
21	23357.08	162.31	0.708	0.30( 0.30)	0.99	49558.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	450.06	9.31	3.484	0.30( 0.16)	0.52	148.6	800.00
2	405.04	12.87	2.798	0.30( 0.17)	0.57	168.1	818.00
3	381.73	14.01	2.621	0.30( 0.17)	0.58	171.0	810.00

LONGEST FLOWPATH FROM NODE 810.00 TO NODE 12603.00 = 3814.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16867.21	9.31	3.484	0.30( 0.29)	0.97	2925.2	800.00
2	18216.26	12.87	2.798	0.30( 0.29)	0.98	4007.3	818.00
3	18398.35	14.01	2.621	0.30( 0.29)	0.98	4350.3	810.00
4	19459.38	18.79	2.140	0.30( 0.29)	0.98	5774.6	600.00
5	23025.21	36.84	1.417	0.30( 0.30)	0.99	11786.8	40100.00
6	24773.61	45.06	1.277	0.30( 0.30)	0.99	14561.4	11801.00
7	27354.38	56.41	1.122	0.30( 0.30)	0.99	19091.9	11530.00
8	28812.48	65.40	1.047	0.30( 0.30)	0.99	23748.7	11910.00
9	31010.93	75.84	0.988	0.30( 0.30)	0.99	30051.7	11350.00
10	31674.52	80.69	0.961	0.30( 0.30)	0.99	33225.9	11130.00
11	31603.07	86.72	0.927	0.30( 0.30)	0.99	36152.5	12300.00

12	31546.31	90.59	0.907	0.30	( 0.30)	0.99	38213.4	11620.00
13	31275.02	95.37	0.889	0.30	( 0.30)	0.99	40413.1	12400.00
14	31034.62	98.59	0.878	0.30	( 0.30)	0.99	41728.5	11111.00
15	30607.21	104.67	0.856	0.30	( 0.30)	0.99	43814.7	12201.00
16	30277.96	107.67	0.845	0.30	( 0.30)	0.99	44628.4	10410.00
17	29894.13	111.93	0.829	0.30	( 0.30)	0.99	45707.7	12231.00
18	29601.73	114.90	0.819	0.30	( 0.30)	0.99	46399.8	12101.10
19	29128.76	119.17	0.803	0.30	( 0.30)	0.99	47260.4	10400.00
20	28764.02	121.81	0.796	0.30	( 0.30)	0.99	47714.6	10200.00
21	27858.64	128.20	0.782	0.30	( 0.30)	0.99	48706.9	12010.00
22	26980.08	133.29	0.771	0.30	( 0.30)	0.99	48969.4	10210.00
23	26432.24	137.15	0.763	0.30	( 0.30)	0.99	49116.3	12000.00
24	23440.43	162.31	0.708	0.30	( 0.30)	0.99	49729.2	10100.00
TOTAL AREA (ACRES) =								49729.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 31674.52 Tc (MIN.) = 80.688  
EFFECTIVE AREA (ACRES) = 33225.92 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49729.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 80.69  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.961  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	12.00	0.30	1.000	66
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	1.40	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	26.90	0.30	1.000	65
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.60	0.30	0.900	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996					
SUBAREA AREA (ACRES) = 43.40 SUBAREA RUNOFF (CFS) = 25.87					
EFFECTIVE AREA (ACRES) = 33269.32 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49772.6 PEAK FLOW RATE (CFS) = 31674.52					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 80.69

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.961  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850					
SUBAREA AREA (ACRES) = 0.90 SUBAREA RUNOFF (CFS) = 0.57					
EFFECTIVE AREA (ACRES) = 33270.22 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49773.5 PEAK FLOW RATE (CFS) = 31674.52					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 80.69  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.961  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.40	0.30	0.900	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.00	0.30	0.900	56
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	9.00	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.974					
SUBAREA AREA (ACRES) = 12.20 SUBAREA RUNOFF (CFS) = 7.35					
EFFECTIVE AREA (ACRES) = 33282.42 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49785.7 PEAK FLOW RATE (CFS) = 31674.52					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 80.69  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.961  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	5.60	0.30	1.000	65
NATURAL FAIR COVER					

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"CHAPARRAL,NARROWLEAF"  B      0.10   0.30   1.000   72
NATURAL FAIR COVER
"CHAPARRAL,NARROWLEAF"  B      2.90   0.30   1.000   72
NATURAL FAIR COVER
"CHAPARRAL,NARROWLEAF"  B      0.70   0.30   1.000   72
NATURAL FAIR COVER
"OPEN BRUSH"            B      1.20   0.30   1.000   66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 10.80      SUBAREA RUNOFF(CFS) = 6.43
EFFECTIVE AREA(ACRES) = 33293.22  AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49796.5      PEAK FLOW RATE(CFS) = 31674.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc(MIN.) = 80.69
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.961
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"          B      2.10   0.30   1.000   66
NATURAL FAIR COVER
"OPEN BRUSH"          B      1.00   0.30   1.000   66
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B      0.80   0.30   1.000   63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B      0.20   0.30   1.000   63
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 4.10      SUBAREA RUNOFF(CFS) = 2.44
EFFECTIVE AREA(ACRES) = 33297.32  AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49800.6      PEAK FLOW RATE(CFS) = 31674.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12603.00 TO NODE 12604.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 310.00  DOWNSTREAM(FEET) = 307.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 459.69  CHANNEL SLOPE = 0.0065
GIVEN CHANNEL BASE(FEET) = 200.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000  MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.65
CHANNEL FLOW THRU SUBAREA(CFS) = 31674.52
FLOW VELOCITY(FEET/SEC.) = 15.06  FLOW DEPTH(FEET) = 8.65
TRAVEL TIME(MIN.) = 0.51  Tc(MIN.) = 81.20
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12604.00 = 102017.99 FEET.

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FLOW PROCESS FROM NODE 12604.00 TO NODE 12604.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc(MIN.) = 81.20
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.958
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      0.20   0.30   1.000   65
PUBLIC PARK            B      0.10   0.30   0.850   56
NATURAL FAIR COVER
"OPEN BRUSH"          B      0.90   0.30   1.000   66
NATURAL FAIR COVER
"OPEN BRUSH"          B      0.40   0.30   1.000   66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.991
SUBAREA AREA(ACRES) = 1.60      SUBAREA RUNOFF(CFS) = 0.95
EFFECTIVE AREA(ACRES) = 33298.92  AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 49802.2      PEAK FLOW RATE(CFS) = 31674.52
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12604.00 TO NODE 12605.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 307.00  DOWNSTREAM(FEET) = 305.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 427.54  CHANNEL SLOPE = 0.0047
GIVEN CHANNEL BASE(FEET) = 200.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000  MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.50
CHANNEL FLOW THRU SUBAREA(CFS) = 31674.52
FLOW VELOCITY(FEET/SEC.) = 13.47  FLOW DEPTH(FEET) = 9.50
TRAVEL TIME(MIN.) = 0.53  Tc(MIN.) = 81.73
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12605.00 = 102445.53 FEET.

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FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc(MIN.) = 81.73
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.955
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
RESIDENTIAL
".4 DWELLING/ACRE"    B      0.10   0.30   0.900   56
RESIDENTIAL
".4 DWELLING/ACRE"    B      1.30   0.30   0.900   56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B      1.90   0.30   1.000   79
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B      0.50   0.30   1.000   79

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PUBLIC PARK B 6.60 0.30 0.850 56  
PUBLIC PARK B 0.20 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891  
SUBAREA AREA(ACRES) = 10.60 SUBAREA RUNOFF(CFS) = 6.57  
EFFECTIVE AREA(ACRES) = 33309.52 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49812.8 PEAK FLOW RATE(CFS) = 31674.52  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 81.73  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.955  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 3.10 0.30 1.000 65  
RESIDENTIAL  
"5-7 DWELLINGS/ACRE" B 0.30 0.30 0.500 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969  
SUBAREA AREA(ACRES) = 4.80 SUBAREA RUNOFF(CFS) = 2.87  
EFFECTIVE AREA(ACRES) = 33314.32 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49817.6 PEAK FLOW RATE(CFS) = 31674.52  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.94  
CHANNEL FLOW THRU SUBAREA(CFS) = 31674.52  
FLOW VELOCITY(FEET/SEC.) = 16.64 FLOW DEPTH(FEET) = 7.94  
TRAVEL TIME(MIN.) = 2.16 Tc(MIN.) = 83.89  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

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FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F25EVRL.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:  
STREAM Q Tc Fp(Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(ACRES)	NODE
1	1022.51	10.03	0.30 ( 0.24)	0.79	378.2 940.00
2	1028.93	10.26	0.30 ( 0.24)	0.79	385.3 930.00
3	1050.12	13.05	0.30 ( 0.25)	0.82	462.2 910.00
4	1022.32	16.66	0.30 ( 0.25)	0.85	548.8 920.00
5	1000.98	17.37	0.30 ( 0.25)	0.85	553.8 950.00
6	974.93	17.97	0.30 ( 0.25)	0.85	553.8 900.00
TOTAL AREA(ACRES) =			553.8		

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FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16867.21	13.28	2.735	0.30 ( 0.29)	0.97	3013.6	800.00
2	18216.26	16.74	2.318	0.30 ( 0.29)	0.98	4095.7	818.00
3	18398.35	17.86	2.220	0.30 ( 0.29)	0.98	4438.7	810.00
4	19459.38	22.56	1.901	0.30 ( 0.29)	0.98	5863.0	600.00
5	23025.21	40.40	1.348	0.30 ( 0.30)	0.99	11875.2	40100.00
6	24773.61	48.54	1.223	0.30 ( 0.30)	0.99	14649.8	11801.00
7	27354.38	59.77	1.080	0.30 ( 0.30)	0.99	19180.3	11530.00
8	28812.48	68.71	1.028	0.30 ( 0.30)	0.99	23837.1	11910.00
9	31010.93	79.06	0.970	0.30 ( 0.30)	0.99	30140.1	11350.00
10	31674.52	83.89	0.943	0.30 ( 0.30)	0.99	33314.3	11130.00
11	31603.07	89.93	0.909	0.30 ( 0.30)	0.99	36240.9	12300.00
12	31546.31	93.79	0.895	0.30 ( 0.30)	0.99	38301.8	11620.00
13	31275.02	98.58	0.878	0.30 ( 0.30)	0.99	40501.5	12400.00
14	31034.62	101.81	0.866	0.30 ( 0.30)	0.99	41816.9	11111.00
15	30607.21	107.91	0.844	0.30 ( 0.30)	0.99	43903.1	12201.00
16	30277.96	110.92	0.833	0.30 ( 0.30)	0.99	44716.8	10410.00
17	29894.13	115.20	0.817	0.30 ( 0.30)	0.99	45796.1	12231.00
18	29601.73	118.18	0.807	0.30 ( 0.30)	0.99	46488.2	12101.10
19	29128.76	122.46	0.795	0.30 ( 0.30)	0.99	47348.8	10400.00
20	28764.02	125.11	0.789	0.30 ( 0.30)	0.99	47803.0	10200.00
21	27858.64	131.54	0.775	0.30 ( 0.30)	0.99	48795.3	12010.00
22	26980.08	136.67	0.764	0.30 ( 0.30)	0.99	49057.8	10210.00
23	26432.24	140.55	0.755	0.30 ( 0.30)	0.99	49204.7	12000.00
24	23440.43	165.85	0.701	0.30 ( 0.30)	0.99	49817.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1022.51	10.03	3.240	0.30 ( 0.24)	0.79	378.2	940.00
2	1028.93	10.26	3.204	0.30 ( 0.24)	0.79	385.3	930.00
3	1050.12	13.05	2.770	0.30 ( 0.25)	0.82	462.2	910.00
4	1022.32	16.66	2.324	0.30 ( 0.25)	0.85	548.8	920.00
5	1000.98	17.37	2.263	0.30 ( 0.25)	0.85	553.8	950.00
6	974.93	17.97	2.211	0.30 ( 0.25)	0.85	553.8	900.00

LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1	16387.75	10.03	3.240	0.30	( 0.28)	0.94	2653.6	940.00
2	16558.09	10.26	3.204	0.30	( 0.28)	0.94	2713.4	930.00
3	17868.66	13.05	2.770	0.30	( 0.28)	0.95	3425.0	910.00
4	17915.61	13.28	2.735	0.30	( 0.28)	0.95	3481.2	800.00
5	19210.18	16.66	2.324	0.30	( 0.29)	0.96	4621.8	920.00
6	19236.37	16.74	2.318	0.30	( 0.29)	0.96	4645.1	818.00
7	19319.09	17.37	2.263	0.30	( 0.29)	0.96	4841.4	950.00
8	19377.97	17.86	2.220	0.30	( 0.29)	0.96	4992.5	810.00
9	19397.93	17.97	2.211	0.30	( 0.29)	0.96	5025.6	900.00
10	20279.76	22.56	1.901	0.30	( 0.29)	0.97	6416.8	600.00
11	23570.05	40.40	1.348	0.30	( 0.29)	0.98	12429.0	40100.00
12	25256.38	48.54	1.223	0.30	( 0.29)	0.98	15203.6	11801.00
13	27765.64	59.77	1.080	0.30	( 0.30)	0.99	19734.1	11530.00
14	29198.02	68.71	1.028	0.30	( 0.30)	0.99	24390.9	11910.00
15	31367.57	79.06	0.970	0.30	( 0.30)	0.99	30693.9	11350.00
16	32017.69	83.89	0.943	0.30	( 0.30)	0.99	33868.1	11130.00
17	31929.39	89.93	0.909	0.30	( 0.30)	0.99	36794.7	12300.00
18	31865.55	93.79	0.895	0.30	( 0.30)	0.99	38855.6	11620.00
19	31585.59	98.58	0.878	0.30	( 0.30)	0.99	41055.3	12400.00
20	31339.34	101.81	0.866	0.30	( 0.30)	0.99	42370.7	11111.00
21	30900.89	107.91	0.844	0.30	( 0.30)	0.99	44456.9	12201.00
22	30566.19	110.92	0.833	0.30	( 0.30)	0.99	45270.6	10410.00
23	30174.62	115.20	0.817	0.30	( 0.30)	0.99	46349.9	12231.00
24	29876.82	118.18	0.807	0.30	( 0.30)	0.99	47042.0	12101.10
25	29397.89	122.46	0.795	0.30	( 0.30)	0.99	47902.6	10400.00
26	29030.28	125.11	0.789	0.30	( 0.30)	0.99	48356.8	10200.00
27	28117.96	131.54	0.775	0.30	( 0.30)	0.99	49349.1	12010.00
28	27233.86	136.67	0.764	0.30	( 0.30)	0.99	49611.6	10210.00
29	26681.84	140.55	0.755	0.30	( 0.30)	0.99	49758.5	12000.00
30	23662.70	165.85	0.701	0.30	( 0.30)	0.99	50371.4	10100.00

TOTAL AREA (ACRES) = 50371.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 32017.69 Tc(MIN.) = 83.889  
EFFECTIVE AREA(ACRES) = 33868.12 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
TOTAL AREA(ACRES) = 50371.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 83.89

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	11.90	0.30	1.000	66
PUBLIC PARK	B	0.80	0.30	0.850	56
AGRICULTURAL POOR COVER					

"ROW CROPS,CONTOURED" B 1.50 0.30 1.000 79  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.953  
SUBAREA AREA(ACRES) = 16.00 SUBAREA RUNOFF(CFS) = 9.46  
EFFECTIVE AREA(ACRES) = 33884.12 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 50387.4 PEAK FLOW RATE(CFS) = 32017.69  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 83.89

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.40	0.30	0.100	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	8.20	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	3.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978					
SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 9.71					
EFFECTIVE AREA(ACRES) = 33900.73 AREA-AVERAGED Fm(INCH/HR) = 0.30					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA(ACRES) = 50404.0 PEAK FLOW RATE(CFS) = 32017.69					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 83.89

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.943

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 1.04					
EFFECTIVE AREA(ACRES) = 33902.53 AREA-AVERAGED Fm(INCH/HR) = 0.30					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA(ACRES) = 50405.8 PEAK FLOW RATE(CFS) = 32017.69					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 50405.8 TC (MIN.) = 83.89  
 EFFECTIVE AREA (ACRES) = 33902.53 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.990  
 PEAK FLOW RATE (CFS) = 32017.69

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16387.75	10.03	3.240	0.30 ( 0.28)	0.94	2688.0	940.00
2	16558.09	10.26	3.204	0.30 ( 0.28)	0.94	2747.8	930.00
3	17868.66	13.05	2.770	0.30 ( 0.28)	0.95	3459.4	910.00
4	17915.61	13.28	2.735	0.30 ( 0.28)	0.95	3515.6	800.00
5	19210.18	16.66	2.324	0.30 ( 0.29)	0.96	4656.2	920.00
6	19236.37	16.74	2.318	0.30 ( 0.29)	0.96	4679.5	818.00
7	19319.09	17.37	2.263	0.30 ( 0.29)	0.96	4875.8	950.00
8	19377.97	17.86	2.220	0.30 ( 0.29)	0.96	5026.9	810.00
9	19397.93	17.97	2.211	0.30 ( 0.29)	0.96	5060.0	900.00
10	20279.76	22.56	1.901	0.30 ( 0.29)	0.97	6451.2	600.00
11	23570.05	40.40	1.348	0.30 ( 0.29)	0.98	12463.4	40100.00
12	25256.38	48.54	1.223	0.30 ( 0.29)	0.98	15238.0	11801.00
13	27765.64	59.77	1.080	0.30 ( 0.30)	0.99	19768.5	11530.00
14	29198.02	68.71	1.028	0.30 ( 0.30)	0.99	24425.3	11910.00
15	31367.57	79.06	0.970	0.30 ( 0.30)	0.99	30728.3	11350.00
16	32017.69	83.89	0.943	0.30 ( 0.30)	0.99	33902.5	11130.00
17	31929.39	89.93	0.909	0.30 ( 0.30)	0.99	36829.1	12300.00
18	31865.55	93.79	0.895	0.30 ( 0.30)	0.99	38890.0	11620.00
19	31585.59	98.58	0.878	0.30 ( 0.30)	0.99	41089.7	12400.00
20	31339.34	101.81	0.866	0.30 ( 0.30)	0.99	42405.1	11111.00
21	30900.89	107.91	0.844	0.30 ( 0.30)	0.99	44491.3	12201.00
22	30566.19	110.92	0.833	0.30 ( 0.30)	0.99	45305.0	10410.00
23	30174.62	115.20	0.817	0.30 ( 0.30)	0.99	46384.3	12231.00
24	29876.82	118.18	0.807	0.30 ( 0.30)	0.99	47076.4	12101.10
25	29397.89	122.46	0.795	0.30 ( 0.30)	0.99	47937.0	10400.00
26	29030.28	125.11	0.789	0.30 ( 0.30)	0.99	48391.2	10200.00
27	28117.96	131.54	0.775	0.30 ( 0.30)	0.99	49383.5	12010.00
28	27233.86	136.67	0.764	0.30 ( 0.30)	0.99	49646.0	10210.00
29	26681.84	140.55	0.755	0.30 ( 0.30)	0.99	49792.9	12000.00
30	23662.70	165.85	0.701	0.30 ( 0.30)	0.99	50405.8	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S27- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV27.DAT  
TIME/DATE OF STUDY: 11:43 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.947
- 2) 10.00; 3.222
- 3) 15.00; 2.455
- 4) 20.00; 2.027
- 5) 25.00; 1.766
- 6) 30.00; 1.548
- 7) 40.00; 1.349
- 8) 50.00; 1.196
- 9) 60.00; 1.072
- 10) 90.00; 0.904
- 11) 120.00; 0.794
- 12) 180.00; 0.664
- 13) 360.00; 0.492
- 14) 1200.00; 0.217

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RU25EV26.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17915.61	13.28	0.30 ( 0.28)	0.95	3515.6	800.00
2	19397.93	17.97	0.30 ( 0.29)	0.96	5060.0	900.00
3	20279.76	22.56	0.30 ( 0.29)	0.97	6451.2	600.00
4	23570.05	40.40	0.30 ( 0.29)	0.98	12463.4	40100.00
5	25256.38	48.54	0.30 ( 0.29)	0.98	15238.0	11801.00
6	27765.64	59.77	0.30 ( 0.30)	0.99	19768.5	11530.00
7	29198.02	68.71	0.30 ( 0.30)	0.99	24425.3	11910.00
8	31367.57	79.06	0.30 ( 0.30)	0.99	30728.3	11350.00
9	32017.69	83.89	0.30 ( 0.30)	0.99	33902.5	11130.00
10	31929.39	89.93	0.30 ( 0.30)	0.99	36829.1	12300.00
11	31865.55	93.79	0.30 ( 0.30)	0.99	38890.0	11620.00
12	31585.59	98.58	0.30 ( 0.30)	0.99	41089.7	12400.00
13	30900.89	107.91	0.30 ( 0.30)	0.99	44491.3	12201.00
14	30566.19	110.92	0.30 ( 0.30)	0.99	45305.0	10410.00
15	30174.62	115.20	0.30 ( 0.30)	0.99	46384.3	12231.00
16	29397.89	122.46	0.30 ( 0.30)	0.99	47937.0	10400.00
17	28117.96	131.54	0.30 ( 0.30)	0.99	49383.5	12010.00
18	27233.86	136.67	0.30 ( 0.30)	0.99	49646.0	10210.00
19	26681.84	140.55	0.30 ( 0.30)	0.99	49792.9	12000.00
20	23662.70	165.85	0.30 ( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =						50405.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17915.61	13.28	0.30 ( 0.28)	0.95	3515.6	800.00
2	19397.93	17.97	0.30 ( 0.29)	0.96	5060.0	900.00
3	20279.76	22.56	0.30 ( 0.29)	0.97	6451.2	600.00
4	23570.05	40.40	0.30 ( 0.29)	0.98	12463.4	40100.00
5	25256.38	48.54	0.30 ( 0.29)	0.98	15238.0	11801.00
6	27765.64	59.77	0.30 ( 0.30)	0.99	19768.5	11530.00
7	29198.02	68.71	0.30 ( 0.30)	0.99	24425.3	11910.00
8	31367.57	79.06	0.30 ( 0.30)	0.99	30728.3	11350.00
9	32017.69	83.89	0.30 ( 0.30)	0.99	33902.5	11130.00
10	31929.39	89.93	0.30 ( 0.30)	0.99	36829.1	12300.00
11	31865.55	93.79	0.30 ( 0.30)	0.99	38890.0	11620.00
12	31585.59	98.58	0.30 ( 0.30)	0.99	41089.7	12400.00
13	30900.89	107.91	0.30 ( 0.30)	0.99	44491.3	12201.00



14	30566.19	110.92	0.30	( 0.30)	0.99	45305.0	10410.00	
15	30174.62	115.20	0.30	( 0.30)	0.99	46384.3	12231.00	
16	29397.89	122.46	0.30	( 0.30)	0.99	47937.0	10400.00	
17	28117.96	131.54	0.30	( 0.30)	0.99	49383.5	12010.00	
18	27233.86	136.67	0.30	( 0.30)	0.99	49646.0	10210.00	
19	26681.84	140.55	0.30	( 0.30)	0.99	49792.9	12000.00	
20	23662.70	165.85	0.30	( 0.30)	0.99	50405.8	10100.00	
TOTAL AREA (ACRES) =		50405.8						

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 286.00 DOWNSTREAM(FEET) = 276.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.19 CHANNEL SLOPE = 0.0079  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.23

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.931

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	7.55	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32020.75

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.14

AVERAGE FLOW DEPTH(FEET) = 8.23 TRAVEL TIME(MIN.) = 1.30

Tc(MIN.) = 85.19

SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 6.12

EFFECTIVE AREA(ACRES) = 33910.08 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50413.3 PEAK FLOW RATE(CFS) = 32017.69

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.23 FLOW VELOCITY(FEET/SEC.) = 16.13

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 105865.19 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 85.19

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.931

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56

NATURAL FAIR COVER

"WOODLAND,GRASS" B 3.40 0.30 1.000 65

RESIDENTIAL

"5-7 DWELLINGS/ACRE"	B	0.40	0.30	0.500	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	23.00	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
NATURAL FAIR COVER					
"GRASS"	B	0.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.989

SUBAREA AREA(ACRES) = 31.40 SUBAREA RUNOFF(CFS) = 17.92

EFFECTIVE AREA(ACRES) = 33941.48 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50444.7 PEAK FLOW RATE(CFS) = 32017.69

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 85.19

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.931

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 0.97

EFFECTIVE AREA(ACRES) = 33943.18 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50446.4 PEAK FLOW RATE(CFS) = 32017.69

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 276.00 DOWNSTREAM(FEET) = 275.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 147.65 CHANNEL SLOPE = 0.0068

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.61

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.930

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	1.49	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32018.14

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.30

AVERAGE FLOW DEPTH(FEET) = 8.61 TRAVEL TIME(MIN.) = 0.16

Tc(MIN.) = 85.35

SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 0.91

EFFECTIVE AREA(ACRES) = 33944.66 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50447.9 PEAK FLOW RATE(CFS) = 32017.69  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 8.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 8.61 FLOW VELOCITY(FEET/SEC.) = 15.30  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 85.35  
 RAINFALL INTENSITY(INCH/HR) = 0.93  
 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99  
 EFFECTIVE STREAM AREA(ACRES) = 33944.66  
 TOTAL STREAM AREA(ACRES) = 50447.93  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 32017.69

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12710.00 TO NODE 12711.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 943.56  
 ELEVATION DATA: UPSTREAM(FEET) = 940.78 DOWNSTREAM(FEET) = 657.79

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.910  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.622  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"GRASS"	B	6.56	0.30	1.000	69	13.91

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 13.71  
 TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 13.71

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12711.00 TO NODE 12712.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 657.79 DOWNSTREAM(FEET) = 585.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 766.00 CHANNEL SLOPE = 0.0942

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.68  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.339  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	26.94	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38.51  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.23  
 AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 2.44  
 Tc(MIN.) = 16.35

SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 49.45  
 EFFECTIVE AREA(ACRES) = 33.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 33.5 PEAK FLOW RATE(CFS) = 61.49  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.86 FLOW VELOCITY(FEET/SEC.) = 6.12  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12712.00 = 1709.56 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12712.00 TO NODE 12713.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 585.63 DOWNSTREAM(FEET) = 463.75  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1025.79 CHANNEL SLOPE = 0.1188  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.90  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.133

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	14.73	0.30	0.100	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 75.43  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.07  
 AVERAGE FLOW DEPTH(FEET) = 0.90 TRAVEL TIME(MIN.) = 2.42  
 Tc(MIN.) = 18.77

SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 27.87  
 EFFECTIVE AREA(ACRES) = 48.23 AREA-AVERAGED Fm(INCH/HR) = 0.22  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA(ACRES) = 48.2 PEAK FLOW RATE(CFS) = 83.12  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.95 FLOW VELOCITY(FEET/SEC.) = 7.35  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12713.00 = 2735.35 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12713.00 TO NODE 12714.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 463.75 DOWNSTREAM(FEET) = 360.30  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1148.54 CHANNEL SLOPE = 0.0901  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.57  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.973

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	105.64	0.30	0.100	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 175.50

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.46

AVERAGE FLOW DEPTH(FEET) = 1.58 TRAVEL TIME(MIN.) = 2.26

Tc(MIN.) = 21.03

SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 184.76

EFFECTIVE AREA(ACRES) = 153.87 AREA-AVERAGED Fm(INCH/HR) = 0.09

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

TOTAL AREA(ACRES) = 153.9 PEAK FLOW RATE(CFS) = 260.97

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.96 FLOW VELOCITY(FEET/SEC.) = 9.54

LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12714.00 = 3883.89 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12714.00 TO NODE 12720.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 360.30 DOWNSTREAM(FEET) = 275.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1314.99 CHANNEL SLOPE = 0.0649  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.58  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.851

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	127.13	0.30	0.100	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 365.19

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.37

AVERAGE FLOW DEPTH(FEET) = 2.57 TRAVEL TIME(MIN.) = 2.34

Tc(MIN.) = 23.37  
SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 208.37  
EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.06  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.21  
TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 452.43  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.88 FLOW VELOCITY(FEET/SEC.) = 9.96

LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1

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>>>>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.) = 23.37

RAINFALL INTENSITY(INCH/HR) = 1.85

AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.21

EFFECTIVE STREAM AREA(ACRES) = 281.00

TOTAL STREAM AREA(ACRES) = 281.00

PEAK FLOW RATE(CFS) AT CONFLUENCE = 452.43

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17915.61	15.06	2.450	0.30( 0.28)	0.95	3557.7	800.00
1	19397.93	19.70	2.052	0.30( 0.29)	0.96	5102.2	900.00
1	20279.76	24.27	1.804	0.30( 0.29)	0.97	6493.3	600.00
1	23570.05	42.02	1.318	0.30( 0.29)	0.98	12505.6	40100.00
1	25256.38	50.12	1.194	0.30( 0.29)	0.98	15280.1	11801.00
1	27765.64	61.30	1.065	0.30( 0.30)	0.99	19810.7	11530.00
1	29198.02	70.21	1.015	0.30( 0.30)	0.99	24467.5	11910.00
1	31367.57	80.54	0.957	0.30( 0.30)	0.99	30770.4	11350.00
1	32017.69	85.35	0.930	0.30( 0.30)	0.99	33944.7	11130.00
1	31929.39	91.39	0.899	0.30( 0.30)	0.99	36871.2	12300.00
1	31865.55	95.26	0.885	0.30( 0.30)	0.99	38932.1	11620.00
1	31585.59	100.05	0.867	0.30( 0.30)	0.99	41131.8	12400.00
1	30900.89	109.39	0.833	0.30( 0.30)	0.99	44533.4	12201.00
1	30566.19	112.40	0.822	0.30( 0.30)	0.99	45347.1	10410.00
1	30174.62	116.69	0.806	0.30( 0.30)	0.99	46426.4	12231.00
1	29397.89	123.97	0.785	0.30( 0.30)	0.99	47979.2	10400.00
1	28117.96	133.07	0.766	0.30( 0.30)	0.99	49425.6	12010.00
1	27233.86	138.21	0.755	0.30( 0.30)	0.99	49688.2	10210.00
1	26681.84	142.10	0.746	0.30( 0.30)	0.99	49835.0	12000.00
1	23662.70	167.47	0.691	0.30( 0.30)	0.99	50447.9	10100.00
2	452.43	23.37	1.851	0.30( 0.06)	0.21	281.0	12710.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18304.73	15.06	2.450	0.30 ( 0.27)	0.91	3738.8	800.00
2	19822.30	19.70	2.052	0.30 ( 0.28)	0.93	5339.1	900.00
3	20557.98	23.37	1.851	0.30 ( 0.28)	0.93	6499.5	12710.00
4	20720.28	24.27	1.804	0.30 ( 0.28)	0.94	6774.3	600.00
5	23887.66	42.02	1.318	0.30 ( 0.29)	0.96	12786.6	40100.00
6	25542.73	50.12	1.194	0.30 ( 0.29)	0.97	15561.1	11801.00
7	28019.18	61.30	1.065	0.30 ( 0.29)	0.97	20091.7	11530.00
8	29438.94	70.21	1.015	0.30 ( 0.29)	0.98	24748.5	11910.00
9	31593.87	80.54	0.957	0.30 ( 0.29)	0.98	31051.4	11350.00
10	32237.17	85.35	0.930	0.30 ( 0.29)	0.98	34225.7	11130.00
11	32141.00	91.39	0.899	0.30 ( 0.30)	0.98	37152.2	12300.00
12	32073.57	95.26	0.885	0.30 ( 0.30)	0.98	39213.1	11620.00
13	31789.16	100.05	0.867	0.30 ( 0.30)	0.98	41412.8	12400.00
14	31095.80	109.39	0.833	0.30 ( 0.30)	0.98	44814.4	12201.00
15	30758.31	112.40	0.822	0.30 ( 0.30)	0.98	45628.1	10410.00
16	30362.76	116.69	0.806	0.30 ( 0.30)	0.98	46707.4	12231.00
17	29580.79	123.97	0.785	0.30 ( 0.30)	0.98	48260.2	10400.00
18	28295.88	133.07	0.766	0.30 ( 0.30)	0.98	49706.6	12010.00
19	27408.96	138.21	0.755	0.30 ( 0.30)	0.98	49969.2	10210.00
20	26854.80	142.10	0.746	0.30 ( 0.30)	0.98	50116.0	12000.00
21	23821.76	167.47	0.691	0.30 ( 0.30)	0.98	50728.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 32237.17 Tc(MIN.) = 85.35  
 EFFECTIVE AREA(ACRES) = 34225.66 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50728.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

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FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 85.35  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.930  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.20	0.30	0.500	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.80	0.30	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.964  
 SUBAREA AREA(ACRES) = 4.50 SUBAREA RUNOFF(CFS) = 2.59  
 EFFECTIVE AREA(ACRES) = 34230.16 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50733.4 PEAK FLOW RATE(CFS) = 32237.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 8.80  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.913  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	62.15	0.30	0.100	56

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32261.88  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.03  
 AVERAGE FLOW DEPTH(FEET) = 8.80 TRAVEL TIME(MIN.) = 2.96  
 Tc(MIN.) = 88.31  
 SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 49.42  
 EFFECTIVE AREA(ACRES) = 34292.31 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50795.6 PEAK FLOW RATE(CFS) = 32237.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 8.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.79 FLOW VELOCITY(FEET/SEC.) = 15.03  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 88.31  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.913  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.10	0.30	0.100	56
NATURAL FAIR COVER					
"MEADOWS"	B	0.30	0.30	1.000	70
NATURAL FAIR COVER					
"OPEN BRUSH"	B	17.90	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
PUBLIC PARK	B	0.30	0.30	0.850	56
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.993  
 SUBAREA AREA(ACRES) = 19.50 SUBAREA RUNOFF(CFS) = 10.80  
 EFFECTIVE AREA(ACRES) = 34311.81 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 50815.1 PEAK FLOW RATE (CFS) = 32237.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 88.31

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.913

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.90	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.30	0.30	0.900	56
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960

SUBAREA AREA (ACRES) = 3.50 SUBAREA RUNOFF (CFS) = 1.97

EFFECTIVE AREA (ACRES) = 34315.31 AREA-AVERAGED Fm (INCH/HR) = 0.29

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

TOTAL AREA (ACRES) = 50818.6 PEAK FLOW RATE (CFS) = 32237.17

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3D25EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	756.73	19.51	0.30 (0.14)	0.48	352.7	413.00
2	752.79	26.15	0.30 (0.14)	0.48	431.9	430.00
3	720.59	27.88	0.30 (0.14)	0.48	439.5	400.00
TOTAL AREA (ACRES) =						439.5

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18304.73	18.64	2.144	0.30 (0.27)	0.90	3828.4	800.00

2	19822.30	23.19	1.861	0.30 (0.28)	0.92	5428.8	900.00
3	20557.98	26.81	1.687	0.30 (0.28)	0.93	6589.2	12710.00
4	20720.28	27.70	1.648	0.30 (0.28)	0.93	6864.0	600.00
5	23887.66	45.29	1.268	0.30 (0.29)	0.96	12876.2	40100.00
6	25542.73	53.32	1.155	0.30 (0.29)	0.97	15650.8	11801.00
7	28019.18	64.41	1.047	0.30 (0.29)	0.97	20181.3	11530.00
8	29438.94	73.27	0.998	0.30 (0.29)	0.98	24838.1	11910.00
9	31593.87	83.52	0.940	0.30 (0.29)	0.98	31141.1	11350.00
10	32237.17	88.31	0.913	0.30 (0.29)	0.98	34315.3	11130.00
11	32141.00	94.35	0.888	0.30 (0.29)	0.98	37241.9	12300.00
12	32073.57	98.22	0.874	0.30 (0.29)	0.98	39302.8	11620.00
13	31789.16	103.03	0.856	0.30 (0.29)	0.98	41502.5	12400.00
14	31095.80	112.38	0.822	0.30 (0.29)	0.98	44904.1	12201.00
15	30758.31	115.41	0.811	0.30 (0.29)	0.98	45717.8	10410.00
16	30362.76	119.71	0.795	0.30 (0.29)	0.98	46797.1	12231.00
17	29580.79	127.01	0.779	0.30 (0.29)	0.98	48349.8	10400.00
18	28295.88	136.16	0.759	0.30 (0.29)	0.98	49796.3	12010.00
19	27408.96	141.34	0.748	0.30 (0.30)	0.98	50058.8	10210.00
20	26854.80	145.25	0.739	0.30 (0.30)	0.98	50205.6	12000.00
21	23821.76	170.75	0.684	0.30 (0.30)	0.98	50818.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	756.73	19.51	2.069	0.30 (0.14)	0.48	352.7	413.00
2	752.79	26.15	1.716	0.30 (0.14)	0.48	431.9	430.00
3	720.59	27.88	1.640	0.30 (0.14)	0.48	439.5	400.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 12720.50 = 11352.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19055.63	18.64	2.144	0.30 (0.26)	0.87	4165.3	800.00
2	19353.74	19.51	2.069	0.30 (0.26)	0.87	4489.3	413.00
3	20576.85	23.19	1.861	0.30 (0.27)	0.89	5825.3	900.00
4	21177.00	26.15	1.716	0.30 (0.27)	0.90	6810.0	430.00
5	21298.52	26.81	1.687	0.30 (0.27)	0.90	7023.9	12710.00
6	21444.21	27.70	1.648	0.30 (0.27)	0.90	7302.7	600.00
7	21473.27	27.88	1.640	0.30 (0.27)	0.90	7365.0	400.00
8	24429.00	45.29	1.268	0.30 (0.28)	0.94	13315.7	40100.00
9	26029.57	53.32	1.155	0.30 (0.29)	0.95	16090.3	11801.00
10	28454.28	64.41	1.047	0.30 (0.29)	0.96	20620.8	11530.00
11	29850.15	73.27	0.998	0.30 (0.29)	0.97	25277.6	11910.00
12	31977.45	83.52	0.940	0.30 (0.29)	0.97	31580.6	11350.00
13	32607.82	88.31	0.913	0.30 (0.29)	0.98	34754.8	11130.00
14	32499.42	94.35	0.888	0.30 (0.29)	0.98	37681.4	12300.00
15	32425.16	98.22	0.874	0.30 (0.29)	0.98	39742.3	11620.00
16	32132.27	103.03	0.856	0.30 (0.29)	0.98	41942.0	12400.00
17	31422.39	112.38	0.822	0.30 (0.29)	0.98	45343.6	12201.00
18	31079.56	115.41	0.811	0.30 (0.29)	0.98	46157.2	10410.00
19	30676.43	119.71	0.795	0.30 (0.29)	0.98	47236.6	12231.00
20	29886.63	127.01	0.779	0.30 (0.29)	0.98	48789.3	10400.00
21	28592.17	136.16	0.759	0.30 (0.29)	0.98	50235.8	12010.00
22	27699.85	141.34	0.748	0.30 (0.29)	0.98	50498.3	10210.00
23	27141.61	145.25	0.739	0.30 (0.29)	0.98	50645.1	12000.00
24	24081.98	170.75	0.684	0.30 (0.29)	0.98	51258.1	10100.00

TOTAL AREA (ACRES) = 51258.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 32607.82 Tc(MIN.) = 88.312  
 EFFECTIVE AREA(ACRES) = 34754.81 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA(ACRES) = 51258.1  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 256.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 438.77 CHANNEL SLOPE = 0.0046  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.73  
 CHANNEL FLOW THRU SUBAREA(CFS) = 32607.82  
 FLOW VELOCITY(FEET/SEC.) = 13.47 FLOW DEPTH(FEET) = 9.73  
 TRAVEL TIME(MIN.) = 0.54 Tc(MIN.) = 88.85  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12721.00 TO NODE 12722.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 256.00 DOWNSTREAM(FEET) = 255.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 830.42 CHANNEL SLOPE = 0.0012  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 14.10  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.902  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	11.24	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32612.23  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.55  
 AVERAGE FLOW DEPTH(FEET) = 14.10 TRAVEL TIME(MIN.) = 1.62  
 Tc(MIN.) = 90.47  
 SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 8.82  
 EFFECTIVE AREA(ACRES) = 34766.05 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51269.3 PEAK FLOW RATE(CFS) = 32607.82  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 14.10  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 14.10 FLOW VELOCITY(FEET/SEC.) = 8.55  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

=====

MAINLINE Tc(MIN.) = 90.47  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.902  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	2.10	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "MEADOWS"	B	3.60	0.30	1.000	70
NATURAL FAIR COVER "OPEN BRUSH"	B	4.10	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 5.37  
 EFFECTIVE AREA(ACRES) = 34775.95 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51279.2 PEAK FLOW RATE(CFS) = 32607.82  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

=====

MAINLINE Tc(MIN.) = 90.47  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.902  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	1.90	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977  
 SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 1.43  
 EFFECTIVE AREA(ACRES) = 34778.55 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51281.8 PEAK FLOW RATE(CFS) = 32607.82  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10
CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.68
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.899

Subarea Loss Rate Data (AMC II) table with columns: Development Type/Land Use, SCS Soil Group, Area (Acres), Fp (Inch/HR), Ap (Decimal), SCS CN. Rows include Commercial, Grass, Woodland, Grass.

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.925
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32612.83
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.57
AVERAGE FLOW DEPTH(FEET) = 9.68 TRAVEL TIME (MIN.) = 0.77
Tc (MIN.) = 91.24
SUBAREA AREA (ACRES) = 17.90 SUBAREA RUNOFF (CFS) = 10.02
EFFECTIVE AREA (ACRES) = 34796.45 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 51299.7 PEAK FLOW RATE (CFS) = 32607.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 9.68 FLOW VELOCITY(FEET/SEC.) = 13.56
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 91.24
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.899
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 4.70 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 6.70 0.30 1.000 66

NATURAL FAIR COVER
"OPEN BRUSH" B 12.00 0.30 1.000 66
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.80 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 20.20 0.30 1.000 63
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 44.40 SUBAREA RUNOFF (CFS) = 23.95
EFFECTIVE AREA (ACRES) = 34840.85 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 51344.1 PEAK FLOW RATE (CFS) = 32607.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION (MIN.) = 91.24
RAINFALL INTENSITY (INCH/HR) = 0.90
AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA (ACRES) = 34840.85
TOTAL STREAM AREA (ACRES) = 51344.12
PEAK FLOW RATE (CFS) AT CONFLUENCE = 32607.82

\*\*\*\*\*
FLOW PROCESS FROM NODE 12730.00 TO NODE 12731.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)]\*\*0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.823
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 2.636

SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 6.33 0.30 1.000 63 13.82
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 13.31
TOTAL AREA (ACRES) = 6.33 PEAK FLOW RATE (CFS) = 13.31

\*\*\*\*\*
FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.87  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 2.269

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 34.62 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 48.23  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.84  
AVERAGE FLOW DEPTH(FEET) = 0.85 TRAVEL TIME(MIN.) = 3.35  
Tc(MIN.) = 17.17  
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 69.77  
EFFECTIVE AREA(ACRES) = 40.95 AREA-AVERAGED Fm(INCH/HR) = 0.07  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.24  
TOTAL AREA(ACRES) = 40.9 PEAK FLOW RATE(CFS) = 80.99  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.15  
  
END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.15 FLOW VELOCITY(FEET/SEC.) = 5.74  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.60  
\* 25 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  
COMMERCIAL B 59.52 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 134.37  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.57  
AVERAGE FLOW DEPTH(FEET) = 1.56 TRAVEL TIME(MIN.) = 2.93  
Tc(MIN.) = 20.10  
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 106.68  
EFFECTIVE AREA(ACRES) = 100.47 AREA-AVERAGED Fm(INCH/HR) = 0.05  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.16  
TOTAL AREA(ACRES) = 100.5 PEAK FLOW RATE(CFS) = 178.54  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.83 FLOW VELOCITY(FEET/SEC.) = 7.16  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12733.00 = 2689.86 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12733.00 TO NODE 12734.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 431.00 DOWNSTREAM(FEET) = 367.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1654.48 CHANNEL SLOPE = 0.0386  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.34  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.810

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 64.05 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 229.90  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.82  
AVERAGE FLOW DEPTH(FEET) = 2.31 TRAVEL TIME(MIN.) = 4.04  
Tc(MIN.) = 24.15  
SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 102.64  
EFFECTIVE AREA(ACRES) = 164.52 AREA-AVERAGED Fm(INCH/HR) = 0.04  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
TOTAL AREA(ACRES) = 164.5 PEAK FLOW RATE(CFS) = 262.09  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 2.47 FLOW VELOCITY(FEET/SEC.) = 7.08  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12734.00 = 4344.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12734.00 TO NODE 12740.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 367.11 DOWNSTREAM(FEET) = 252.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1880.98 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.28  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.643

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 26.02 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 280.98  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.51



AVERAGE FLOW DEPTH (FEET) = 2.27 TRAVEL TIME (MIN.) = 3.68  
 Tc (MIN.) = 27.83  
 SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 37.76  
 EFFECTIVE AREA (ACRES) = 190.54 AREA-AVERAGED Fm (INCH/HR) = 0.04  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
 TOTAL AREA (ACRES) = 190.5 PEAK FLOW RATE (CFS) = 274.99  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.25 FLOW VELOCITY (FEET/SEC.) = 8.45  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 27.83  
 RAINFALL INTENSITY (INCH/HR) = 1.64  
 AREA-AVERAGED Fm (INCH/HR) = 0.04  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.13  
 EFFECTIVE STREAM AREA (ACRES) = 190.54  
 TOTAL STREAM AREA (ACRES) = 190.54  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 274.99

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19055.63	22.12	1.916	0.30 ( 0.26)	0.87	4251.3	800.00
1	19353.74	22.98	1.872	0.30 ( 0.26)	0.87	4575.4	413.00
1	20576.85	26.58	1.697	0.30 ( 0.27)	0.89	5911.3	900.00
1	21177.00	29.51	1.569	0.30 ( 0.27)	0.90	6896.1	430.00
1	21298.52	30.17	1.545	0.30 ( 0.27)	0.90	7110.0	12710.00
1	21444.21	31.05	1.527	0.30 ( 0.27)	0.90	7388.7	600.00
1	21473.27	31.23	1.524	0.30 ( 0.27)	0.90	7451.0	400.00
1	24429.00	48.51	1.219	0.30 ( 0.28)	0.94	13401.8	40100.00
1	26029.57	56.47	1.116	0.30 ( 0.29)	0.95	16176.3	11801.00
1	28454.28	67.46	1.030	0.30 ( 0.29)	0.96	20706.9	11530.00
1	29850.15	76.28	0.981	0.30 ( 0.29)	0.97	25363.7	11910.00
1	31977.45	86.46	0.924	0.30 ( 0.29)	0.97	31666.6	11350.00
1	32607.82	91.24	0.899	0.30 ( 0.29)	0.97	34840.8	11130.00
1	32499.42	97.28	0.877	0.30 ( 0.29)	0.98	37767.4	12300.00
1	32425.16	101.16	0.863	0.30 ( 0.29)	0.98	39828.3	11620.00
1	32132.27	105.97	0.845	0.30 ( 0.29)	0.98	42028.0	12400.00
1	31422.39	115.35	0.811	0.30 ( 0.29)	0.98	45429.6	12201.00
1	31079.56	118.38	0.800	0.30 ( 0.29)	0.98	46243.3	10410.00
1	30676.43	122.69	0.788	0.30 ( 0.29)	0.98	47322.6	12231.00
1	29886.63	130.02	0.772	0.30 ( 0.29)	0.98	48875.4	10400.00
1	28592.17	139.21	0.752	0.30 ( 0.29)	0.98	50321.8	12010.00
1	27699.85	144.42	0.741	0.30 ( 0.29)	0.98	50584.4	10210.00
1	27141.61	148.35	0.733	0.30 ( 0.29)	0.98	50731.2	12000.00
1	24081.98	173.97	0.677	0.30 ( 0.29)	0.98	51344.1	10100.00

2	274.99	27.83	1.643	0.30 ( 0.04)	0.13	190.5	12730.00
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RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19311.50	22.12	1.916	0.30 ( 0.25)	0.84	4402.8	800.00
2	19613.20	22.98	1.872	0.30 ( 0.25)	0.84	4732.7	413.00
3	20848.42	26.58	1.697	0.30 ( 0.26)	0.87	6093.3	900.00
4	21107.48	27.83	1.643	0.30 ( 0.26)	0.87	6521.3	12730.00
5	21439.41	29.51	1.569	0.30 ( 0.26)	0.88	7086.6	430.00
6	21556.73	30.17	1.545	0.30 ( 0.26)	0.88	7300.5	12710.00
7	21699.40	31.05	1.527	0.30 ( 0.26)	0.88	7579.3	600.00
8	21727.85	31.23	1.524	0.30 ( 0.26)	0.88	7641.6	400.00
9	24631.33	48.51	1.219	0.30 ( 0.28)	0.93	13592.3	40100.00
10	26214.23	56.47	1.116	0.30 ( 0.28)	0.94	16366.8	11801.00
11	28624.26	67.46	1.030	0.30 ( 0.29)	0.95	20897.4	11530.00
12	30011.67	76.28	0.981	0.30 ( 0.29)	0.96	25554.2	11910.00
13	32129.18	86.46	0.924	0.30 ( 0.29)	0.97	31857.2	11350.00
14	32755.38	91.24	0.899	0.30 ( 0.29)	0.97	35031.4	11130.00
15	32643.18	97.28	0.877	0.30 ( 0.29)	0.97	37958.0	12300.00
16	32566.49	101.16	0.863	0.30 ( 0.29)	0.97	40018.8	11620.00
17	32270.56	105.97	0.845	0.30 ( 0.29)	0.97	42218.6	12400.00
18	31554.80	115.35	0.811	0.30 ( 0.29)	0.97	45620.1	12201.00
19	31210.05	118.38	0.800	0.30 ( 0.29)	0.97	46433.8	10410.00
20	30804.90	122.69	0.788	0.30 ( 0.29)	0.97	47513.2	12231.00
21	30012.38	130.02	0.772	0.30 ( 0.29)	0.97	49065.9	10400.00
22	28714.51	139.21	0.752	0.30 ( 0.29)	0.98	50512.3	12010.00
23	27820.25	144.42	0.741	0.30 ( 0.29)	0.98	50774.9	10210.00
24	27260.56	148.35	0.733	0.30 ( 0.29)	0.98	50921.7	12000.00
25	24191.40	173.97	0.677	0.30 ( 0.29)	0.98	51534.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE (CFS) = 32755.38 Tc (MIN.) = 91.24  
 EFFECTIVE AREA (ACRES) = 35031.39 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 51534.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12741.00 IS CODE = 56

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

=====  
 ELEVATION DATA: UPSTREAM (FEET) = 252.10 DOWNSTREAM (FEET) = 247.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 401.47 CHANNEL SLOPE = 0.0127  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 7.29  
 CHANNEL FLOW THRU SUBAREA (CFS) = 32755.38  
 FLOW VELOCITY (FEET/SEC.) = 19.01 FLOW DEPTH (FEET) = 7.29  
 TRAVEL TIME (MIN.) = 0.35 Tc (MIN.) = 91.59  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 91.59

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.898

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.10	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	7.50	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.90	0.30	1.000	66
PUBLIC PARK	B	1.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.40	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	0.50	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.833

SUBAREA AREA(ACRES) = 13.30 SUBAREA RUNOFF(CFS) = 7.76

EFFECTIVE AREA(ACRES) = 35044.69 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 51548.0 PEAK FLOW RATE(CFS) = 32755.38

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 91.59

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.898

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 0.48

EFFECTIVE AREA(ACRES) = 35045.59 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 51548.9 PEAK FLOW RATE(CFS) = 32755.38

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: 3C25EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1238.80	17.88	0.30( 0.14)	0.47	637.3	300.00
2	1244.85	23.09	0.30( 0.14)	0.47	776.0	327.00

3	1226.75	24.13	0.30( 0.14)	0.48	789.1	350.00
4	1195.85	25.52	0.30( 0.14)	0.48	803.2	320.00
5	1100.24	29.60	0.30( 0.15)	0.49	831.0	306.00
6	1012.76	36.96	0.30( 0.15)	0.50	870.6	390.00
TOTAL AREA(ACRES) =					870.6	

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19311.50	22.54	1.894	0.30( 0.25)	0.84	4417.0	800.00
2	19613.20	23.40	1.850	0.30( 0.25)	0.84	4746.9	413.00
3	20848.42	26.99	1.679	0.30( 0.26)	0.87	6107.5	900.00
4	21107.48	28.24	1.625	0.30( 0.26)	0.87	6535.5	12730.00
5	21439.41	29.92	1.551	0.30( 0.26)	0.88	7100.8	430.00
6	21556.73	30.57	1.537	0.30( 0.26)	0.88	7314.7	12710.00
7	21699.40	31.46	1.519	0.30( 0.26)	0.88	7593.5	600.00
8	21727.85	31.63	1.515	0.30( 0.26)	0.88	7655.8	400.00
9	24631.33	48.89	1.213	0.30( 0.28)	0.93	13606.5	40100.00
10	26214.23	56.85	1.111	0.30( 0.28)	0.94	16381.0	11801.00
11	28624.26	67.83	1.028	0.30( 0.29)	0.95	20911.6	11530.00
12	30011.67	76.64	0.979	0.30( 0.29)	0.96	25568.4	11910.00
13	32129.18	86.82	0.922	0.30( 0.29)	0.97	31871.4	11350.00
14	32755.38	91.59	0.898	0.30( 0.29)	0.97	35045.6	11130.00
15	32643.18	97.64	0.876	0.30( 0.29)	0.97	37972.2	12300.00
16	32566.49	101.51	0.862	0.30( 0.29)	0.97	40033.0	11620.00
17	32270.56	106.32	0.844	0.30( 0.29)	0.97	42232.8	12400.00
18	31554.80	115.70	0.810	0.30( 0.29)	0.97	45634.3	12201.00
19	31210.05	118.74	0.799	0.30( 0.29)	0.97	46448.0	10410.00
20	30804.90	123.05	0.787	0.30( 0.29)	0.97	47527.4	12231.00
21	30012.38	130.38	0.771	0.30( 0.29)	0.97	49080.1	10400.00
22	28714.51	139.58	0.752	0.30( 0.29)	0.98	50526.5	12010.00
23	27820.25	144.79	0.740	0.30( 0.29)	0.98	50789.1	10210.00
24	27260.56	148.73	0.732	0.30( 0.29)	0.98	50935.9	12000.00
25	24191.40	174.36	0.676	0.30( 0.29)	0.98	51548.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1238.80	17.88	2.208	0.30( 0.14)	0.47	637.3	300.00
2	1244.85	23.09	1.866	0.30( 0.14)	0.47	776.0	327.00
3	1226.75	24.13	1.811	0.30( 0.14)	0.48	789.1	350.00
4	1195.85	25.52	1.744	0.30( 0.14)	0.48	803.2	320.00
5	1100.24	29.60	1.566	0.30( 0.15)	0.49	831.0	306.00
6	1012.76	36.96	1.410	0.30( 0.15)	0.50	870.6	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12741.00 = 15238.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19487.31	17.88	2.208	0.30( 0.23)	0.78	4141.6	300.00
2	20555.71	22.54	1.894	0.30( 0.24)	0.79	5178.4	800.00

3	20749.62	23.09	1.866	0.30	( 0.24)	0.79	5404.3	327.00
4	20852.70	23.40	1.850	0.30	( 0.24)	0.79	5526.8	413.00
5	21091.59	24.13	1.811	0.30	( 0.24)	0.80	5813.2	350.00
6	21536.36	25.52	1.744	0.30	( 0.24)	0.81	6351.3	320.00
7	22009.62	26.99	1.679	0.30	( 0.25)	0.82	6920.8	900.00
8	22239.48	28.24	1.625	0.30	( 0.25)	0.83	7357.3	12730.00
9	22475.44	29.60	1.566	0.30	( 0.25)	0.83	7822.4	306.00
10	22535.79	29.92	1.551	0.30	( 0.25)	0.84	7933.5	430.00
11	22645.37	30.57	1.537	0.30	( 0.25)	0.84	8150.9	12710.00
12	22777.53	31.46	1.519	0.30	( 0.25)	0.84	8434.5	600.00
13	22803.87	31.63	1.515	0.30	( 0.25)	0.84	8497.7	400.00
14	23636.35	36.96	1.410	0.30	( 0.26)	0.86	10362.2	390.00
15	25485.95	48.89	1.213	0.30	( 0.27)	0.91	14477.1	40100.00
16	26986.90	56.85	1.111	0.30	( 0.28)	0.92	17251.6	11801.00
17	29330.22	67.83	1.028	0.30	( 0.28)	0.93	21782.2	11530.00
18	30677.96	76.64	0.979	0.30	( 0.28)	0.95	26439.0	11910.00
19	32749.62	86.82	0.922	0.30	( 0.29)	0.96	32742.0	11350.00
20	33356.79	91.59	0.898	0.30	( 0.29)	0.96	35916.2	11130.00
21	33226.75	97.64	0.876	0.30	( 0.29)	0.96	38842.8	12300.00
22	33138.64	101.51	0.862	0.30	( 0.29)	0.96	40903.6	11620.00
23	32828.52	106.32	0.844	0.30	( 0.29)	0.96	43103.4	12400.00
24	32085.09	115.70	0.810	0.30	( 0.29)	0.97	46504.9	12201.00
25	31731.38	118.74	0.799	0.30	( 0.29)	0.97	47318.6	10410.00
26	31317.20	123.05	0.787	0.30	( 0.29)	0.97	48398.0	12231.00
27	30511.89	130.38	0.771	0.30	( 0.29)	0.97	49950.7	10400.00
28	29197.99	139.58	0.752	0.30	( 0.29)	0.97	51397.1	12010.00
29	28294.65	144.79	0.740	0.30	( 0.29)	0.97	51659.7	10210.00
30	27728.10	148.73	0.732	0.30	( 0.29)	0.97	51806.5	12000.00
31	24614.26	174.36	0.676	0.30	( 0.29)	0.97	52419.5	10100.00

TOTAL AREA (ACRES) = 52419.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 33356.79 Tc (MIN.) = 91.592  
EFFECTIVE AREA (ACRES) = 35916.19 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 52419.5  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 12  
-----

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 247.00 DOWNSTREAM (FEET) = 240.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 819.00 CHANNEL SLOPE = 0.0085  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.25  
CHANNEL FLOW THRU SUBAREA (CFS) = 33356.79  
FLOW VELOCITY (FEET/SEC.) = 16.76 FLOW DEPTH (FEET) = 8.25  
TRAVEL TIME (MIN.) = 0.81 Tc (MIN.) = 92.41

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc (MIN.) = 92.41  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.895  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"GRASS" B 17.31 0.30 1.000 69  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 17.31 SUBAREA RUNOFF (CFS) = 9.27  
EFFECTIVE AREA (ACRES) = 35933.50 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA (ACRES) = 52436.8 PEAK FLOW RATE (CFS) = 33356.79  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
-----

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52436.8 TC (MIN.) = 92.41  
EFFECTIVE AREA (ACRES) = 35933.50 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.959  
PEAK FLOW RATE (CFS) = 33356.79

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19487.31	18.86	2.125	0.30 ( 0.23)	0.78	4158.9	300.00
2	20555.71	23.50	1.844	0.30 ( 0.24)	0.79	5195.7	800.00
3	20749.62	24.05	1.816	0.30 ( 0.24)	0.79	5421.6	327.00
4	20852.70	24.35	1.800	0.30 ( 0.24)	0.79	5544.1	413.00
5	21091.59	25.08	1.762	0.30 ( 0.24)	0.80	5830.5	350.00
6	21536.36	26.46	1.702	0.30 ( 0.24)	0.81	6368.6	320.00
7	22009.62	27.93	1.638	0.30 ( 0.25)	0.82	6938.1	900.00
8	22239.48	29.17	1.584	0.30 ( 0.25)	0.83	7374.6	12730.00
9	22475.44	30.53	1.538	0.30 ( 0.25)	0.83	7839.7	306.00
10	22535.79	30.85	1.531	0.30 ( 0.25)	0.84	7950.8	430.00
11	22645.37	31.50	1.518	0.30 ( 0.25)	0.84	8168.2	12710.00
12	22777.53	32.38	1.501	0.30 ( 0.25)	0.84	8451.8	600.00
13	22803.87	32.56	1.497	0.30 ( 0.25)	0.84	8515.0	400.00
14	23636.35	37.87	1.391	0.30 ( 0.26)	0.86	10379.5	390.00
15	25485.95	49.78	1.199	0.30 ( 0.27)	0.91	14494.4	40100.00
16	26986.90	57.72	1.100	0.30 ( 0.28)	0.92	17268.9	11801.00
17	29330.22	68.68	1.023	0.30 ( 0.28)	0.93	21799.5	11530.00
18	30677.96	77.48	0.974	0.30 ( 0.28)	0.95	26456.3	11910.00
19	32749.62	87.64	0.917	0.30 ( 0.29)	0.96	32759.3	11350.00
20	33356.79	92.41	0.895	0.30 ( 0.29)	0.96	35933.5	11130.00
21	33226.75	98.45	0.873	0.30 ( 0.29)	0.96	38860.1	12300.00
22	33138.64	102.33	0.859	0.30 ( 0.29)	0.96	40920.9	11620.00
23	32828.52	107.14	0.841	0.30 ( 0.29)	0.96	43120.7	12400.00
24	32085.09	116.53	0.807	0.30 ( 0.29)	0.97	46522.3	12201.00
25	31731.38	119.57	0.796	0.30 ( 0.29)	0.97	47335.9	10410.00
26	31317.20	123.88	0.786	0.30 ( 0.29)	0.97	48415.3	12231.00
27	30511.89	131.22	0.770	0.30 ( 0.29)	0.97	49968.0	10400.00

28	29197.99	140.43	0.750	0.30 ( 0.29)	0.97	51414.4	12010.00
29	28294.65	145.65	0.738	0.30 ( 0.29)	0.97	51677.0	10210.00
30	27728.10	149.59	0.730	0.30 ( 0.29)	0.97	51823.8	12000.00
31	24614.26	175.26	0.674	0.30 ( 0.29)	0.97	52436.8	10100.00

=====  
=====  
END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S28- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV28.DAT  
TIME/DATE OF STUDY: 11:44 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.947
- 2) 10.00; 3.222
- 3) 15.00; 2.455
- 4) 20.00; 2.027
- 5) 25.00; 1.766
- 6) 30.00; 1.548
- 7) 40.00; 1.349
- 8) 50.00; 1.196
- 9) 60.00; 1.072
- 10) 90.00; 0.904
- 11) 120.00; 0.794
- 12) 180.00; 0.664
- 13) 360.00; 0.492
- 14) 1200.00; 0.217

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RU25EV27.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19487.31	18.86	0.30 ( 0.23)	0.78	4158.9	300.00
2	22803.87	32.56	0.30 ( 0.25)	0.84	8515.0	400.00
3	23636.35	37.87	0.30 ( 0.26)	0.86	10379.5	390.00
4	25485.95	49.78	0.30 ( 0.27)	0.91	14494.4	40100.00
5	26986.90	57.72	0.30 ( 0.28)	0.92	17268.9	11801.00
6	29330.22	68.68	0.30 ( 0.28)	0.93	21799.5	11530.00
7	30677.96	77.48	0.30 ( 0.28)	0.95	26456.3	11910.00
8	32749.62	87.64	0.30 ( 0.29)	0.96	32759.3	11350.00
9	33356.79	92.41	0.30 ( 0.29)	0.96	35933.5	11130.00
10	33226.75	98.45	0.30 ( 0.29)	0.96	38860.1	12300.00
11	33138.64	102.33	0.30 ( 0.29)	0.96	40920.9	11620.00
12	32828.52	107.14	0.30 ( 0.29)	0.96	43120.7	12400.00
13	32085.09	116.53	0.30 ( 0.29)	0.97	46522.3	12201.00
14	31731.38	119.57	0.30 ( 0.29)	0.97	47335.9	10410.00
15	31317.20	123.88	0.30 ( 0.29)	0.97	48415.3	12231.00
16	30511.89	131.22	0.30 ( 0.29)	0.97	49968.0	10400.00
17	29197.99	140.43	0.30 ( 0.29)	0.97	51414.4	12010.00
18	28294.65	145.65	0.30 ( 0.29)	0.97	51677.0	10210.00
19	27728.10	149.59	0.30 ( 0.29)	0.97	51823.8	12000.00
20	24614.26	175.26	0.30 ( 0.29)	0.97	52436.8	10100.00
TOTAL AREA (ACRES) =						52436.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: P501XX25.DNA  
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	332.36	13.44	0.30 ( 0.25)	0.84	173.8	50110.00
2	350.43	18.02	0.30 ( 0.26)	0.85	223.2	50100.00
TOTAL AREA (ACRES) =						223.2

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

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

1 332.36 13.44 0.30( 0.25) 0.84 173.8 50110.00  
 2 350.43 18.02 0.30( 0.26) 0.85 223.2 50100.00  
 TOTAL AREA (ACRES) = 223.2

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	332.36	13.44	2.694	0.30( 0.25)	0.84	173.8	50110.00
2	350.43	18.02	2.196	0.30( 0.26)	0.85	223.2	50100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19487.31	18.86	2.125	0.30( 0.23)	0.78	4158.9	300.00
2	22803.87	32.56	1.497	0.30( 0.25)	0.84	8515.0	400.00
3	23636.35	37.87	1.391	0.30( 0.26)	0.86	10379.5	390.00
4	25485.95	49.78	1.199	0.30( 0.27)	0.91	14494.4	40100.00
5	26986.90	57.72	1.100	0.30( 0.28)	0.92	17268.9	11801.00
6	29330.22	68.68	1.023	0.30( 0.28)	0.93	21799.5	11530.00
7	30677.96	77.48	0.974	0.30( 0.28)	0.95	26456.3	11910.00
8	32749.62	87.64	0.917	0.30( 0.29)	0.96	32759.3	11350.00
9	33356.79	92.41	0.895	0.30( 0.29)	0.96	35933.5	11130.00
10	33226.75	98.45	0.873	0.30( 0.29)	0.96	38860.1	12300.00
11	33138.64	102.33	0.859	0.30( 0.29)	0.96	40920.9	11620.00
12	32828.52	107.14	0.841	0.30( 0.29)	0.96	43120.7	12400.00
13	32085.09	116.53	0.807	0.30( 0.29)	0.97	46522.3	12201.00
14	31731.38	119.57	0.796	0.30( 0.29)	0.97	47335.9	10410.00
15	31317.20	123.88	0.786	0.30( 0.29)	0.97	48415.3	12231.00
16	30511.89	131.22	0.770	0.30( 0.29)	0.97	49968.0	10400.00
17	29197.99	140.43	0.750	0.30( 0.29)	0.97	51414.4	12010.00
18	28294.65	145.65	0.738	0.30( 0.29)	0.97	51677.0	10210.00
19	27728.10	149.59	0.730	0.30( 0.29)	0.97	51823.8	12000.00
20	24614.26	175.26	0.674	0.30( 0.29)	0.97	52436.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18405.99	13.44	2.694	0.30( 0.24)	0.79	3137.2	50110.00
2	19678.51	18.02	2.196	0.30( 0.24)	0.79	4197.0	50100.00
3	19824.77	18.86	2.125	0.30( 0.24)	0.79	4382.1	300.00
4	23028.05	32.56	1.497	0.30( 0.25)	0.84	8738.2	400.00
5	23841.45	37.87	1.391	0.30( 0.26)	0.86	10602.7	390.00
6	25656.40	49.78	1.199	0.30( 0.27)	0.90	14717.6	40100.00
7	27139.46	57.72	1.100	0.30( 0.28)	0.92	17492.1	11801.00
8	29468.90	68.68	1.023	0.30( 0.28)	0.93	22022.7	11530.00
9	30807.76	77.48	0.974	0.30( 0.28)	0.94	26679.5	11910.00
10	32869.15	87.64	0.917	0.30( 0.29)	0.95	32982.5	11350.00
11	33472.33	92.41	0.895	0.30( 0.29)	0.96	36156.7	11130.00
12	33338.29	98.45	0.873	0.30( 0.29)	0.96	39083.3	12300.00
13	33247.62	102.33	0.859	0.30( 0.29)	0.96	41144.1	11620.00

14	32934.30	107.14	0.841	0.30( 0.29)	0.96	43343.9	12400.00
15	32184.66	116.53	0.807	0.30( 0.29)	0.96	46745.5	12201.00
16	31828.95	119.57	0.796	0.30( 0.29)	0.97	47559.1	10410.00
17	31412.96	123.88	0.786	0.30( 0.29)	0.97	48638.5	12231.00
18	30604.78	131.22	0.770	0.30( 0.29)	0.97	50191.2	10400.00
19	29287.28	140.43	0.750	0.30( 0.29)	0.97	51637.6	12010.00
20	28381.90	145.65	0.738	0.30( 0.29)	0.97	51900.2	10210.00
21	27813.80	149.59	0.730	0.30( 0.29)	0.97	52047.0	12000.00
22	24689.93	175.26	0.674	0.30( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 33472.33 Tc (MIN.) = 92.407  
 EFFECTIVE AREA (ACRES) = 36156.70 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52660.0  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52660.0 TC (MIN.) = 92.41  
 EFFECTIVE AREA (ACRES) = 36156.70 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.958  
 PEAK FLOW RATE (CFS) = 33472.33

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18405.99	13.44	2.694	0.30( 0.24)	0.79	3137.2	50110.00
2	19678.51	18.02	2.196	0.30( 0.24)	0.79	4197.0	50100.00
3	19824.77	18.86	2.125	0.30( 0.24)	0.79	4382.1	300.00
4	23028.05	32.56	1.497	0.30( 0.25)	0.84	8738.2	400.00
5	23841.45	37.87	1.391	0.30( 0.26)	0.86	10602.7	390.00
6	25656.40	49.78	1.199	0.30( 0.27)	0.90	14717.6	40100.00
7	27139.46	57.72	1.100	0.30( 0.28)	0.92	17492.1	11801.00
8	29468.90	68.68	1.023	0.30( 0.28)	0.93	22022.7	11530.00
9	30807.76	77.48	0.974	0.30( 0.28)	0.94	26679.5	11910.00
10	32869.15	87.64	0.917	0.30( 0.29)	0.95	32982.5	11350.00
11	33472.33	92.41	0.895	0.30( 0.29)	0.96	36156.7	11130.00
12	33338.29	98.45	0.873	0.30( 0.29)	0.96	39083.3	12300.00
13	33247.62	102.33	0.859	0.30( 0.29)	0.96	41144.1	11620.00
14	32934.30	107.14	0.841	0.30( 0.29)	0.96	43343.9	12400.00
15	32184.66	116.53	0.807	0.30( 0.29)	0.96	46745.5	12201.00
16	31828.95	119.57	0.796	0.30( 0.29)	0.97	47559.1	10410.00
17	31412.96	123.88	0.786	0.30( 0.29)	0.97	48638.5	12231.00
18	30604.78	131.22	0.770	0.30( 0.29)	0.97	50191.2	10400.00
19	29287.28	140.43	0.750	0.30( 0.29)	0.97	51637.6	12010.00
20	28381.90	145.65	0.738	0.30( 0.29)	0.97	51900.2	10210.00
21	27813.80	149.59	0.730	0.30( 0.29)	0.97	52047.0	12000.00
22	24689.93	175.26	0.674	0.30( 0.29)	0.97	52660.0	10100.00

END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S29- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV29.DAT  
TIME/DATE OF STUDY: 11:44 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.919
- 2) 10.00; 3.206
- 3) 15.00; 2.446
- 4) 20.00; 2.020
- 5) 25.00; 1.761
- 6) 30.00; 1.545
- 7) 40.00; 1.345
- 8) 50.00; 1.192
- 9) 60.00; 1.068
- 10) 90.00; 0.899
- 11) 120.00; 0.789
- 12) 180.00; 0.660
- 13) 360.00; 0.488
- 14) 1200.00; 0.215

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV28.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18405.99	13.44	0.30 ( 0.24)	0.79	3137.2	50110.00
2	19824.77	18.86	0.30 ( 0.24)	0.79	4382.1	300.00
3	23028.05	32.56	0.30 ( 0.25)	0.84	8738.2	400.00
4	23841.45	37.87	0.30 ( 0.26)	0.86	10602.7	390.00
5	25656.40	49.78	0.30 ( 0.27)	0.90	14717.6	40100.00
6	27139.46	57.72	0.30 ( 0.28)	0.92	17492.1	11801.00
7	29468.90	68.68	0.30 ( 0.28)	0.93	22022.7	11530.00
8	30807.76	77.48	0.30 ( 0.28)	0.94	26679.5	11910.00
9	32869.15	87.64	0.30 ( 0.29)	0.95	32982.5	11350.00
10	33472.33	92.41	0.30 ( 0.29)	0.96	36156.7	11130.00
11	33338.29	98.45	0.30 ( 0.29)	0.96	39083.3	12300.00
12	33247.62	102.33	0.30 ( 0.29)	0.96	41144.1	11620.00
13	32934.30	107.14	0.30 ( 0.29)	0.96	43343.9	12400.00
14	32184.66	116.53	0.30 ( 0.29)	0.96	46745.5	12201.00
15	31412.96	123.88	0.30 ( 0.29)	0.97	48638.5	12231.00
16	30604.78	131.22	0.30 ( 0.29)	0.97	50191.2	10400.00
17	29287.28	140.43	0.30 ( 0.29)	0.97	51637.6	12010.00
18	28381.90	145.65	0.30 ( 0.29)	0.97	51900.2	10210.00
19	27813.80	149.59	0.30 ( 0.29)	0.97	52047.0	12000.00
20	24689.93	175.26	0.30 ( 0.29)	0.97	52660.0	10100.00
TOTAL AREA (ACRES) =						52660.0

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18405.99	13.44	0.30 ( 0.24)	0.79	3137.2	50110.00
2	19824.77	18.86	0.30 ( 0.24)	0.79	4382.1	300.00
3	23028.05	32.56	0.30 ( 0.25)	0.84	8738.2	400.00
4	23841.45	37.87	0.30 ( 0.26)	0.86	10602.7	390.00
5	25656.40	49.78	0.30 ( 0.27)	0.90	14717.6	40100.00
6	27139.46	57.72	0.30 ( 0.28)	0.92	17492.1	11801.00
7	29468.90	68.68	0.30 ( 0.28)	0.93	22022.7	11530.00
8	30807.76	77.48	0.30 ( 0.28)	0.94	26679.5	11910.00
9	32869.15	87.64	0.30 ( 0.29)	0.95	32982.5	11350.00
10	33472.33	92.41	0.30 ( 0.29)	0.96	36156.7	11130.00
11	33338.29	98.45	0.30 ( 0.29)	0.96	39083.3	12300.00
12	33247.62	102.33	0.30 ( 0.29)	0.96	41144.1	11620.00
13	32934.30	107.14	0.30 ( 0.29)	0.96	43343.9	12400.00



14	32184.66	116.53	0.30	( 0.29)	0.96	46745.5	12201.00
15	31412.96	123.88	0.30	( 0.29)	0.97	48638.5	12231.00
16	30604.78	131.22	0.30	( 0.29)	0.97	50191.2	10400.00
17	29287.28	140.43	0.30	( 0.29)	0.97	51637.6	12010.00
18	28381.90	145.65	0.30	( 0.29)	0.97	51900.2	10210.00
19	27813.80	149.59	0.30	( 0.29)	0.97	52047.0	12000.00
20	24689.93	175.26	0.30	( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

\*\*\*\*\*

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 240.00 DOWNSTREAM (FEET) = 216.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3120.28 CHANNEL SLOPE = 0.0077  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.52  
 CHANNEL FLOW THRU SUBAREA (CFS) = 33472.33  
 FLOW VELOCITY (FEET/SEC.) = 16.20 FLOW DEPTH (FEET) = 8.52  
 TRAVEL TIME (MIN.) = 3.21 Tc (MIN.) = 95.62  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 95.62  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.878  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.60	0.30	0.100	56
COMMERCIAL	B	3.20	0.30	0.100	56
PUBLIC PARK	B	1.50	0.30	0.850	56
COMMERCIAL	B	5.60	0.30	0.100	56
PUBLIC PARK	B	6.50	0.30	0.850	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.409  
 SUBAREA AREA (ACRES) = 19.40 SUBAREA RUNOFF (CFS) = 13.19  
 EFFECTIVE AREA (ACRES) = 36176.09 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52679.4 PEAK FLOW RATE (CFS) = 33472.33  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 95.62  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.878  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.50	0.30	0.100	56
PUBLIC PARK	B	4.10	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
RESIDENTIAL					
" .4 DWELLING/ACRE"	B	1.60	0.30	0.900	56
RESIDENTIAL					
" .4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
RESIDENTIAL					
" .4 DWELLING/ACRE"	B	1.00	0.30	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.823  
 SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 4.49  
 EFFECTIVE AREA (ACRES) = 36183.99 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52687.3 PEAK FLOW RATE (CFS) = 33472.33  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 95.62  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.878  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
" .4 DWELLING/ACRE"	B	3.60	0.30	0.900	56
AGRICULTURAL FAIR COVER					
" ORCHARDS"	B	0.30	0.30	1.000	65
NATURAL POOR COVER					
" BARREN"	B	12.00	0.30	1.000	86
PUBLIC PARK	B	36.10	0.30	0.850	56
NATURAL FAIR COVER					
" GRASS"	B	15.90	0.30	1.000	69
NATURAL FAIR COVER					
" GRASS"	B	1.50	0.30	1.000	69

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA (ACRES) = 69.40 SUBAREA RUNOFF (CFS) = 37.69  
 EFFECTIVE AREA (ACRES) = 36253.39 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52756.7 PEAK FLOW RATE (CFS) = 33472.33  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 95.62

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.878  
 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  
 "WOODLAND,GRASS" B 4.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.40 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 1.00 0.30 1.000 65  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 4.10 0.30 0.500 56  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 3.70 0.30 0.500 56  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 0.40 0.30 0.500 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.703  
 SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 8.29  
 EFFECTIVE AREA (ACRES) = 36267.19 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52770.5 PEAK FLOW RATE (CFS) = 33472.33  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 95.62  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.878  
 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 6.70 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.90 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 5.62  
 EFFECTIVE AREA (ACRES) = 36277.99 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52781.3 PEAK FLOW RATE (CFS) = 33472.33  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12902.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 216.00 DOWNSTREAM (FEET) = 215.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 122.04 CHANNEL SLOPE = 0.0082  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.36  
 CHANNEL FLOW THRU SUBAREA (CFS) = 33472.33  
 FLOW VELOCITY (FEET/SEC.) = 16.55 FLOW DEPTH (FEET) = 8.36  
 TRAVEL TIME (MIN.) = 0.12 Tc (MIN.) = 95.74  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: P503XX25.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1550.55	18.97	0.30 ( 0.22)	0.74	1028.1	50320.00
2	1548.96	19.87	0.30 ( 0.22)	0.74	1064.5	50240.00
3	1557.87	20.83	0.30 ( 0.22)	0.74	1101.6	50330.00
4	1557.26	23.76	0.30 ( 0.22)	0.74	1199.8	50280.00
5	1537.88	24.97	0.30 ( 0.22)	0.74	1230.2	50300.00
6	1519.40	26.29	0.30 ( 0.22)	0.74	1253.8	50220.00
7	1413.89	30.55	0.30 ( 0.22)	0.74	1292.3	50260.00
8	1346.29	33.44	0.30 ( 0.22)	0.74	1298.6	50200.00
TOTAL AREA (ACRES) =						1298.6

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18405.99	17.52	2.231	0.30 ( 0.24)	0.79	3258.5	50110.00
2	19824.77	22.84	1.873	0.30 ( 0.24)	0.79	4503.4	300.00
3	23028.05	36.34	1.418	0.30 ( 0.25)	0.84	8859.5	400.00
4	23841.45	41.61	1.320	0.30 ( 0.26)	0.86	10724.0	390.00
5	25656.40	53.43	1.150	0.30 ( 0.27)	0.90	14838.9	40100.00
6	27139.46	61.30	1.061	0.30 ( 0.28)	0.92	17613.4	11801.00
7	29468.90	72.16	0.999	0.30 ( 0.28)	0.93	22144.0	11530.00
8	30807.76	80.90	0.950	0.30 ( 0.28)	0.94	26800.8	11910.00
9	32869.15	90.99	0.895	0.30 ( 0.29)	0.95	33103.8	11350.00
10	33472.33	95.74	0.878	0.30 ( 0.29)	0.96	36278.0	11130.00
11	33338.29	101.79	0.856	0.30 ( 0.29)	0.96	39204.6	12300.00
12	33247.62	105.66	0.842	0.30 ( 0.29)	0.96	41265.4	11620.00
13	32934.30	110.49	0.824	0.30 ( 0.29)	0.96	43465.2	12400.00
14	32184.66	119.90	0.789	0.30 ( 0.29)	0.96	46866.8	12201.00
15	31412.96	127.29	0.773	0.30 ( 0.29)	0.97	48759.8	12231.00
16	30604.78	134.66	0.757	0.30 ( 0.29)	0.97	50312.5	10400.00
17	29287.28	143.92	0.738	0.30 ( 0.29)	0.97	51758.9	12010.00
18	28381.90	149.17	0.726	0.30 ( 0.29)	0.97	52021.5	10210.00
19	27813.80	153.14	0.718	0.30 ( 0.29)	0.97	52168.3	12000.00
20	24689.93	178.96	0.662	0.30 ( 0.29)	0.97	52781.3	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 =						115038.03 FEET.	

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*  
 STREAM Q Tc Intensity Fp (Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	1550.55	18.97	2.108	0.30 ( 0.22)	0.74	1028.1 50320.00
2	1548.96	19.87	2.031	0.30 ( 0.22)	0.74	1064.5 50240.00
3	1557.87	20.83	1.977	0.30 ( 0.22)	0.74	1101.6 50330.00
4	1557.26	23.76	1.825	0.30 ( 0.22)	0.74	1199.8 50280.00
5	1537.88	24.97	1.762	0.30 ( 0.22)	0.74	1230.2 50300.00
6	1519.40	26.29	1.705	0.30 ( 0.22)	0.74	1253.8 50220.00
7	1413.89	30.55	1.534	0.30 ( 0.22)	0.74	1292.3 50260.00
8	1346.29	33.44	1.476	0.30 ( 0.22)	0.74	1298.6 50200.00

LONGEST FLOWPATH FROM NODE 50220.00 TO NODE 12902.00 = 17597.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19931.79	17.52	2.231	0.30 ( 0.23)	0.78	4207.9	50110.00
2	20344.25	18.97	2.108	0.30 ( 0.23)	0.78	4626.8	50320.00
3	20581.11	19.87	2.031	0.30 ( 0.23)	0.78	4872.5	50240.00
4	20847.16	20.83	1.977	0.30 ( 0.23)	0.78	5135.2	50330.00
5	21382.22	22.84	1.873	0.30 ( 0.23)	0.78	5672.2	300.00
6	21601.92	23.76	1.825	0.30 ( 0.23)	0.78	6002.2	50280.00
7	21869.39	24.97	1.762	0.30 ( 0.24)	0.79	6422.7	50300.00
8	22162.69	26.29	1.705	0.30 ( 0.24)	0.79	6870.2	50220.00
9	23067.48	30.55	1.534	0.30 ( 0.24)	0.81	8282.7	50260.00
10	23685.43	33.44	1.476	0.30 ( 0.25)	0.82	9221.3	50200.00
11	24311.99	36.34	1.418	0.30 ( 0.25)	0.83	10158.1	400.00
12	25020.37	41.61	1.320	0.30 ( 0.26)	0.85	12022.6	390.00
13	26651.83	53.43	1.150	0.30 ( 0.27)	0.89	16137.5	40100.00
14	28039.51	61.30	1.061	0.30 ( 0.27)	0.91	18912.0	11801.00
15	30303.24	72.16	0.999	0.30 ( 0.28)	0.92	23442.6	11530.00
16	31589.22	80.90	0.950	0.30 ( 0.28)	0.93	28099.4	11910.00
17	33591.68	90.99	0.895	0.30 ( 0.28)	0.95	34402.4	11350.00
18	34176.16	95.74	0.878	0.30 ( 0.29)	0.95	37576.6	11130.00
19	34018.30	101.79	0.856	0.30 ( 0.29)	0.95	40503.2	12300.00
20	33912.37	105.66	0.842	0.30 ( 0.29)	0.96	42564.0	11620.00
21	33580.04	110.49	0.824	0.30 ( 0.29)	0.96	44763.8	12400.00
22	32793.35	119.90	0.789	0.30 ( 0.29)	0.96	48165.4	12201.00
23	32004.45	127.29	0.773	0.30 ( 0.29)	0.96	50058.4	12231.00
24	31179.26	134.66	0.757	0.30 ( 0.29)	0.96	51611.1	10400.00
25	29840.38	143.92	0.738	0.30 ( 0.29)	0.96	53057.5	12010.00
26	28922.86	149.17	0.726	0.30 ( 0.29)	0.96	53320.1	10210.00
27	28345.61	153.14	0.718	0.30 ( 0.29)	0.96	53466.9	12000.00
28	25162.13	178.96	0.662	0.30 ( 0.29)	0.96	54079.9	10100.00

TOTAL AREA (ACRES) = 54079.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 34176.16 Tc(MIN.) = 95.740  
EFFECTIVE AREA(ACRES) = 37576.59 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA (ACRES) = 54079.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 215.00 DOWNSTREAM(FEET) = 214.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.53 CHANNEL SLOPE = 0.0011  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 14.77  
CHANNEL FLOW THRU SUBAREA(CFS) = 34176.16  
FLOW VELOCITY(FEET/SEC.) = 8.45 FLOW DEPTH(FEET) = 14.77  
TRAVEL TIME(MIN.) = 1.77 Tc(MIN.) = 97.51  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P504XX25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	128.78	13.45	0.30 ( 0.28)	0.94	70.7	50400.00

TOTAL AREA (ACRES) = 70.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19931.79	19.61	2.053	0.30 ( 0.23)	0.78	4207.9	50110.00
2	20344.25	21.05	1.966	0.30 ( 0.23)	0.78	4626.8	50320.00
3	20581.11	21.94	1.920	0.30 ( 0.23)	0.78	4872.5	50240.00
4	20847.16	22.89	1.870	0.30 ( 0.23)	0.78	5135.2	50330.00
5	21382.22	24.88	1.767	0.30 ( 0.23)	0.78	5672.2	300.00
6	21601.92	25.80	1.726	0.30 ( 0.23)	0.78	6002.2	50280.00
7	21869.39	27.00	1.674	0.30 ( 0.24)	0.79	6422.7	50300.00
8	22162.69	28.31	1.618	0.30 ( 0.24)	0.79	6870.2	50220.00
9	23067.48	32.54	1.494	0.30 ( 0.24)	0.81	8282.7	50260.00
10	23685.43	35.42	1.437	0.30 ( 0.25)	0.82	9221.3	50200.00
11	24311.99	38.30	1.379	0.30 ( 0.25)	0.83	10158.1	400.00
12	25020.37	43.55	1.291	0.30 ( 0.26)	0.85	12022.6	390.00
13	26651.83	55.33	1.126	0.30 ( 0.27)	0.89	16137.5	40100.00
14	28039.51	63.18	1.050	0.30 ( 0.27)	0.91	18912.0	11801.00
15	30303.24	73.99	0.989	0.30 ( 0.28)	0.92	23442.6	11530.00
16	31589.22	82.71	0.940	0.30 ( 0.28)	0.93	28099.4	11910.00
17	33591.68	92.76	0.889	0.30 ( 0.28)	0.95	34402.4	11350.00
18	34176.16	97.51	0.871	0.30 ( 0.29)	0.95	37576.6	11130.00
19	34018.30	103.56	0.849	0.30 ( 0.29)	0.95	40503.2	12300.00
20	33912.37	107.43	0.835	0.30 ( 0.29)	0.96	42564.0	11620.00
21	33580.04	112.27	0.817	0.30 ( 0.29)	0.96	44763.8	12400.00
22	32793.35	121.69	0.785	0.30 ( 0.29)	0.96	48165.4	12201.00

```

23 32004.45 129.09 0.769 0.30( 0.29) 0.96 50058.4 12231.00
24 31179.26 136.47 0.754 0.30( 0.29) 0.96 51611.1 10400.00
25 29840.38 145.76 0.734 0.30( 0.29) 0.96 53057.5 12010.00
26 28922.86 151.03 0.722 0.30( 0.29) 0.96 53320.1 10210.00
27 28345.61 155.01 0.714 0.30( 0.29) 0.96 53466.9 12000.00
28 25162.13 180.90 0.659 0.30( 0.29) 0.96 54079.9 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

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\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

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STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      128.78  13.45  2.682 0.30( 0.28) 0.94   70.7  50400.00
LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

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\*\* PEAK FLOW RATE TABLE \*\*

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STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      18518.30 13.45  2.682 0.30( 0.23) 0.78  2956.5 50400.00
2      20026.85 19.61  2.053 0.30( 0.23) 0.78  4278.6 50110.00
3      20434.61 21.05  1.966 0.30( 0.23) 0.78  4697.5 50320.00
4      20669.00 21.94  1.920 0.30( 0.23) 0.78  4943.2 50240.00
5      20932.40 22.89  1.870 0.30( 0.23) 0.78  5205.9 50330.00
6      21461.93 24.88  1.767 0.30( 0.23) 0.78  5742.9 300.00
7      21679.44 25.80  1.726 0.30( 0.23) 0.78  6072.9 50280.00
8      21944.13 27.00  1.674 0.30( 0.24) 0.79  6493.4 50300.00
9      22234.40 28.31  1.618 0.30( 0.24) 0.79  6940.9 50220.00
10     23132.54 32.54  1.494 0.30( 0.24) 0.81  8353.4 50260.00
11     23747.42 35.42  1.437 0.30( 0.25) 0.82  9292.0 50200.00
12     24370.87 38.30  1.379 0.30( 0.25) 0.83 10228.8 400.00
13     25074.52 43.55  1.291 0.30( 0.26) 0.85 12093.3 390.00
14     26697.14 55.33  1.126 0.30( 0.27) 0.89 16208.2 40100.00
15     28080.75 63.18  1.050 0.30( 0.27) 0.91 18982.7 11801.00
16     30341.21 73.99  0.989 0.30( 0.28) 0.92 23513.3 11530.00
17     31624.57 82.71  0.940 0.30( 0.28) 0.93 28170.1 11910.00
18     33624.28 92.76  0.889 0.30( 0.28) 0.95 34473.1 11350.00
19     34207.82 97.51  0.871 0.30( 0.29) 0.95 37647.3 11130.00
20     34048.78 103.56 0.849 0.30( 0.29) 0.95 40573.9 12300.00
21     33942.08 107.43 0.835 0.30( 0.29) 0.96 42634.7 11620.00
22     33608.80 112.27 0.817 0.30( 0.29) 0.96 44834.5 12400.00
23     32820.39 121.69 0.785 0.30( 0.29) 0.96 48236.1 12201.00
24     32030.64 129.09 0.769 0.30( 0.29) 0.96 50129.1 12231.00
25     31204.60 136.47 0.754 0.30( 0.29) 0.96 51681.8 10400.00
26     29864.65 145.76 0.734 0.30( 0.29) 0.96 53128.2 12010.00
27     28946.52 151.03 0.722 0.30( 0.29) 0.96 53390.8 10210.00
28     28368.81 155.01 0.714 0.30( 0.29) 0.96 53537.6 12000.00
29     25182.40 180.90 0.659 0.30( 0.29) 0.96 54150.6 10100.00
TOTAL AREA(ACRES) = 54150.6

```

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

PEAK FLOW RATE(CFS) = 34207.82 Tc(MIN.) = 97.506
EFFECTIVE AREA(ACRES) = 37647.29 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 54150.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

```

```

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

```

```
>>>>CLEAR MEMORY BANK # 2 <<<<<
```

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

```
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
>>>>TRAVELTIME THRU SUBAREA<<<<<
```

```

ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 14.16
CHANNEL FLOW THRU SUBAREA(CFS) = 34207.82
FLOW VELOCITY(FEET/SEC.) = 8.92 FLOW DEPTH(FEET) = 14.16
TRAVEL TIME(MIN.) = 1.43 Tc(MIN.) = 98.94
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

```

```
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1
-----
```

```
>>>>DEFINE MEMORY BANK # 3 <<<<<
```

```
PEAK FLOWRATE TABLE FILE NAME: 3B25EVRL.DNA
```

```
MEMORY BANK # 3 DEFINED AS FOLLOWS:
```

```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      407.12  14.83  0.30( 0.13) 0.42  192.8  200.00
2      403.92  17.69  0.30( 0.13) 0.42  214.7  210.00
TOTAL AREA(ACRES) = 214.7

```

```
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11
-----
```

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      18518.30 15.19  2.430 0.30( 0.23) 0.78  2956.5 50400.00
2      20026.85 21.31  1.952 0.30( 0.23) 0.78  4278.6 50110.00
3      20434.61 22.74  1.878 0.30( 0.23) 0.78  4697.5 50320.00
4      20669.00 23.62  1.833 0.30( 0.23) 0.78  4943.2 50240.00
5      20932.40 24.56  1.784 0.30( 0.23) 0.78  5205.9 50330.00
6      21461.93 26.54  1.694 0.30( 0.23) 0.78  5742.9 300.00
7      21679.44 27.46  1.655 0.30( 0.23) 0.78  6072.9 50280.00
8      21944.13 28.65  1.603 0.30( 0.24) 0.79  6493.4 50300.00
9      22234.40 29.95  1.547 0.30( 0.24) 0.79  6940.9 50220.00
10     23132.54 34.16  1.462 0.30( 0.24) 0.81  8353.4 50260.00
11     23747.42 37.02  1.405 0.30( 0.25) 0.82  9292.0 50200.00
12     24370.87 39.90  1.347 0.30( 0.25) 0.83 10228.8 400.00
13     25074.52 45.13  1.266 0.30( 0.26) 0.85 12093.3 390.00
14     26697.14 56.88  1.107 0.30( 0.27) 0.89 16208.2 40100.00
15     28080.75 64.70  1.042 0.30( 0.27) 0.91 18982.7 11801.00
16     30341.21 75.48  0.981 0.30( 0.28) 0.92 23513.3 11530.00
17     31624.57 84.18  0.932 0.30( 0.28) 0.93 28170.1 11910.00

```

18	33624.28	94.21	0.884	0.30 ( 0.28)	0.95	34473.1	11350.00
19	34207.82	98.94	0.866	0.30 ( 0.29)	0.95	37647.3	11130.00
20	34048.78	104.99	0.844	0.30 ( 0.29)	0.95	40573.9	12300.00
21	33942.08	108.87	0.830	0.30 ( 0.29)	0.96	42634.7	11620.00
22	33608.80	113.71	0.812	0.30 ( 0.29)	0.96	44834.5	12400.00
23	32820.39	123.15	0.782	0.30 ( 0.29)	0.96	48236.1	12201.00
24	32030.64	130.55	0.766	0.30 ( 0.29)	0.96	50129.1	12231.00
25	31204.60	137.95	0.750	0.30 ( 0.29)	0.96	51681.8	10400.00
26	29864.65	147.25	0.730	0.30 ( 0.29)	0.96	53128.2	12010.00
27	28946.52	152.54	0.719	0.30 ( 0.29)	0.96	53390.8	10210.00
28	28368.81	156.53	0.710	0.30 ( 0.29)	0.96	53537.6	12000.00
29	25182.40	182.48	0.658	0.30 ( 0.29)	0.96	54150.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	407.12	14.83	2.472	0.30 ( 0.13)	0.42	192.8	200.00
2	403.92	17.69	2.217	0.30 ( 0.13)	0.42	214.7	210.00

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 5961.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18832.93	14.83	2.472	0.30 ( 0.23)	0.76	3079.0	200.00
2	18925.01	15.19	2.430	0.30 ( 0.23)	0.76	3152.1	50400.00
3	19538.94	17.69	2.217	0.30 ( 0.23)	0.76	3711.7	210.00
4	20379.66	21.31	1.952	0.30 ( 0.23)	0.76	4493.3	50110.00
5	20773.13	22.74	1.878	0.30 ( 0.23)	0.76	4912.2	50320.00
6	20998.71	23.62	1.833	0.30 ( 0.23)	0.76	5157.9	50240.00
7	21252.62	24.56	1.784	0.30 ( 0.23)	0.77	5420.6	50330.00
8	21764.91	26.54	1.694	0.30 ( 0.23)	0.77	5957.6	300.00
9	21974.78	27.46	1.655	0.30 ( 0.23)	0.77	6287.6	50280.00
10	22229.49	28.65	1.603	0.30 ( 0.23)	0.78	6708.1	50300.00
11	22508.92	29.95	1.547	0.30 ( 0.23)	0.78	7155.6	50220.00
12	23390.57	34.16	1.462	0.30 ( 0.24)	0.80	8568.1	50260.00
13	23994.39	37.02	1.405	0.30 ( 0.24)	0.81	9506.7	50200.00
14	24606.74	39.90	1.347	0.30 ( 0.25)	0.82	10443.5	400.00
15	25294.81	45.13	1.266	0.30 ( 0.25)	0.84	12308.0	390.00
16	26886.55	56.88	1.107	0.30 ( 0.27)	0.88	16422.9	40100.00
17	28257.58	64.70	1.042	0.30 ( 0.27)	0.90	19197.4	11801.00
18	30506.31	75.48	0.981	0.30 ( 0.28)	0.92	23728.0	11530.00
19	31780.19	84.18	0.932	0.30 ( 0.28)	0.93	28384.8	11910.00
20	33770.59	94.21	0.884	0.30 ( 0.28)	0.94	34687.8	11350.00
21	34350.78	98.94	0.866	0.30 ( 0.28)	0.95	37862.0	11130.00
22	34187.45	104.99	0.844	0.30 ( 0.29)	0.95	40788.6	12300.00
23	34078.00	108.87	0.830	0.30 ( 0.29)	0.95	42849.4	11620.00
24	33741.29	113.71	0.812	0.30 ( 0.29)	0.95	45049.2	12400.00
25	32947.12	123.15	0.782	0.30 ( 0.29)	0.96	48450.8	12201.00
26	32154.29	130.55	0.766	0.30 ( 0.29)	0.96	50343.8	12231.00
27	31325.17	137.95	0.750	0.30 ( 0.29)	0.96	51896.5	10400.00
28	29981.36	147.25	0.730	0.30 ( 0.29)	0.96	53342.9	12010.00
29	29061.04	152.54	0.719	0.30 ( 0.29)	0.96	53605.5	10210.00
30	28481.67	156.53	0.710	0.30 ( 0.29)	0.96	53752.3	12000.00
31	25285.05	182.48	0.658	0.30 ( 0.29)	0.96	54365.3	10100.00

TOTAL AREA (ACRES) = 54365.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 34350.78 Tc(MIN.) = 98.941  
EFFECTIVE AREA(ACRES) = 37861.99 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 54365.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 98.94

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.866

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	20.00	0.30	1.000	69
NATURAL FAIR COVER "MEADOWS"	B	0.10	0.30	1.000	70
PUBLIC PARK	B	14.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.920  
SUBAREA AREA(ACRES) = 39.10 SUBAREA RUNOFF(CFS) = 20.77  
EFFECTIVE AREA(ACRES) = 37901.09 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 54404.4 PEAK FLOW RATE(CFS) = 34350.78  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 98.94

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.866

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.10	0.30	1.000	66
AGRICULTURAL FAIR COVER "ORCHARDS"	B	0.10	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER "GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.912  
SUBAREA AREA(ACRES) = 5.00 SUBAREA RUNOFF(CFS) = 2.67

EFFECTIVE AREA(ACRES) = 37906.09 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA(ACRES) = 54409.4 PEAK FLOW RATE(CFS) = 34350.78  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 98.94

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.866

SUBAREA LOSS RATE DATA(AMC II):

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

"ORCHARDS"	B	0.10	0.30	1.000	65
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RESIDENTIAL

".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
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NATURAL FAIR COVER

"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
------------------	---	------	------	-------	----

NATURAL FAIR COVER

"GRASS"	B	3.00	0.30	1.000	69
---------	---	------	------	-------	----

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.956

SUBAREA AREA(ACRES) = 5.90 SUBAREA RUNOFF(CFS) = 3.08

EFFECTIVE AREA(ACRES) = 37911.99 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 54415.3 PEAK FLOW RATE(CFS) = 34350.78

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 54415.3 TC(MIN.) = 98.94

EFFECTIVE AREA(ACRES) = 37911.99 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.947

PEAK FLOW RATE(CFS) = 34350.78

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18832.93	14.83	2.472	0.30( 0.23)	0.76	3129.0	200.00
2	18925.01	15.19	2.430	0.30( 0.23)	0.76	3202.1	50400.00
3	19538.94	17.69	2.217	0.30( 0.23)	0.76	3761.7	210.00
4	20379.66	21.31	1.952	0.30( 0.23)	0.76	4543.3	50110.00
5	20773.13	22.74	1.878	0.30( 0.23)	0.77	4962.2	50320.00
6	20998.71	23.62	1.833	0.30( 0.23)	0.77	5207.9	50240.00
7	21252.62	24.56	1.784	0.30( 0.23)	0.77	5470.6	50330.00
8	21764.91	26.54	1.694	0.30( 0.23)	0.77	6007.6	300.00
9	21974.78	27.46	1.655	0.30( 0.23)	0.77	6337.6	50280.00
10	22229.49	28.65	1.603	0.30( 0.23)	0.78	6758.1	50300.00
11	22508.92	29.95	1.547	0.30( 0.23)	0.78	7205.6	50220.00
12	23390.57	34.16	1.462	0.30( 0.24)	0.80	8618.1	50260.00
13	23994.39	37.02	1.405	0.30( 0.24)	0.81	9556.7	50200.00
14	24606.74	39.90	1.347	0.30( 0.25)	0.82	10493.5	400.00
15	25294.81	45.13	1.266	0.30( 0.25)	0.84	12358.0	390.00
16	26886.55	56.88	1.107	0.30( 0.27)	0.89	16472.9	40100.00
17	28257.58	64.70	1.042	0.30( 0.27)	0.90	19247.4	11801.00
18	30506.31	75.48	0.981	0.30( 0.28)	0.92	23778.0	11530.00

19	31780.19	84.18	0.932	0.30( 0.28)	0.93	28434.8	11910.00
20	33770.59	94.21	0.884	0.30( 0.28)	0.94	34737.8	11350.00
21	34350.78	98.94	0.866	0.30( 0.28)	0.95	37912.0	11130.00
22	34187.45	104.99	0.844	0.30( 0.29)	0.95	40838.6	12300.00
23	34078.00	108.87	0.830	0.30( 0.29)	0.95	42899.4	11620.00
24	33741.29	113.71	0.812	0.30( 0.29)	0.95	45099.2	12400.00
25	32947.12	123.15	0.782	0.30( 0.29)	0.96	48500.8	12201.00
26	32154.29	130.55	0.766	0.30( 0.29)	0.96	50393.8	12231.00
27	31325.17	137.95	0.750	0.30( 0.29)	0.96	51946.5	10400.00
28	29981.36	147.25	0.730	0.30( 0.29)	0.96	53392.9	12010.00
29	29061.04	152.54	0.719	0.30( 0.29)	0.96	53655.5	10210.00
30	28481.67	156.53	0.710	0.30( 0.29)	0.96	53802.3	12000.00
31	25285.05	182.48	0.658	0.30( 0.29)	0.96	54415.3	10100.00

END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S33- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV33.DAT  
TIME/DATE OF STUDY: 11:44 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.828
- 2) 10.00; 3.154
- 3) 15.00; 2.415
- 4) 20.00; 2.000
- 5) 25.00; 1.745
- 6) 30.00; 1.533
- 7) 40.00; 1.333
- 8) 50.00; 1.180
- 9) 60.00; 1.055
- 10) 90.00; 0.886
- 11) 120.00; 0.775
- 12) 180.00; 0.646
- 13) 360.00; 0.475
- 14) 1200.00; 0.208

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: S31X25.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2430.28	35.90	0.30 ( 0.24)	0.81	2511.7	13100.00
2	2369.04	61.85	0.30 ( 0.24)	0.81	3776.9	13000.00
3	2335.36	64.17	0.30 ( 0.24)	0.81	3796.8	13010.00
TOTAL AREA (ACRES) =						3796.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S32X25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1123.08	33.84	0.30 ( 0.25)	0.83	1121.8	13210.00
2	1123.47	34.10	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1123.08	33.84	0.30 ( 0.25)	0.83	1121.8	13210.00
2	1123.47	34.10	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1123.08	33.84	1.456	0.30 ( 0.25)	0.83	1121.8	13210.00
2	1123.47	34.10	1.451	0.30 ( 0.25)	0.83	1127.6	13200.00
LONGEST FLOWPATH FROM NODE 13200.00 TO NODE 13222.00 =							16821.05 FEET.



\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2430.28	35.90	1.415	0.30( 0.24)	0.81	2511.7	13100.00
2	2369.04	61.85	1.045	0.30( 0.24)	0.81	3776.9	13000.00
3	2335.36	64.17	1.032	0.30( 0.24)	0.81	3796.8	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3494.44	33.84	1.456	0.30( 0.24)	0.82	3489.4	13210.00
2	3502.81	34.10	1.451	0.30( 0.24)	0.82	3513.4	13200.00
3	3520.15	35.90	1.415	0.30( 0.24)	0.82	3639.3	13100.00
4	3112.88	61.85	1.045	0.30( 0.24)	0.81	4904.5	13000.00
5	3066.96	64.17	1.032	0.30( 0.24)	0.81	4924.4	13010.00

TOTAL AREA (ACRES) = 4924.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3520.15 Tc(MIN.) = 35.896

EFFECTIVE AREA(ACRES) = 3639.28 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82

TOTAL AREA (ACRES) = 4924.4

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

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FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

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>>>>CLEAR MEMORY BANK # 1 <<<<<

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FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

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

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FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.63

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.345

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.60	0.30	1.000	66
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.10	0.30	0.600	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED"	B	5.30	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
COMMERCIAL	B	22.60	0.30	0.100	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.521

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3544.32

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.99

AVERAGE FLOW DEPTH(FEET) = 4.63 TRAVEL TIME(MIN.) = 3.52

Tc(MIN.) = 39.42

SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 48.34

EFFECTIVE AREA(ACRES) = 3684.48 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81

TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 3651.50

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 4.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.71 FLOW VELOCITY(FEET/SEC.) = 12.09

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 39.42

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.345

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	1.00	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	7.40	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	4.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.90	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.596

SUBAREA AREA(ACRES) = 16.50 SUBAREA RUNOFF(CFS) = 17.31

EFFECTIVE AREA(ACRES) = 3700.98 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81

TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 3668.81

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 39.42

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.345

SUBAREA LOSS RATE DATA(AMC II):

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

NATURAL POOR COVER  
 "BARREN" B 1.30 0.30 1.000 86  
 COMMERCIAL B 0.20 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 5.30 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.30 0.30 1.000 65  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.20 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.60 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977  
 SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 7.48  
 EFFECTIVE AREA(ACRES) = 3708.88 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
 TOTAL AREA (ACRES) = 4994.0 PEAK FLOW RATE(CFS) = 3676.29

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 39.42  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.345  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	4.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.10	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	6.90	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	7.90	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.00	0.30	1.000	65

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 22.00 SUBAREA RUNOFF(CFS) = 20.68  
 EFFECTIVE AREA(ACRES) = 3730.88 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
 TOTAL AREA (ACRES) = 5016.0 PEAK FLOW RATE(CFS) = 3696.97

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 39.42  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.345  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63

"OPEN BRUSH" B 0.40 0.30 1.000 66  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 14.60 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 14.10  
 EFFECTIVE AREA(ACRES) = 3745.88 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
 TOTAL AREA (ACRES) = 5031.0 PEAK FLOW RATE(CFS) = 3711.07

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1<<<<<

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

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 317.00  
 ELEVATION DATA: UPSTREAM(FEET) = 801.00 DOWNSTREAM(FEET) = 685.00

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 8.641  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.609  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 3.28  
 TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE(CFS) = 3.28

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 685.00 DOWNSTREAM(FEET) = 655.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 135.00 CHANNEL SLOPE = 0.2222  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.496  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63

NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.10 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.70 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.15  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.69  
 AVERAGE FLOW DEPTH(FEET) = 0.51 TRAVEL TIME(MIN.) = 0.34  
 Tc(MIN.) = 8.98  
 SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = 3.74  
 EFFECTIVE AREA(ACRES) = 2.40 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 6.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.56 FLOW VELOCITY(FEET/SEC.) = 7.29  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 630.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 203.00 CHANNEL SLOPE = 0.1232  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.353

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.30	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.90	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.07  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.91  
 AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 0.43  
 Tc(MIN.) = 9.40  
 SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 6.32  
 EFFECTIVE AREA(ACRES) = 4.70 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 12.92

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.71 FLOW VELOCITY(FEET/SEC.) = 8.44  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 605.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 321.00 CHANNEL SLOPE = 0.0779  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.114

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.50	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.47  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.17  
 AVERAGE FLOW DEPTH(FEET) = 0.97 TRAVEL TIME(MIN.) = 0.87  
 Tc(MIN.) = 10.27  
 SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 9.12  
 EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 21.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.04 FLOW VELOCITY(FEET/SEC.) = 6.47  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 3.008

SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.70	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.00	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.10	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28.82  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.73  
 AVERAGE FLOW DEPTH(FEET) = 1.19 TRAVEL TIME(MIN.) = 0.71  
 Tc(MIN.) = 10.99  
 SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 15.60

EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 35.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.30 FLOW VELOCITY(FEET/SEC.) = 7.07  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.900

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	2.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	4.10	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 48.47

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.80

AVERAGE FLOW DEPTH(FEET) = 1.44 TRAVEL TIME(MIN.) = 0.73

Tc(MIN.) = 11.72

SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 25.27

EFFECTIVE AREA(ACRES) = 25.50 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 25.5 PEAK FLOW RATE(CFS) = 59.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.56 FLOW VELOCITY(FEET/SEC.) = 8.18  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTREAM(FEET) = 530.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 619.00 CHANNEL SLOPE = 0.0485  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.695

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	8.20	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.70	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 75.95

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.47

AVERAGE FLOW DEPTH(FEET) = 1.84 TRAVEL TIME(MIN.) = 1.38

Tc(MIN.) = 13.10

SUBAREA AREA(ACRES) = 15.10 SUBAREA RUNOFF(CFS) = 32.55

EFFECTIVE AREA(ACRES) = 40.60 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 40.6 PEAK FLOW RATE(CFS) = 87.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.94 FLOW VELOCITY(FEET/SEC.) = 7.75  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 530.00 DOWNSTREAM(FEET) = 515.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 377.00 CHANNEL SLOPE = 0.0398  
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.573

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.50	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	6.50	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.30	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	5.50	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.40	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 106.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.56  
 AVERAGE FLOW DEPTH(FEET) = 2.16 TRAVEL TIME(MIN.) = 0.83  
 Tc(MIN.) = 13.93  
 SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 37.43  
 EFFECTIVE AREA(ACRES) = 58.90 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 58.9 PEAK FLOW RATE(CFS) = 120.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.27 FLOW VELOCITY(FEET/SEC.) = 7.79  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 515.00 DOWNSTREAM(FEET) = 490.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0481  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.424

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.70	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	2.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.10	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	7.40	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 134.43  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.59  
 AVERAGE FLOW DEPTH(FEET) = 2.28 TRAVEL TIME(MIN.) = 1.01  
 Tc(MIN.) = 14.94  
 SUBAREA AREA(ACRES) = 14.60 SUBAREA RUNOFF(CFS) = 27.90  
 EFFECTIVE AREA(ACRES) = 73.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 73.5 PEAK FLOW RATE(CFS) = 140.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.32 FLOW VELOCITY(FEET/SEC.) = 8.68  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31109.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
 MAINLINE Tc(MIN.) = 14.94  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.424  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	11.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	8.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.40	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 32.80 SUBAREA RUNOFF(CFS) = 62.69  
 EFFECTIVE AREA(ACRES) = 106.30 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 106.3 PEAK FLOW RATE(CFS) = 203.16

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31110.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 490.00 DOWNSTREAM(FEET) = 432.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1420.00 CHANNEL SLOPE = 0.0408  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.203

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.60	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	4.00	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.50	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 210.26  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.06  
 AVERAGE FLOW DEPTH(FEET) = 2.78 TRAVEL TIME(MIN.) = 2.61  
 Tc(MIN.) = 17.56  
 SUBAREA AREA(ACRES) = 8.30 SUBAREA RUNOFF(CFS) = 14.22  
 EFFECTIVE AREA(ACRES) = 114.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 114.6 PEAK FLOW RATE (CFS) = 203.16  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 2.75 FLOW VELOCITY (FEET/SEC.) = 8.96  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31110.00 = 4544.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31110.00 TO NODE 31110.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 17.56  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 2.203  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.60	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.40	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	6.20	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	3.90	0.30	1.000	65
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	1.40	0.30	1.000	79

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.998  
SUBAREA AREA (ACRES) = 21.80 SUBAREA RUNOFF (CFS) = 37.35  
EFFECTIVE AREA (ACRES) = 136.40 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 136.4 PEAK FLOW RATE (CFS) = 233.61

\*\*\*\*\*  
FLOW PROCESS FROM NODE 31110.00 TO NODE 13301.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 432.00 DOWNSTREAM (FEET) = 382.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1847.00 CHANNEL SLOPE = 0.0271  
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000  
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.930  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	4.90	0.30	1.000	86
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	1.50	0.30	1.000	79
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	2.50	0.30	1.000	79

AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 5.30 0.30 1.000 79  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 3.30 0.30 1.000 79  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.997  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 246.90  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.07  
AVERAGE FLOW DEPTH (FEET) = 3.19 TRAVEL TIME (MIN.) = 3.82  
Tc (MIN.) = 21.37  
SUBAREA AREA (ACRES) = 18.10 SUBAREA RUNOFF (CFS) = 26.57  
EFFECTIVE AREA (ACRES) = 154.50 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 154.5 PEAK FLOW RATE (CFS) = 233.61  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 3.13 FLOW VELOCITY (FEET/SEC.) = 7.94  
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	233.61	21.37	1.930	0.30 ( 0.30)	1.00	154.5	31100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3695.03	37.37	1.386	0.30 ( 0.24)	0.81	3596.0	13210.00
2	3702.98	37.63	1.380	0.30 ( 0.24)	0.81	3620.0	13200.00
3	3711.07	39.42	1.345	0.30 ( 0.24)	0.81	3745.9	13100.00
4	3521.37	65.52	1.024	0.30 ( 0.24)	0.81	5011.1	13000.00
5	3475.90	67.86	1.011	0.30 ( 0.24)	0.81	5031.0	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3354.46	21.37	1.930	0.30 ( 0.25)	0.83	2211.0	31100.00
2	3850.62	37.37	1.386	0.30 ( 0.25)	0.82	3750.5	13210.00
3	3857.83	37.63	1.380	0.30 ( 0.25)	0.82	3774.5	13200.00
4	3860.79	39.42	1.345	0.30 ( 0.25)	0.82	3900.4	13100.00
5	3625.14	65.52	1.024	0.30 ( 0.24)	0.82	5165.6	13000.00
6	3577.78	67.86	1.011	0.30 ( 0.24)	0.82	5185.5	13010.00

TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
PEAK FLOW RATE (CFS) = 3860.79 Tc (MIN.) = 39.418  
EFFECTIVE AREA (ACRES) = 3900.38 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA (ACRES) = 5185.5

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.54

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.308

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	9.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3865.06

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.49

AVERAGE FLOW DEPTH(FEET) = 6.54 TRAVEL TIME(MIN.) = 2.24

Tc(MIN.) = 41.66

SUBAREA AREA(ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 8.52

EFFECTIVE AREA(ACRES) = 3909.78 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82

TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 3860.79

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 6.54 FLOW VELOCITY(FEET/SEC.) = 8.49

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 41.66

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.308

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	13.80	0.30	1.000	86
NATURAL POOR COVER					
"BARREN"	B	2.60	0.30	1.000	86

COMMERCIAL B 1.10 0.30 0.100 56

RESIDENTIAL

".4 DWELLING/ACRE" B 3.50 0.30 0.900 56

AGRICULTURAL POOR COVER

"ROW CROPS,CONTOURED" B 6.90 0.30 1.000 79

NATURAL POOR COVER

"BARREN" B 0.20 0.30 1.000 86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952

SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 25.84

EFFECTIVE AREA(ACRES) = 3937.88 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82

TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 3860.79

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 41.66

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.308

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	0.10	0.30	1.000	79
COMMERCIAL	B	0.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.40	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	0.50	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894

SUBAREA AREA(ACRES) = 3.10 SUBAREA RUNOFF(CFS) = 2.90

EFFECTIVE AREA(ACRES) = 3940.98 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82

TOTAL AREA(ACRES) = 5226.1 PEAK FLOW RATE(CFS) = 3860.79

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 41.66

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.308

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.10	0.30	1.000	86
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65

NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.20 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 13.80 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 18.32  
 EFFECTIVE AREA (ACRES) = 3961.18 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 3860.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 41.66  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.308  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	34.60	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	2.40	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	22.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	11.60	0.30	1.000	79
APARTMENTS	B	0.40	0.30	0.200	56
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	4.80	0.30	1.000	63
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996					
SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 69.37					
EFFECTIVE AREA (ACRES) = 4037.58 AREA-AVERAGED Fm (INCH/HR) = 0.25					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83					
TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 3860.79					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 41.66  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.308  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	1.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	46.40	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
AGRICULTURAL POOR COVER					

"ROW CROPS,CONTOURED" B 60.70 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 5.80 0.30 1.000 65  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 103.95  
 EFFECTIVE AREA (ACRES) = 4152.18 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 3955.31

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.94  
 CHANNEL FLOW THRU SUBAREA (CFS) = 3955.31  
 FLOW VELOCITY (FEET/SEC.) = 9.82 FLOW DEPTH (FEET) = 5.94  
 TRAVEL TIME (MIN.) = 3.72 Tc (MIN.) = 45.38  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 45.38  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.251  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.20	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834					
SUBAREA AREA (ACRES) = 7.60 SUBAREA RUNOFF (CFS) = 6.84					
EFFECTIVE AREA (ACRES) = 4159.78 AREA-AVERAGED Fm (INCH/HR) = 0.25					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83					
TOTAL AREA (ACRES) = 5444.9 PEAK FLOW RATE (CFS) = 3955.31					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 45.38
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.251
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED"   B       3.10   0.30   1.000   79
NATURAL FAIR COVER
"WOODLAND,GRASS"       B       3.40   0.30   1.000   65
NATURAL POOR COVER
"BARREN"               B       0.50   0.30   1.000   86
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF"  B       0.20   0.30   1.000   63
COMMERCIAL             B       3.60   0.30   0.100   56
NATURAL FAIR COVER
"GRASS"                B       4.00   0.30   1.000   69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80      SUBAREA RUNOFF(CFS) = 13.54
EFFECTIVE AREA(ACRES) = 4174.58  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5459.7      PEAK FLOW RATE(CFS) = 3955.31
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 45.38
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.251
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"           B      14.60   0.30   1.000   66
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED"  B       6.30   0.30   1.000   79
NATURAL FAIR COVER
"WOODLAND,GRASS"       B       3.70   0.30   1.000   65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60      SUBAREA RUNOFF(CFS) = 21.05
EFFECTIVE AREA(ACRES) = 4199.18  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5484.3      PEAK FLOW RATE(CFS) = 3955.31
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 45.38
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.251
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
NATURAL POOR COVER
"BARREN"             B       0.50   0.30   1.000   86
COMMERCIAL           B       0.30   0.30   0.100   56
NATURAL FAIR COVER
"OPEN BRUSH"         B       0.20   0.30   1.000   66
RESIDENTIAL
".4 DWELLING/ACRE"   B       0.80   0.30   0.900   56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B       1.60   0.30   1.000   79
NATURAL POOR COVER
"BARREN"             B      31.90   0.30   1.000   86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30      SUBAREA RUNOFF(CFS) = 30.30
EFFECTIVE AREA(ACRES) = 4234.48  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5519.6      PEAK FLOW RATE(CFS) = 3955.31
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 45.38
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.251
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL           B       1.70   0.30   0.100   56
NATURAL FAIR COVER
"OPEN BRUSH"         B       0.30   0.30   1.000   66
RESIDENTIAL
".4 DWELLING/ACRE"   B       2.60   0.30   0.900   56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B       5.50   0.30   1.000   79
NATURAL FAIR COVER
"WOODLAND,GRASS"     B       0.20   0.30   1.000   65
NATURAL FAIR COVER
"OPEN BRUSH"         B       0.20   0.30   1.000   66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830
SUBAREA AREA(ACRES) = 10.50      SUBAREA RUNOFF(CFS) = 9.47
EFFECTIVE AREA(ACRES) = 4244.98  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5530.1      PEAK FLOW RATE(CFS) = 3955.31
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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=====
MAINLINE Tc(MIN.) = 45.38
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.251
SUBAREA LOSS RATE DATA(AMC II):

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DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.30	0.30	0.900	56
NATURAL POOR COVER "BARREN"	B	0.30	0.30	1.000	86
COMMERCIAL NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	0.100	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.30	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	6.50	0.30	0.900	56
	B	3.00	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 10.18  
EFFECTIVE AREA (ACRES) = 4256.58 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.86  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.222  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	13.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3961.31  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.18  
AVERAGE FLOW DEPTH (FEET) = 6.86 TRAVEL TIME (MIN.) = 1.89  
Tc (MIN.) = 47.27  
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 12.01  
EFFECTIVE AREA (ACRES) = 4270.38 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 6.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 6.85 FLOW VELOCITY (FEET/SEC.) = 8.18  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13304.00 = 38920.27 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
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MAINLINE Tc (MIN.) = 47.27  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.222  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	7.80	0.30	1.000	86
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	1.70	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	9.40	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	1.20	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	2.60	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 22.80 SUBAREA RUNOFF (CFS) = 18.92  
EFFECTIVE AREA (ACRES) = 4293.18 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5578.3 PEAK FLOW RATE (CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
-----

MAINLINE Tc (MIN.) = 47.27  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.222  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.20	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	2.70	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994  
SUBAREA AREA (ACRES) = 3.40 SUBAREA RUNOFF (CFS) = 2.83  
EFFECTIVE AREA (ACRES) = 4296.58 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5581.7 PEAK FLOW RATE (CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.54  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.157

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	27.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3965.87  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.74  
AVERAGE FLOW DEPTH(FEET) = 5.54 TRAVEL TIME(MIN.) = 4.60  
Tc(MIN.) = 51.87  
SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 21.12  
EFFECTIVE AREA(ACRES) = 4323.98 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 5.53 FLOW VELOCITY(FEET/SEC.) = 10.73  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 51.87  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.157

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	18.40	0.30	1.000	86
NATURAL FAIR COVER					
"MEADOWS"	B	1.20	0.30	1.000	70
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	26.60	0.30	1.000	86
COMMERCIAL	B	3.90	0.30	0.100	56
AGRICULTURAL POOR COVER					
"FALLOW"	B	3.00	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934  
SUBAREA AREA(ACRES) = 53.20 SUBAREA RUNOFF(CFS) = 41.96  
EFFECTIVE AREA(ACRES) = 4377.18 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5662.3 PEAK FLOW RATE(CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 51.87  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.157

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	14.00	0.30	1.000	86
COMMERCIAL	B	4.30	0.30	0.100	56
AGRICULTURAL POOR COVER					
"FALLOW"	B	5.30	0.30	1.000	86
NATURAL FAIR COVER					
"GRASS"	B	2.70	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860  
SUBAREA AREA(ACRES) = 27.60 SUBAREA RUNOFF(CFS) = 22.32  
EFFECTIVE AREA(ACRES) = 4404.78 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
TOTAL AREA(ACRES) = 5689.9 PEAK FLOW RATE(CFS) = 3955.31  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

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MAINLINE Tc(MIN.) = 51.87  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.157

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"MEADOWS"	B	3.20	0.30	1.000	70
NATURAL FAIR COVER					
"OPEN BRUSH"	B	6.10	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	7.50	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	5.40	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.60	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	1.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971  
SUBAREA AREA(ACRES) = 25.70 SUBAREA RUNOFF(CFS) = 20.02  
EFFECTIVE AREA(ACRES) = 4430.48 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5715.6 PEAK FLOW RATE (CFS) = 3955.31  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 51.87  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.157  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 2.00 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.70 0.30 1.000 86  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 0.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.10 0.30 1.000 65  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.807  
 SUBAREA AREA (ACRES) = 10.70 SUBAREA RUNOFF (CFS) = 8.81  
 EFFECTIVE AREA (ACRES) = 4441.18 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5726.3 PEAK FLOW RATE (CFS) = 3955.31  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc (MIN.) = 51.87  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.157  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 8.20 0.30 0.900 56  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.906  
 SUBAREA AREA (ACRES) = 8.70 SUBAREA RUNOFF (CFS) = 6.93  
 EFFECTIVE AREA (ACRES) = 4449.88 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5735.0 PEAK FLOW RATE (CFS) = 3955.31  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3a25evr1.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	985.44	13.67	0.30 ( 0.13)	0.43	435.7	120.00
2	984.77	13.72	0.30 ( 0.13)	0.43	436.5	110.00
3	831.39	20.84	0.30 ( 0.13)	0.43	504.3	100.00
4	778.32	23.57	0.30 ( 0.13)	0.43	510.2	150.00
TOTAL AREA (ACRES) =						510.2

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3453.18	34.36	1.446	0.30 ( 0.26)	0.85	2760.5	31100.00
2	3931.16	49.85	1.182	0.30 ( 0.25)	0.84	4300.0	13210.00
3	3936.31	50.10	1.179	0.30 ( 0.25)	0.84	4324.0	13200.00
4	3955.31	51.87	1.157	0.30 ( 0.25)	0.84	4449.9	13100.00
5	3723.93	78.21	0.952	0.30 ( 0.25)	0.83	5715.1	13000.00
6	3673.16	80.60	0.939	0.30 ( 0.25)	0.83	5735.0	13010.00
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 =							41886.54 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	985.44	13.67	2.612	0.30 ( 0.13)	0.43	435.7	120.00
2	984.77	13.72	2.604	0.30 ( 0.13)	0.43	436.5	110.00
3	831.39	20.84	1.957	0.30 ( 0.13)	0.43	504.3	100.00
4	778.32	23.57	1.818	0.30 ( 0.13)	0.43	510.2	150.00
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 13305.00 =							9867.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3705.11	13.67	2.612	0.30 ( 0.22)	0.73	1534.0	120.00
2	3705.84	13.72	2.604	0.30 ( 0.22)	0.73	1538.9	110.00
3	3825.82	20.84	1.957	0.30 ( 0.23)	0.75	2178.7	100.00
4	3887.78	23.57	1.818	0.30 ( 0.23)	0.76	2403.7	150.00
5	4059.86	34.36	1.446	0.30 ( 0.24)	0.79	3270.7	31100.00
6	4416.33	49.85	1.182	0.30 ( 0.24)	0.80	4810.2	13210.00
7	4419.87	50.10	1.179	0.30 ( 0.24)	0.80	4834.2	13200.00
8	4428.62	51.87	1.157	0.30 ( 0.24)	0.80	4960.1	13100.00
9	4103.11	78.21	0.952	0.30 ( 0.24)	0.80	6225.3	13000.00
10	4046.12	80.60	0.939	0.30 ( 0.24)	0.80	6245.2	13010.00
TOTAL AREA (ACRES) =						6245.2	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 4428.62 Tc (MIN.) = 51.872  
 EFFECTIVE AREA (ACRES) = 4960.08 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA (ACRES) = 6245.2

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50

CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.46

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.082

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	68.80	0.30	0.850	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4454.22

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.31

AVERAGE FLOW DEPTH(FEET) = 5.45 TRAVEL TIME(MIN.) = 5.97

Tc(MIN.) = 57.84

SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 51.21

EFFECTIVE AREA(ACRES) = 5028.88 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 4428.62

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.44

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.44 FLOW VELOCITY(FEET/SEC.) = 12.28

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13306.00 = 46294.95 FEET.

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FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.84

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.082

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	21.50	0.30	1.000	86
COMMERCIAL	B	15.30	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69

NATURAL POOR COVER

"BARREN" B 21.50 0.30 1.000 86

COMMERCIAL B 15.30 0.30 0.100 56

NATURAL FAIR COVER

"GRASS" B 0.80 0.30 1.000 69

AGRICULTURAL FAIR COVER

"ORCHARDS" B 0.60 0.30 1.000 65

RESIDENTIAL

".4 DWELLING/ACRE" B 8.00 0.30 0.900 56

NATURAL FAIR COVER

"WOODLAND,GRASS" B 0.10 0.30 1.000 65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.685

SUBAREA AREA(ACRES) = 46.30 SUBAREA RUNOFF(CFS) = 36.52

EFFECTIVE AREA(ACRES) = 5075.18 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 6360.3 PEAK FLOW RATE(CFS) = 4428.62

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.84

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.082

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	43.30	0.30	1.000	86
COMMERCIAL	B	4.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	5.70	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.50	0.30	1.000	65
PUBLIC PARK	B	1.10	0.30	0.850	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.10	0.30	0.900	56

NATURAL POOR COVER

"BARREN" B 43.30 0.30 1.000 86

COMMERCIAL B 4.90 0.30 0.100 56

NATURAL FAIR COVER

"GRASS" B 5.70 0.30 1.000 69

AGRICULTURAL FAIR COVER

"ORCHARDS" B 0.50 0.30 1.000 65

PUBLIC PARK B 1.10 0.30 0.850 56

RESIDENTIAL

".4 DWELLING/ACRE" B 3.10 0.30 0.900 56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917

SUBAREA AREA(ACRES) = 58.60 SUBAREA RUNOFF(CFS) = 42.56

EFFECTIVE AREA(ACRES) = 5133.78 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 6418.9 PEAK FLOW RATE(CFS) = 4428.62

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.84

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.082

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	6.80	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
NATURAL FAIR COVER					

NATURAL FAIR COVER

"WOODLAND,GRASS" B 6.80 0.30 1.000 65

NATURAL POOR COVER

"BARREN" B 0.70 0.30 1.000 86

COMMERCIAL B 1.10 0.30 0.100 56

NATURAL FAIR COVER

"GRASS"	B	0.50	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.10	0.30	1.000	65
PUBLIC PARK	B	0.50	0.30	0.850	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.890  
SUBAREA AREA(ACRES) = 9.70 SUBAREA RUNOFF(CFS) = 7.11  
EFFECTIVE AREA(ACRES) = 5143.48 AREA-AVERAGED Fm(INCH/HR) = 0.24  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 6428.6 PEAK FLOW RATE(CFS) = 4428.62  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 57.84  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.082  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.20	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.904  
SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 1.68  
EFFECTIVE AREA(ACRES) = 5145.78 AREA-AVERAGED Fm(INCH/HR) = 0.24  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 6430.9 PEAK FLOW RATE(CFS) = 4428.62  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 245.50 DOWNSTREAM(FEET) = 220.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1543.21 CHANNEL SLOPE = 0.0165  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.37  
CHANNEL FLOW THRU SUBAREA(CFS) = 4428.62  
FLOW VELOCITY(FEET/SEC.) = 12.49 FLOW DEPTH(FEET) = 5.37  
TRAVEL TIME(MIN.) = 2.06 Tc(MIN.) = 59.90  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13307.00 = 47838.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 59.90  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.056  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.20	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	3.70	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	3.20	0.30	1.000	69

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.942  
SUBAREA AREA(ACRES) = 7.70 SUBAREA RUNOFF(CFS) = 5.36  
EFFECTIVE AREA(ACRES) = 5153.48 AREA-AVERAGED Fm(INCH/HR) = 0.24  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 6438.6 PEAK FLOW RATE(CFS) = 4428.62  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 59.90  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.056  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.60	0.30	1.000	65
NATURAL FAIR COVER					
"GRASS"	B	1.90	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.60	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 6.10 SUBAREA RUNOFF(CFS) = 4.15  
EFFECTIVE AREA(ACRES) = 5159.58 AREA-AVERAGED Fm(INCH/HR) = 0.24  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
TOTAL AREA(ACRES) = 6444.7 PEAK FLOW RATE(CFS) = 4428.62  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 220.00 DOWNSTREAM(FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 925.62 CHANNEL SLOPE = 0.0086  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.41  
CHANNEL FLOW THRU SUBAREA(CFS) = 4428.62  
FLOW VELOCITY(FEET/SEC.) = 9.97 FLOW DEPTH(FEET) = 6.41  
TRAVEL TIME(MIN.) = 1.55 Tc(MIN.) = 61.45

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	5.00	0.30	1.000	65
COMMERCIAL	B	3.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697  
 SUBAREA AREA(ACRES) = 9.50 SUBAREA RUNOFF(CFS) = 7.16  
 EFFECTIVE AREA(ACRES) = 5169.08 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6454.2 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	B	0.30	0.30	0.200	56
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.00	0.30	1.000	63
COMMERCIAL	B	41.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	7.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	25.00	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498  
 SUBAREA AREA(ACRES) = 75.60 SUBAREA RUNOFF(CFS) = 61.06  
 EFFECTIVE AREA(ACRES) = 5244.68 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6529.8 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	0.90	0.30	1.000	79
SCHOOL	B	0.30	0.30	0.600	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	13.20	0.30	1.000	65
APARTMENTS	B	0.50	0.30	0.200	56
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966  
 SUBAREA AREA(ACRES) = 15.60 SUBAREA RUNOFF(CFS) = 10.63  
 EFFECTIVE AREA(ACRES) = 5260.28 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6545.4 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	33.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	17.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	16.80	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.60	0.30	0.200	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	1.50	0.30	0.400	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	10.00	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603  
 SUBAREA AREA(ACRES) = 80.40 SUBAREA RUNOFF(CFS) = 62.65  
 EFFECTIVE AREA(ACRES) = 5340.68 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6625.8 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
SCHOOL	B	0.30	0.30	0.600	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
 SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 0.70  
 EFFECTIVE AREA(ACRES) = 5341.68 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6626.8 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER "GRASS"	B	0.50	0.30	1.000	69
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "GRASS"	B	0.30	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 2.10 SUBAREA RUNOFF(CFS) = 1.41  
 EFFECTIVE AREA(ACRES) = 5343.78 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6628.9 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 61.45  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.047  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL FAIR COVER  
 "GRASS" B 1.20 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 PUBLIC PARK B 1.70 0.30 0.850 56  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 7.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 1.00 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978  
 SUBAREA AREA(ACRES) = 11.60 SUBAREA RUNOFF(CFS) = 7.87  
 EFFECTIVE AREA(ACRES) = 5355.38 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6640.5 PEAK FLOW RATE(CFS) = 4428.62  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV29.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19538.94	17.69	0.30( 0.23)	0.76	3761.7	210.00
2	21252.62	24.56	0.30( 0.23)	0.77	5470.6	50330.00
3	22508.92	29.95	0.30( 0.23)	0.78	7205.6	50220.00
4	24606.74	39.90	0.30( 0.25)	0.82	10493.5	400.00
5	25294.81	45.13	0.30( 0.25)	0.84	12358.0	390.00
6	26886.55	56.88	0.30( 0.27)	0.89	16472.9	40100.00
7	28257.58	64.70	0.30( 0.27)	0.90	19247.4	11801.00
8	30506.31	75.48	0.30( 0.28)	0.92	23778.0	11530.00
9	31780.19	84.18	0.30( 0.28)	0.93	28434.8	11910.00
10	33770.59	94.21	0.30( 0.28)	0.94	34737.8	11350.00
11	34350.78	98.94	0.30( 0.28)	0.95	37912.0	11130.00
12	34187.45	104.99	0.30( 0.29)	0.95	40838.6	12300.00
13	33741.29	113.71	0.30( 0.29)	0.95	45099.2	12400.00
14	32947.12	123.15	0.30( 0.29)	0.96	48500.8	12201.00
15	32154.29	130.55	0.30( 0.29)	0.96	50393.8	12231.00
16	31325.17	137.95	0.30( 0.29)	0.96	51946.5	10400.00
17	29981.36	147.25	0.30( 0.29)	0.96	53392.9	12010.00
18	29061.04	152.54	0.30( 0.29)	0.96	53655.5	10210.00
19	28481.67	156.53	0.30( 0.29)	0.96	53802.3	12000.00
20	25285.05	182.48	0.30( 0.29)	0.96	54415.3	10100.00
TOTAL AREA(ACRES) =						54415.3

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<



MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19538.94	17.69	0.30 ( 0.23)	0.76	3761.7	210.00
2	21252.62	24.56	0.30 ( 0.23)	0.77	5470.6	50330.00
3	22508.92	29.95	0.30 ( 0.23)	0.78	7205.6	50220.00
4	24606.74	39.90	0.30 ( 0.25)	0.82	10493.5	400.00
5	25294.81	45.13	0.30 ( 0.25)	0.84	12358.0	390.00
6	26886.55	56.88	0.30 ( 0.27)	0.89	16472.9	40100.00
7	28257.58	64.70	0.30 ( 0.27)	0.90	19247.4	11801.00
8	30506.31	75.48	0.30 ( 0.28)	0.92	23778.0	11530.00
9	31780.19	84.18	0.30 ( 0.28)	0.93	28434.8	11910.00
10	33770.59	94.21	0.30 ( 0.28)	0.94	34737.8	11350.00
11	34350.78	98.94	0.30 ( 0.28)	0.95	37912.0	11130.00
12	34187.45	104.99	0.30 ( 0.29)	0.95	40838.6	12300.00
13	33741.29	113.71	0.30 ( 0.29)	0.95	45099.2	12400.00
14	32947.12	123.15	0.30 ( 0.29)	0.96	48500.8	12201.00
15	32154.29	130.55	0.30 ( 0.29)	0.96	50393.8	12231.00
16	31325.17	137.95	0.30 ( 0.29)	0.96	51946.5	10400.00
17	29981.36	147.25	0.30 ( 0.29)	0.96	53392.9	12010.00
18	29061.04	152.54	0.30 ( 0.29)	0.96	53655.5	10210.00
19	28481.67	156.53	0.30 ( 0.29)	0.96	53802.3	12000.00
20	25285.05	182.48	0.30 ( 0.29)	0.96	54415.3	10100.00
TOTAL AREA (ACRES) =						54415.3

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 FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 213.00 DOWNSTREAM (FEET) = 212.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1389.52 CHANNEL SLOPE = 0.0007  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 16.69  
 CHANNEL FLOW THRU SUBAREA (CFS) = 34350.78  
 FLOW VELOCITY (FEET/SEC.) = 7.26 FLOW DEPTH (FEET) = 16.69  
 TRAVEL TIME (MIN.) = 3.19 Tc (MIN.) = 102.13  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

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 FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19538.94	21.48	1.924	0.30 ( 0.23)	0.76	3761.7	210.00
2	21252.62	28.26	1.607	0.30 ( 0.23)	0.77	5470.6	50330.00
3	22508.92	33.58	1.461	0.30 ( 0.23)	0.78	7205.6	50220.00
4	24606.74	43.43	1.281	0.30 ( 0.25)	0.82	10493.5	400.00
5	25294.81	48.63	1.201	0.30 ( 0.25)	0.84	12358.0	390.00
6	26886.55	60.32	1.053	0.30 ( 0.27)	0.89	16472.9	40100.00

7	28257.58	68.08	1.009	0.30 ( 0.27)	0.90	19247.4	11801.00
8	30506.31	78.79	0.949	0.30 ( 0.28)	0.92	23778.0	11530.00
9	31780.19	87.45	0.900	0.30 ( 0.28)	0.93	28434.8	11910.00
10	33770.59	97.41	0.859	0.30 ( 0.28)	0.94	34737.8	11350.00
11	34350.78	102.13	0.841	0.30 ( 0.28)	0.95	37912.0	11130.00
12	34187.45	108.19	0.819	0.30 ( 0.29)	0.95	40838.6	12300.00
13	33741.29	116.92	0.786	0.30 ( 0.29)	0.95	45099.2	12400.00
14	32947.12	126.37	0.761	0.30 ( 0.29)	0.96	48500.8	12201.00
15	32154.29	133.81	0.745	0.30 ( 0.29)	0.96	50393.8	12231.00
16	31325.17	141.23	0.729	0.30 ( 0.29)	0.96	51946.5	10400.00
17	29981.36	150.57	0.709	0.30 ( 0.29)	0.96	53392.9	12010.00
18	29061.04	155.90	0.698	0.30 ( 0.29)	0.96	53655.5	10210.00
19	28481.67	159.91	0.689	0.30 ( 0.29)	0.96	53802.3	12000.00
20	25285.05	185.98	0.640	0.30 ( 0.29)	0.96	54415.3	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 =							118090.66 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3705.11	23.78	1.807	0.30 ( 0.22)	0.73	1929.3	120.00
2	3705.84	23.83	1.805	0.30 ( 0.22)	0.73	1934.2	110.00
3	3825.82	30.86	1.516	0.30 ( 0.23)	0.75	2574.0	100.00
4	3887.78	33.53	1.462	0.30 ( 0.23)	0.76	2799.0	150.00
5	4059.86	44.20	1.269	0.30 ( 0.23)	0.78	3666.0	31100.00
6	4416.33	59.43	1.062	0.30 ( 0.24)	0.79	5205.5	13210.00
7	4419.87	59.68	1.059	0.30 ( 0.24)	0.79	5229.5	13200.00
8	4428.62	61.45	1.047	0.30 ( 0.24)	0.79	5355.4	13100.00
9	4103.11	88.02	0.897	0.30 ( 0.24)	0.79	6620.6	13000.00
10	4046.12	90.45	0.884	0.30 ( 0.24)	0.79	6640.5	13010.00
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 =							48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23133.38	21.48	1.924	0.30 ( 0.23)	0.75	5504.9	210.00
2	23823.78	23.78	1.807	0.30 ( 0.23)	0.75	6269.1	120.00
3	23837.77	23.83	1.805	0.30 ( 0.23)	0.75	6287.2	110.00
4	25034.11	28.26	1.607	0.30 ( 0.23)	0.76	7808.2	50330.00
5	25691.48	30.86	1.516	0.30 ( 0.23)	0.77	8891.2	100.00
6	26384.83	33.53	1.462	0.30 ( 0.23)	0.78	9988.2	150.00
7	26397.51	33.58	1.461	0.30 ( 0.23)	0.78	10008.7	50220.00
8	28654.21	43.43	1.281	0.30 ( 0.24)	0.81	14097.1	400.00
9	28768.10	44.20	1.269	0.30 ( 0.24)	0.82	14434.6	31100.00
10	29458.50	48.63	1.201	0.30 ( 0.25)	0.83	16472.4	390.00
11	31182.19	59.43	1.062	0.30 ( 0.26)	0.86	21366.4	13210.00
12	31219.58	59.68	1.059	0.30 ( 0.26)	0.86	21477.9	13200.00
13	31309.58	60.32	1.053	0.30 ( 0.26)	0.86	21747.8	40100.00
14	31514.52	61.45	1.047	0.30 ( 0.26)	0.86	22231.7	13100.00
15	32604.90	68.08	1.009	0.30 ( 0.26)	0.88	24918.9	11801.00
16	34722.52	78.79	0.949	0.30 ( 0.27)	0.89	29959.0	11530.00
17	35890.35	87.45	0.900	0.30 ( 0.27)	0.91	35028.1	11910.00
18	35998.20	88.02	0.897	0.30 ( 0.27)	0.91	35419.3	13000.00
19	36427.32	90.45	0.884	0.30 ( 0.27)	0.91	36978.6	13010.00
20	37655.54	97.41	0.859	0.30 ( 0.28)	0.92	41378.3	11350.00
21	38126.45	102.13	0.841	0.30 ( 0.28)	0.92	44552.5	11130.00
22	37822.81	108.19	0.819	0.30 ( 0.28)	0.93	47479.1	12300.00
23	37174.39	116.92	0.786	0.30 ( 0.28)	0.93	51739.7	12400.00
24	36223.04	126.37	0.761	0.30 ( 0.28)	0.94	55141.3	12201.00

25 35330.18 133.81 0.745 0.30( 0.28) 0.94 57034.3 12231.00  
 26 34401.16 141.23 0.729 0.30( 0.28) 0.94 58587.0 10400.00  
 27 32931.54 150.57 0.709 0.30( 0.28) 0.94 60033.5 12010.00  
 28 31939.57 155.90 0.698 0.30( 0.28) 0.94 60296.0 10210.00  
 29 31306.25 159.91 0.689 0.30( 0.28) 0.94 60442.9 12000.00  
 30 27803.59 185.98 0.640 0.30( 0.28) 0.94 61055.8 10100.00  
 TOTAL AREA(ACRES) = 61055.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38126.45 Tc(MIN.) = 102.130  
 EFFECTIVE AREA(ACRES) = 44552.52 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
 TOTAL AREA(ACRES) = 61055.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

=====  
 END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 61055.8 TC(MIN.) = 102.13  
 EFFECTIVE AREA(ACRES) = 44552.52 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.924  
 PEAK FLOW RATE(CFS) = 38126.45

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23133.38	21.48	1.924	0.30( 0.23)	0.75	5504.9	210.00
2	23823.78	23.78	1.807	0.30( 0.23)	0.75	6269.1	120.00
3	23837.77	23.83	1.805	0.30( 0.23)	0.75	6287.2	110.00
4	25034.11	28.26	1.607	0.30( 0.23)	0.76	7808.2	50330.00
5	25691.48	30.86	1.516	0.30( 0.23)	0.77	8891.2	100.00
6	26384.83	33.53	1.462	0.30( 0.23)	0.78	9988.2	150.00
7	26397.51	33.58	1.461	0.30( 0.23)	0.78	10008.7	50220.00
8	28654.21	43.43	1.281	0.30( 0.24)	0.81	14097.1	400.00
9	28768.10	44.20	1.269	0.30( 0.24)	0.82	14434.6	31100.00
10	29458.50	48.63	1.201	0.30( 0.25)	0.83	16472.4	390.00
11	31182.19	59.43	1.062	0.30( 0.26)	0.86	21366.4	13210.00
12	31219.58	59.68	1.059	0.30( 0.26)	0.86	21477.9	13200.00
13	31309.58	60.32	1.053	0.30( 0.26)	0.86	21747.8	40100.00
14	31514.52	61.45	1.047	0.30( 0.26)	0.86	22231.7	13100.00
15	32604.90	68.08	1.009	0.30( 0.26)	0.88	24918.9	11801.00
16	34722.52	78.79	0.949	0.30( 0.27)	0.89	29959.0	11530.00
17	35890.35	87.45	0.900	0.30( 0.27)	0.91	35028.1	11910.00
18	35998.20	88.02	0.897	0.30( 0.27)	0.91	35419.3	13000.00
19	36427.32	90.45	0.884	0.30( 0.27)	0.91	36978.6	13010.00
20	37655.54	97.41	0.859	0.30( 0.28)	0.92	41378.3	11350.00
21	38126.45	102.13	0.841	0.30( 0.28)	0.92	44552.5	11130.00
22	37822.81	108.19	0.819	0.30( 0.28)	0.93	47479.1	12300.00
23	37174.39	116.92	0.786	0.30( 0.28)	0.93	51739.7	12400.00
24	36223.04	126.37	0.761	0.30( 0.28)	0.94	55141.3	12201.00
25	35330.18	133.81	0.745	0.30( 0.28)	0.94	57034.3	12231.00
26	34401.16	141.23	0.729	0.30( 0.28)	0.94	58587.0	10400.00
27	32931.54	150.57	0.709	0.30( 0.28)	0.94	60033.5	12010.00
28	31939.57	155.90	0.698	0.30( 0.28)	0.94	60296.0	10210.00
29	31306.25	159.91	0.689	0.30( 0.28)	0.94	60442.9	12000.00
30	27803.59	185.98	0.640	0.30( 0.28)	0.94	61055.8	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S34- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV34.DAT  
TIME/DATE OF STUDY: 11:44 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.808
- 2) 10.00; 3.142
- 3) 15.00; 2.408
- 4) 20.00; 1.996
- 5) 25.00; 1.741
- 6) 30.00; 1.531
- 7) 40.00; 1.330
- 8) 50.00; 1.178
- 9) 60.00; 1.052
- 10) 90.00; 0.883
- 11) 120.00; 0.772
- 12) 180.00; 0.642
- 13) 360.00; 0.472
- 14) 1200.00; 0.207

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV33.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23837.77	23.83	0.30 ( 0.23)	0.75	6287.2	110.00
2	25691.48	30.86	0.30 ( 0.23)	0.77	8891.2	100.00
3	26397.51	33.58	0.30 ( 0.23)	0.78	10008.7	50220.00
4	28768.10	44.20	0.30 ( 0.24)	0.82	14434.6	31100.00
5	29458.50	48.63	0.30 ( 0.25)	0.83	16472.4	390.00
6	31514.52	61.45	0.30 ( 0.26)	0.86	22231.7	13100.00
7	32604.90	68.08	0.30 ( 0.26)	0.88	24918.9	11801.00
8	34722.52	78.79	0.30 ( 0.27)	0.89	29959.0	11530.00
9	36427.32	90.45	0.30 ( 0.27)	0.91	36978.6	13010.00
10	37655.54	97.41	0.30 ( 0.28)	0.92	41378.3	11350.00
11	38126.45	102.13	0.30 ( 0.28)	0.92	44552.5	11130.00
12	37822.81	108.19	0.30 ( 0.28)	0.93	47479.1	12300.00
13	37174.39	116.92	0.30 ( 0.28)	0.93	51739.7	12400.00
14	36223.04	126.37	0.30 ( 0.28)	0.94	55141.3	12201.00
15	35330.18	133.81	0.30 ( 0.28)	0.94	57034.3	12231.00
16	34401.16	141.23	0.30 ( 0.28)	0.94	58587.0	10400.00
17	32931.54	150.57	0.30 ( 0.28)	0.94	60033.5	12010.00
18	31939.57	155.90	0.30 ( 0.28)	0.94	60296.0	10210.00
19	31306.25	159.91	0.30 ( 0.28)	0.94	60442.9	12000.00
20	27803.59	185.98	0.30 ( 0.28)	0.94	61055.8	10100.00
TOTAL AREA(ACRES) =						61055.8

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23837.77	23.83	0.30 ( 0.23)	0.75	6287.2	110.00
2	25691.48	30.86	0.30 ( 0.23)	0.77	8891.2	100.00
3	26397.51	33.58	0.30 ( 0.23)	0.78	10008.7	50220.00
4	28768.10	44.20	0.30 ( 0.24)	0.82	14434.6	31100.00
5	29458.50	48.63	0.30 ( 0.25)	0.83	16472.4	390.00
6	31514.52	61.45	0.30 ( 0.26)	0.86	22231.7	13100.00
7	32604.90	68.08	0.30 ( 0.26)	0.88	24918.9	11801.00
8	34722.52	78.79	0.30 ( 0.27)	0.89	29959.0	11530.00
9	36427.32	90.45	0.30 ( 0.27)	0.91	36978.6	13010.00
10	37655.54	97.41	0.30 ( 0.28)	0.92	41378.3	11350.00
11	38126.45	102.13	0.30 ( 0.28)	0.92	44552.5	11130.00
12	37822.81	108.19	0.30 ( 0.28)	0.93	47479.1	12300.00
13	37174.39	116.92	0.30 ( 0.28)	0.93	51739.7	12400.00

14	36223.04	126.37	0.30	( 0.28)	0.94	55141.3	12201.00
15	35330.18	133.81	0.30	( 0.28)	0.94	57034.3	12231.00
16	34401.16	141.23	0.30	( 0.28)	0.94	58587.0	10400.00
17	32931.54	150.57	0.30	( 0.28)	0.94	60033.5	12010.00
18	31939.57	155.90	0.30	( 0.28)	0.94	60296.0	10210.00
19	31306.25	159.91	0.30	( 0.28)	0.94	60442.9	12000.00
20	27803.59	185.98	0.30	( 0.28)	0.94	61055.8	10100.00
TOTAL AREA (ACRES) =		61055.8					

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FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 212.00 DOWNSTREAM(FEET) = 209.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 623.02 CHANNEL SLOPE = 0.0048  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.46  
 CHANNEL FLOW THRU SUBAREA(CFS) = 38126.45  
 FLOW VELOCITY(FEET/SEC.) = 14.44 FLOW DEPTH(FEET) = 10.46  
 TRAVEL TIME(MIN.) = 0.72 Tc(MIN.) = 102.85  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23837.77	24.67	1.758	0.30( 0.23)	0.75	6287.2	110.00
2	25691.48	31.67	1.497	0.30( 0.23)	0.77	8891.2	100.00
3	26397.51	34.39	1.443	0.30( 0.23)	0.78	10008.7	50220.00
4	28768.10	44.98	1.254	0.30( 0.24)	0.82	14434.6	31100.00
5	29458.50	49.42	1.187	0.30( 0.25)	0.83	16472.4	390.00
6	31514.52	62.21	1.040	0.30( 0.26)	0.86	22231.7	13100.00
7	32604.90	68.84	1.002	0.30( 0.26)	0.88	24918.9	11801.00
8	34722.52	79.53	0.942	0.30( 0.27)	0.89	29959.0	11530.00
9	36427.32	91.18	0.879	0.30( 0.27)	0.91	36978.6	13010.00
10	37655.54	98.13	0.853	0.30( 0.28)	0.92	41378.3	11350.00
11	38126.45	102.85	0.835	0.30( 0.28)	0.92	44552.5	11130.00
12	37822.81	108.91	0.813	0.30( 0.28)	0.93	47479.1	12300.00
13	37174.39	117.64	0.781	0.30( 0.28)	0.93	51739.7	12400.00
14	36223.04	127.11	0.757	0.30( 0.28)	0.94	55141.3	12201.00
15	35330.18	134.54	0.740	0.30( 0.28)	0.94	57034.3	12231.00
16	34401.16	141.97	0.724	0.30( 0.28)	0.94	58587.0	10400.00
17	32931.54	151.33	0.704	0.30( 0.28)	0.94	60033.5	12010.00
18	31939.57	156.66	0.693	0.30( 0.28)	0.94	60296.0	10210.00
19	31306.25	160.67	0.684	0.30( 0.28)	0.94	60442.9	12000.00
20	27803.59	186.78	0.636	0.30( 0.28)	0.94	61055.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 38126.45 Tc(MIN.) = 102.85  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 44552.52

\*\*\*\*\*

FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P505XX25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	224.31	17.58	2.196	0.30( 0.29)	0.96	146.4	50500.00
TOTAL AREA(ACRES) =		146.4					

\*\*\*\*\*

FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23837.77	24.67	1.758	0.30( 0.23)	0.75	6287.2	110.00
2	25691.48	31.67	1.497	0.30( 0.23)	0.77	8891.2	100.00
3	26397.51	34.39	1.443	0.30( 0.23)	0.78	10008.7	50220.00
4	28768.10	44.98	1.254	0.30( 0.24)	0.82	14434.6	31100.00
5	29458.50	49.42	1.187	0.30( 0.25)	0.83	16472.4	390.00
6	31514.52	62.21	1.040	0.30( 0.26)	0.86	22231.7	13100.00
7	32604.90	68.84	1.002	0.30( 0.26)	0.88	24918.9	11801.00
8	34722.52	79.53	0.942	0.30( 0.27)	0.89	29959.0	11530.00
9	36427.32	91.18	0.879	0.30( 0.27)	0.91	36978.6	13010.00
10	37655.54	98.13	0.853	0.30( 0.28)	0.92	41378.3	11350.00
11	38126.45	102.85	0.835	0.30( 0.28)	0.92	44552.5	11130.00
12	37822.81	108.91	0.813	0.30( 0.28)	0.93	47479.1	12300.00
13	37174.39	117.64	0.781	0.30( 0.28)	0.93	51739.7	12400.00
14	36223.04	127.11	0.757	0.30( 0.28)	0.94	55141.3	12201.00
15	35330.18	134.54	0.740	0.30( 0.28)	0.94	57034.3	12231.00
16	34401.16	141.97	0.724	0.30( 0.28)	0.94	58587.0	10400.00
17	32931.54	151.33	0.704	0.30( 0.28)	0.94	60033.5	12010.00
18	31939.57	156.66	0.693	0.30( 0.28)	0.94	60296.0	10210.00
19	31306.25	160.67	0.684	0.30( 0.28)	0.94	60442.9	12000.00
20	27803.59	186.78	0.636	0.30( 0.28)	0.94	61055.8	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 =		118713.68 FEET.					

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	224.31	17.58	2.196	0.30( 0.29)	0.96	146.4	50500.00
LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 =		5416.00 FEET.					

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22063.71	17.58	2.196	0.30( 0.23)	0.76	4626.5	50500.00
2	24010.62	24.67	1.758	0.30( 0.23)	0.76	6433.6	110.00
3	25833.70	31.67	1.497	0.30( 0.23)	0.77	9037.6	100.00
4	26533.31	34.39	1.443	0.30( 0.23)	0.78	10155.1	50220.00
5	28881.74	44.98	1.254	0.30( 0.25)	0.82	14581.0	31100.00
6	29564.22	49.42	1.187	0.30( 0.25)	0.83	16618.8	390.00
7	31602.92	62.21	1.040	0.30( 0.26)	0.86	22378.1	13100.00
8	32688.91	68.84	1.002	0.30( 0.26)	0.88	25065.3	11801.00
9	34799.45	79.53	0.942	0.30( 0.27)	0.89	30105.4	11530.00
10	36496.81	91.18	0.879	0.30( 0.27)	0.91	37125.0	13010.00
11	37722.00	98.13	0.853	0.30( 0.28)	0.92	41524.7	11350.00

12 38190.86 102.85 0.835 0.30( 0.28) 0.92 44698.9 11130.00  
 13 37884.59 108.91 0.813 0.30( 0.28) 0.93 47625.5 12300.00  
 14 37232.36 117.64 0.781 0.30( 0.28) 0.93 51886.1 12400.00  
 15 36278.18 127.11 0.757 0.30( 0.28) 0.94 55287.7 12201.00  
 16 35383.43 134.54 0.740 0.30( 0.28) 0.94 57180.7 12231.00  
 17 34452.52 141.97 0.724 0.30( 0.28) 0.94 58733.4 10400.00  
 18 32980.51 151.33 0.704 0.30( 0.28) 0.94 60179.9 12010.00  
 19 31987.19 156.66 0.693 0.30( 0.28) 0.94 60442.4 10210.00  
 20 31352.84 160.67 0.684 0.30( 0.28) 0.94 60589.3 12000.00  
 21 27844.51 186.78 0.636 0.30( 0.28) 0.94 61202.2 10100.00  
 TOTAL AREA (ACRES) = 61202.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38190.86 Tc(MIN.) = 102.849  
 EFFECTIVE AREA(ACRES) = 44698.92 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 61202.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13402.00 TO NODE 13404.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 209.00 DOWNSTREAM(FEET) = 207.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 395.35 CHANNEL SLOPE = 0.0051  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.33  
 CHANNEL FLOW THRU SUBAREA(CFS) = 38190.86  
 FLOW VELOCITY(FEET/SEC.) = 14.69 FLOW DEPTH(FEET) = 10.33  
 TRAVEL TIME(MIN.) = 0.45 Tc(MIN.) = 103.30  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22063.71	18.11	2.151	0.30( 0.23)	0.76	4626.5	50500.00
2	24010.62	25.19	1.733	0.30( 0.23)	0.76	6433.6	110.00
3	25833.70	32.18	1.487	0.30( 0.23)	0.77	9037.6	100.00
4	26533.31	34.90	1.433	0.30( 0.23)	0.78	10155.1	50220.00
5	28881.74	45.48	1.247	0.30( 0.25)	0.82	14581.0	31100.00
6	29564.22	49.90	1.179	0.30( 0.25)	0.83	16618.8	390.00
7	31602.92	62.69	1.037	0.30( 0.26)	0.86	22378.1	13100.00
8	32688.91	69.31	1.000	0.30( 0.26)	0.88	25065.3	11801.00
9	34799.45	79.99	0.939	0.30( 0.27)	0.89	30105.4	11530.00
10	36496.81	91.64	0.877	0.30( 0.27)	0.91	37125.0	13010.00
11	37722.00	98.58	0.851	0.30( 0.28)	0.92	41524.7	11350.00
12	38190.86	103.30	0.834	0.30( 0.28)	0.92	44698.9	11130.00
13	37884.59	109.36	0.811	0.30( 0.28)	0.93	47625.5	12300.00
14	37232.36	118.10	0.779	0.30( 0.28)	0.93	51886.1	12400.00
15	36278.18	127.56	0.756	0.30( 0.28)	0.94	55287.7	12201.00
16	35383.43	135.00	0.739	0.30( 0.28)	0.94	57180.7	12231.00
17	34452.52	142.43	0.723	0.30( 0.28)	0.94	58733.4	10400.00
18	32980.51	151.80	0.703	0.30( 0.28)	0.94	60179.9	12010.00
19	31987.19	157.13	0.692	0.30( 0.28)	0.94	60442.4	10210.00
20	31352.84	161.15	0.683	0.30( 0.28)	0.94	60589.3	12000.00

21 27844.51 187.27 0.635 0.30( 0.28) 0.94 61202.2 10100.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 38190.86 Tc(MIN.) = 103.30  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 44698.92

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P506XX25.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.67	18.28	0.30( 0.29)	0.97	49.5	50600.00
TOTAL AREA(ACRES) = 49.5						

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22063.71	18.11	2.151	0.30( 0.23)	0.76	4626.5	50500.00
2	24010.62	25.19	1.733	0.30( 0.23)	0.76	6433.6	110.00
3	25833.70	32.18	1.487	0.30( 0.23)	0.77	9037.6	100.00
4	26533.31	34.90	1.433	0.30( 0.23)	0.78	10155.1	50220.00
5	28881.74	45.48	1.247	0.30( 0.25)	0.82	14581.0	31100.00
6	29564.22	49.90	1.179	0.30( 0.25)	0.83	16618.8	390.00
7	31602.92	62.69	1.037	0.30( 0.26)	0.86	22378.1	13100.00
8	32688.91	69.31	1.000	0.30( 0.26)	0.88	25065.3	11801.00
9	34799.45	79.99	0.939	0.30( 0.27)	0.89	30105.4	11530.00
10	36496.81	91.64	0.877	0.30( 0.27)	0.91	37125.0	13010.00
11	37722.00	98.58	0.851	0.30( 0.28)	0.92	41524.7	11350.00
12	38190.86	103.30	0.834	0.30( 0.28)	0.92	44698.9	11130.00
13	37884.59	109.36	0.811	0.30( 0.28)	0.93	47625.5	12300.00
14	37232.36	118.10	0.779	0.30( 0.28)	0.93	51886.1	12400.00
15	36278.18	127.56	0.756	0.30( 0.28)	0.94	55287.7	12201.00
16	35383.43	135.00	0.739	0.30( 0.28)	0.94	57180.7	12231.00
17	34452.52	142.43	0.723	0.30( 0.28)	0.94	58733.4	10400.00
18	32980.51	151.80	0.703	0.30( 0.28)	0.94	60179.9	12010.00
19	31987.19	157.13	0.692	0.30( 0.28)	0.94	60442.4	10210.00
20	31352.84	161.15	0.683	0.30( 0.28)	0.94	60589.3	12000.00
21	27844.51	187.27	0.635	0.30( 0.28)	0.94	61202.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.							

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.67	18.28	2.137	0.30( 0.29)	0.97	49.5	50600.00
LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	22137.25	18.11	2.151	0.30 ( 0.23)	0.76	4675.5 50500.00
2	22184.21	18.28	2.137	0.30 ( 0.23)	0.76	4719.4 50600.00
3	24068.17	25.19	1.733	0.30 ( 0.23)	0.76	6483.1 110.00
4	25881.45	32.18	1.487	0.30 ( 0.23)	0.77	9087.1 100.00
5	26578.88	34.90	1.433	0.30 ( 0.23)	0.78	10204.6 50220.00
6	28919.91	45.48	1.247	0.30 ( 0.25)	0.82	14630.5 31100.00
7	29599.70	49.90	1.179	0.30 ( 0.25)	0.83	16668.3 390.00
8	31632.71	62.69	1.037	0.30 ( 0.26)	0.87	22427.6 13100.00
9	32717.22	69.31	1.000	0.30 ( 0.26)	0.88	25114.8 11801.00
10	34825.36	79.99	0.939	0.30 ( 0.27)	0.89	30154.9 11530.00
11	36520.23	91.64	0.877	0.30 ( 0.27)	0.91	37174.5 13010.00
12	37744.39	98.58	0.851	0.30 ( 0.28)	0.92	41574.2 11350.00
13	38212.56	103.30	0.834	0.30 ( 0.28)	0.92	44748.4 11130.00
14	37905.39	109.36	0.811	0.30 ( 0.28)	0.93	47675.0 12300.00
15	37251.88	118.10	0.779	0.30 ( 0.28)	0.93	51935.6 12400.00
16	36296.77	127.56	0.756	0.30 ( 0.28)	0.94	55337.2 12201.00
17	35401.37	135.00	0.739	0.30 ( 0.28)	0.94	57230.2 12231.00
18	34469.81	142.43	0.723	0.30 ( 0.28)	0.94	58782.9 10400.00
19	32997.00	151.80	0.703	0.30 ( 0.28)	0.94	60229.4 12010.00
20	32003.21	157.13	0.692	0.30 ( 0.28)	0.94	60491.9 10210.00
21	31368.52	161.15	0.683	0.30 ( 0.28)	0.94	60638.8 12000.00
22	27858.29	187.27	0.635	0.30 ( 0.28)	0.94	61251.7 10100.00

TOTAL AREA (ACRES) = 61251.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38212.56 Tc (MIN.) = 103.297  
EFFECTIVE AREA (ACRES) = 44748.42 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61251.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 207.00 DOWNSTREAM (FEET) = 195.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1601.97 CHANNEL SLOPE = 0.0075  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.25  
CHANNEL FLOW THRU SUBAREA (CFS) = 38212.56  
FLOW VELOCITY (FEET/SEC.) = 16.78 FLOW DEPTH (FEET) = 9.25  
TRAVEL TIME (MIN.) = 1.59 Tc (MIN.) = 104.89  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22137.25	20.02	1.995	0.30 ( 0.23)	0.76	4675.5	50500.00
2	22184.21	20.19	1.986	0.30 ( 0.23)	0.76	4719.4	50600.00
3	24068.17	27.05	1.655	0.30 ( 0.23)	0.76	6483.1	110.00
4	25881.45	34.00	1.451	0.30 ( 0.23)	0.77	9087.1	100.00
5	26578.88	36.69	1.396	0.30 ( 0.23)	0.78	10204.6	50220.00
6	28919.91	47.22	1.220	0.30 ( 0.25)	0.82	14630.5	31100.00
7	29599.70	51.63	1.157	0.30 ( 0.25)	0.83	16668.3	390.00

8	31632.71	64.38	1.027	0.30 ( 0.26)	0.87	22427.6	13100.00
9	32717.22	70.99	0.990	0.30 ( 0.26)	0.88	25114.8	11801.00
10	34825.36	81.63	0.930	0.30 ( 0.27)	0.89	30154.9	11530.00
11	36520.23	93.25	0.871	0.30 ( 0.27)	0.91	37174.5	13010.00
12	37744.39	100.18	0.845	0.30 ( 0.28)	0.92	41574.2	11350.00
13	38212.56	104.89	0.828	0.30 ( 0.28)	0.92	44748.4	11130.00
14	37905.39	110.95	0.805	0.30 ( 0.28)	0.93	47675.0	12300.00
15	37251.88	119.70	0.773	0.30 ( 0.28)	0.93	51935.6	12400.00
16	36296.77	129.18	0.752	0.30 ( 0.28)	0.94	55337.2	12201.00
17	35401.37	136.64	0.736	0.30 ( 0.28)	0.94	57230.2	12231.00
18	34469.81	144.08	0.720	0.30 ( 0.28)	0.94	58782.9	10400.00
19	32997.00	153.47	0.699	0.30 ( 0.28)	0.94	60229.4	12010.00
20	32003.21	158.82	0.688	0.30 ( 0.28)	0.94	60491.9	10210.00
21	31368.52	162.85	0.679	0.30 ( 0.28)	0.94	60638.8	12000.00
22	27858.29	189.04	0.633	0.30 ( 0.28)	0.94	61251.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 38212.56 Tc (MIN.) = 104.89  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44748.42

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 104.89  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.828  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	1.60	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 20.10 SUBAREA RUNOFF (CFS) = 9.55  
EFFECTIVE AREA (ACRES) = 44768.52 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61271.8 PEAK FLOW RATE (CFS) = 38212.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 104.89  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.828  
SUBAREA LOSS RATE DATA (AMC II):

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

AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 2.00 0.30 1.000 81  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 7.10 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 5.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 7.13  
EFFECTIVE AREA (ACRES) = 44783.52 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61286.8 PEAK FLOW RATE (CFS) = 38212.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 195.00 DOWNSTREAM (FEET) = 182.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2458.36 CHANNEL SLOPE = 0.0053  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 10.21  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.818

SUBAREA LOSS RATE DATA (AMC II):

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

NATURAL FAIR COVER  
"OPEN BRUSH" B 7.00 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 3.30 0.30 1.000 65  
COMMERCIAL B 0.40 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
COMMERCIAL B 0.30 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 38215.54  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.92  
AVERAGE FLOW DEPTH (FEET) = 10.21 TRAVEL TIME (MIN.) = 2.75  
Tc (MIN.) = 107.64  
SUBAREA AREA (ACRES) = 12.40 SUBAREA RUNOFF (CFS) = 5.95  
EFFECTIVE AREA (ACRES) = 44795.92 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61299.2 PEAK FLOW RATE (CFS) = 38212.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 10.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 10.21 FLOW VELOCITY (FEET/SEC.) = 14.92

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22137.25	23.31	1.827	0.30 ( 0.23)	0.76	4723.0	50500.00
2	22184.21	23.48	1.819	0.30 ( 0.23)	0.76	4766.9	50600.00
3	24068.17	30.24	1.526	0.30 ( 0.23)	0.76	6530.6	110.00
4	25881.45	37.12	1.388	0.30 ( 0.23)	0.77	9134.6	100.00
5	26578.88	39.79	1.334	0.30 ( 0.23)	0.78	10252.1	50220.00
6	28919.91	50.23	1.175	0.30 ( 0.25)	0.82	14678.0	31100.00
7	29599.70	54.62	1.120	0.30 ( 0.25)	0.83	16715.8	390.00
8	31632.71	67.30	1.011	0.30 ( 0.26)	0.87	22475.1	13100.00
9	32717.22	73.88	0.974	0.30 ( 0.26)	0.88	25162.3	11801.00
10	34825.36	84.46	0.914	0.30 ( 0.27)	0.89	30202.4	11530.00
11	36520.23	96.04	0.861	0.30 ( 0.27)	0.91	37222.0	13010.00
12	37744.39	102.94	0.835	0.30 ( 0.28)	0.92	41621.7	11350.00
13	38212.56	107.64	0.818	0.30 ( 0.28)	0.92	44795.9	11130.00
14	37905.39	113.71	0.795	0.30 ( 0.28)	0.93	47722.5	12300.00
15	37251.88	122.47	0.767	0.30 ( 0.28)	0.93	51983.1	12400.00
16	36296.77	131.97	0.746	0.30 ( 0.28)	0.94	55384.7	12201.00
17	35401.37	139.45	0.730	0.30 ( 0.28)	0.94	57277.7	12231.00
18	34469.81	146.92	0.714	0.30 ( 0.28)	0.94	58830.4	10400.00
19	32997.00	156.35	0.693	0.30 ( 0.28)	0.94	60276.9	12010.00
20	32003.21	161.73	0.682	0.30 ( 0.28)	0.94	60539.4	10210.00
21	31368.52	165.78	0.673	0.30 ( 0.28)	0.94	60686.3	12000.00
22	27858.29	192.09	0.631	0.30 ( 0.28)	0.94	61299.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 38212.56 Tc (MIN.) = 107.64  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44795.92

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 2P25EVBB.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	676.18	9.97	0.30 ( 0.11)	0.38	243.5	429.00
2	719.57	11.48	0.30 ( 0.11)	0.38	280.3	425.00
3	729.64	11.90	0.30 ( 0.11)	0.38	290.5	400.00
4	756.99	13.36	0.30 ( 0.11)	0.38	326.6	300.00
5	801.01	18.55	0.30 ( 0.11)	0.38	439.8	210.00
6	788.68	20.66	0.30 ( 0.11)	0.38	466.8	410.00
7	782.25	21.72	0.30 ( 0.11)	0.38	480.1	200.00
8	780.36	22.29	0.30 ( 0.11)	0.38	486.6	230.00
9	762.79	23.40	0.30 ( 0.11)	0.37	491.2	220.50
TOTAL AREA (ACRES) =		491.2				



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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 1-22.

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 1-9.

LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13408.00 = 11903.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 1-8.

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 9-31.

TOTAL AREA (ACRES) = 61790.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38527.16 Tc (MIN.) = 107.636
EFFECTIVE AREA (ACRES) = 45287.12 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.75
TOTAL AREA (ACRES) = 61790.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

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

\*\*\*\*\*

FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P507XX25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 1-1.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 1-1.

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	17995.86	9.97	3.154	0.30 ( 0.22)	0.72	2262.3 429.00
2	19109.15	11.48	2.925	0.30 ( 0.22)	0.72	2605.5 425.00
3	19356.03	11.90	2.863	0.30 ( 0.22)	0.72	2700.8 400.00
4	19969.39	13.36	2.648	0.30 ( 0.22)	0.72	3034.1 300.00
5	21595.80	18.55	2.115	0.30 ( 0.22)	0.72	4198.0 210.00
6	22069.49	20.66	1.962	0.30 ( 0.22)	0.73	4652.9 410.00
7	22456.02	21.72	1.908	0.30 ( 0.22)	0.73	4880.5 200.00
8	22636.47	22.29	1.879	0.30 ( 0.22)	0.73	5001.7 230.00
9	22901.41	23.31	1.827	0.30 ( 0.22)	0.73	5213.8 50500.00
10	22924.58	23.40	1.823	0.30 ( 0.22)	0.73	5237.1 220.50
11	22945.20	23.48	1.819	0.30 ( 0.22)	0.73	5258.1 50600.00
12	24698.71	30.24	1.526	0.30 ( 0.22)	0.73	7021.8 110.00
13	26450.37	37.12	1.388	0.30 ( 0.23)	0.75	9625.8 100.00
14	27123.88	39.79	1.334	0.30 ( 0.23)	0.76	10743.3 50220.00
15	29393.91	50.23	1.175	0.30 ( 0.24)	0.80	15169.2 31100.00
16	30049.02	54.62	1.120	0.30 ( 0.25)	0.82	17207.0 390.00
17	32033.44	67.30	1.011	0.30 ( 0.26)	0.85	22966.3 13100.00
18	33101.43	73.88	0.974	0.30 ( 0.26)	0.87	25653.5 11801.00
19	35182.97	84.46	0.914	0.30 ( 0.27)	0.88	30693.6 11530.00
20	36853.95	96.04	0.861	0.30 ( 0.27)	0.90	37713.2 13010.00
21	38066.73	102.94	0.835	0.30 ( 0.27)	0.91	42112.9 11350.00
22	38527.16	107.64	0.818	0.30 ( 0.28)	0.92	45287.1 11130.00
23	38209.97	113.71	0.795	0.30 ( 0.28)	0.92	48213.7 12300.00
24	37543.68	122.47	0.767	0.30 ( 0.28)	0.93	52474.3 12400.00
25	36579.39	131.97	0.746	0.30 ( 0.28)	0.93	55875.9 12201.00
26	35676.76	139.45	0.730	0.30 ( 0.28)	0.93	57768.9 12231.00
27	34737.98	146.92	0.714	0.30 ( 0.28)	0.93	59321.6 10400.00
28	33256.06	156.35	0.693	0.30 ( 0.28)	0.94	60768.1 12010.00
29	32257.08	161.73	0.682	0.30 ( 0.28)	0.94	61030.6 10210.00
30	31618.47	165.78	0.673	0.30 ( 0.28)	0.94	61177.5 12000.00
31	28089.40	192.09	0.631	0.30 ( 0.28)	0.94	61790.4 10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	293.66	22.81	1.853	0.30 ( 0.30)	0.99	231.4	50700.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18231.41	9.97	3.154	0.30 ( 0.22)	0.73	2363.4	429.00
2	19358.75	11.48	2.925	0.30 ( 0.22)	0.73	2722.0	425.00
3	19608.69	11.90	2.863	0.30 ( 0.22)	0.73	2821.5	400.00
4	20229.40	13.36	2.648	0.30 ( 0.22)	0.73	3169.7	300.00
5	21874.96	18.55	2.115	0.30 ( 0.22)	0.74	4386.2	210.00
6	22354.24	20.66	1.962	0.30 ( 0.22)	0.74	4862.6	410.00
7	22745.65	21.72	1.908	0.30 ( 0.22)	0.74	5100.9	200.00
8	22928.33	22.29	1.879	0.30 ( 0.22)	0.74	5227.8	230.00
9	23064.13	22.81	1.853	0.30 ( 0.22)	0.74	5340.4	50700.00
10	23190.19	23.31	1.827	0.30 ( 0.22)	0.74	5445.2	50500.00
11	23212.53	23.40	1.823	0.30 ( 0.22)	0.74	5468.5	220.50
12	23232.39	23.48	1.819	0.30 ( 0.22)	0.74	5489.5	50600.00
13	24930.72	30.24	1.526	0.30 ( 0.22)	0.74	7253.2	110.00
14	26656.31	37.12	1.388	0.30 ( 0.23)	0.76	9857.2	100.00
15	27319.70	39.79	1.334	0.30 ( 0.23)	0.77	10974.7	50220.00

16	29559.70	50.23	1.175	0.30 ( 0.24)	0.81	15400.6	31100.00
17	30204.37	54.62	1.120	0.30 ( 0.25)	0.82	17438.4	390.00
18	32168.24	67.30	1.011	0.30 ( 0.26)	0.86	23197.7	13100.00
19	33229.24	73.88	0.974	0.30 ( 0.26)	0.87	25884.9	11801.00
20	35299.53	84.46	0.914	0.30 ( 0.27)	0.89	30925.0	11530.00
21	36960.41	96.04	0.861	0.30 ( 0.27)	0.90	37944.6	13010.00
22	38168.37	102.94	0.835	0.30 ( 0.27)	0.91	42344.3	11350.00
23	38625.52	107.64	0.818	0.30 ( 0.28)	0.92	45518.5	11130.00
24	38304.09	113.71	0.795	0.30 ( 0.28)	0.92	48445.1	12300.00
25	37632.40	122.47	0.767	0.30 ( 0.28)	0.93	52705.7	12400.00
26	36664.22	131.97	0.746	0.30 ( 0.28)	0.93	56107.3	12201.00
27	35758.54	139.45	0.730	0.30 ( 0.28)	0.93	58000.3	12231.00
28	34816.71	146.92	0.714	0.30 ( 0.28)	0.93	59553.0	10400.00
29	33330.93	156.35	0.693	0.30 ( 0.28)	0.94	60999.5	12010.00
30	32329.75	161.73	0.682	0.30 ( 0.28)	0.94	61262.0	10210.00
31	31689.49	165.78	0.673	0.30 ( 0.28)	0.94	61408.9	12000.00
32	28152.45	192.09	0.631	0.30 ( 0.28)	0.94	62021.8	10100.00

TOTAL AREA (ACRES) = 62021.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38625.52 Tc (MIN.) = 107.636  
EFFECTIVE AREA (ACRES) = 45518.52 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 62021.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72  
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 11.58  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.813

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 38626.28					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.94					
AVERAGE FLOW DEPTH (FEET) = 11.58 TRAVEL TIME (MIN.) = 1.23					
Tc (MIN.) = 108.86					
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 1.52					
EFFECTIVE AREA (ACRES) = 45521.82 AREA-AVERAGED Fm (INCH/HR) = 0.28					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92					
TOTAL AREA (ACRES) = 62025.1 PEAK FLOW RATE (CFS) = 38625.52					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0					
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030					

\*ESTIMATED CHANNEL HEIGHT (FEET) = 11.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 11.58 FLOW VELOCITY (FEET/SEC.) = 12.94

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18231.41	11.53	2.917	0.30 ( 0.22)	0.73	2366.7	429.00
2	19358.75	13.02	2.699	0.30 ( 0.22)	0.73	2725.3	425.00
3	19608.69	13.43	2.639	0.30 ( 0.22)	0.73	2824.8	400.00
4	20229.40	14.88	2.426	0.30 ( 0.22)	0.73	3173.0	300.00
5	21874.96	20.03	1.995	0.30 ( 0.22)	0.74	4389.5	210.00
6	22354.24	22.13	1.887	0.30 ( 0.22)	0.74	4865.9	410.00
7	22745.65	23.18	1.834	0.30 ( 0.22)	0.74	5104.2	200.00
8	22928.33	23.74	1.805	0.30 ( 0.22)	0.74	5231.1	230.00
9	23064.13	24.26	1.779	0.30 ( 0.22)	0.74	5343.7	50700.00
10	23190.19	24.76	1.753	0.30 ( 0.22)	0.74	5448.5	50500.00
11	23212.53	24.85	1.749	0.30 ( 0.22)	0.74	5471.8	220.50
12	23232.39	24.93	1.745	0.30 ( 0.22)	0.74	5492.8	50600.00
13	24930.72	31.66	1.498	0.30 ( 0.22)	0.74	7256.5	110.00
14	26656.31	38.50	1.360	0.30 ( 0.23)	0.76	9860.5	100.00
15	27319.70	41.16	1.312	0.30 ( 0.23)	0.77	10978.0	50220.00
16	29559.70	51.57	1.158	0.30 ( 0.24)	0.81	15403.9	31100.00
17	30204.37	55.95	1.103	0.30 ( 0.25)	0.82	17441.7	390.00
18	32168.24	68.61	1.004	0.30 ( 0.26)	0.86	23201.0	13100.00
19	33229.24	75.17	0.967	0.30 ( 0.26)	0.87	25888.2	11801.00
20	35299.53	85.73	0.907	0.30 ( 0.27)	0.89	30928.3	11530.00
21	36960.41	97.29	0.856	0.30 ( 0.27)	0.90	37947.9	13010.00
22	38168.37	104.17	0.831	0.30 ( 0.27)	0.91	42347.6	11350.00
23	38625.52	108.86	0.813	0.30 ( 0.28)	0.92	45521.8	11130.00
24	38304.09	114.94	0.791	0.30 ( 0.28)	0.92	48448.4	12300.00
25	37632.40	123.71	0.764	0.30 ( 0.28)	0.93	52709.0	12400.00
26	36664.22	133.22	0.743	0.30 ( 0.28)	0.93	56110.6	12201.00
27	35758.54	140.71	0.727	0.30 ( 0.28)	0.93	58003.6	12231.00
28	34816.71	148.19	0.711	0.30 ( 0.28)	0.93	59556.3	10400.00
29	33330.93	157.64	0.690	0.30 ( 0.28)	0.94	61002.8	12010.00
30	32329.75	163.03	0.679	0.30 ( 0.28)	0.94	61265.3	10210.00
31	31689.49	167.08	0.670	0.30 ( 0.28)	0.94	61412.2	12000.00
32	28152.45	193.44	0.629	0.30 ( 0.28)	0.94	62025.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 38625.52 Tc (MIN.) = 108.86

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 45521.82

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU25EV36.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	28.56	0.30 ( 0.27)	0.90	1467.2	110.00
2	2209.70	30.95	0.30 ( 0.27)	0.90	1632.7	100.00
3	2208.11	32.23	0.30 ( 0.27)	0.90	1711.6	100.00
4	2242.46	35.30	0.30 ( 0.27)	0.91	1886.6	130.00
5	2335.95	48.91	0.30 ( 0.28)	0.93	2627.1	20100.00
6	2291.36	54.60	0.30 ( 0.28)	0.93	2814.2	13600.00
7	2090.26	91.42	0.30 ( 0.28)	0.93	3793.8	13510.00
8	1979.94	100.93	0.30 ( 0.28)	0.93	3859.7	13500.00
TOTAL AREA (ACRES) =			3859.7			

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18231.41	11.53	2.917	0.30 ( 0.22)	0.73	2366.7	429.00
2	19358.75	13.02	2.699	0.30 ( 0.22)	0.73	2725.3	425.00
3	19608.69	13.43	2.639	0.30 ( 0.22)	0.73	2824.8	400.00
4	20229.40	14.88	2.426	0.30 ( 0.22)	0.73	3173.0	300.00
5	21874.96	20.03	1.995	0.30 ( 0.22)	0.74	4389.5	210.00
6	22354.24	22.13	1.887	0.30 ( 0.22)	0.74	4865.9	410.00
7	22745.65	23.18	1.834	0.30 ( 0.22)	0.74	5104.2	200.00
8	22928.33	23.74	1.805	0.30 ( 0.22)	0.74	5231.1	230.00
9	23064.13	24.26	1.779	0.30 ( 0.22)	0.74	5343.7	50700.00
10	23190.19	24.76	1.753	0.30 ( 0.22)	0.74	5448.5	50500.00
11	23212.53	24.85	1.749	0.30 ( 0.22)	0.74	5471.8	220.50
12	23232.39	24.93	1.745	0.30 ( 0.22)	0.74	5492.8	50600.00
13	24930.72	31.66	1.498	0.30 ( 0.22)	0.74	7256.5	110.00
14	26656.31	38.50	1.360	0.30 ( 0.23)	0.76	9860.5	100.00
15	27319.70	41.16	1.312	0.30 ( 0.23)	0.77	10978.0	50220.00
16	29559.70	51.57	1.158	0.30 ( 0.24)	0.81	15403.9	31100.00
17	30204.37	55.95	1.103	0.30 ( 0.25)	0.82	17441.7	390.00
18	32168.24	68.61	1.004	0.30 ( 0.26)	0.86	23201.0	13100.00
19	33229.24	75.17	0.967	0.30 ( 0.26)	0.87	25888.2	11801.00
20	35299.53	85.73	0.907	0.30 ( 0.27)	0.89	30928.3	11530.00
21	36960.41	97.29	0.856	0.30 ( 0.27)	0.90	37947.9	13010.00
22	38168.37	104.17	0.831	0.30 ( 0.27)	0.91	42347.6	11350.00
23	38625.52	108.86	0.813	0.30 ( 0.28)	0.92	45521.8	11130.00
24	38304.09	114.94	0.791	0.30 ( 0.28)	0.92	48448.4	12300.00
25	37632.40	123.71	0.764	0.30 ( 0.28)	0.93	52709.0	12400.00
26	36664.22	133.22	0.743	0.30 ( 0.28)	0.93	56110.6	12201.00
27	35758.54	140.71	0.727	0.30 ( 0.28)	0.93	58003.6	12231.00
28	34816.71	148.19	0.711	0.30 ( 0.28)	0.93	59556.3	10400.00
29	33330.93	157.64	0.690	0.30 ( 0.28)	0.94	61002.8	12010.00
30	32329.75	163.03	0.679	0.30 ( 0.28)	0.94	61265.3	10210.00
31	31689.49	167.08	0.670	0.30 ( 0.28)	0.94	61412.2	12000.00
32	28152.45	193.44	0.629	0.30 ( 0.28)	0.94	62025.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	2146.94	28.56	1.591	0.30 ( 0.27)	0.90	1467.2 110.00
2	2209.70	30.95	1.512	0.30 ( 0.27)	0.90	1632.7 100.00
3	2208.11	32.23	1.486	0.30 ( 0.27)	0.90	1711.6 100.00
4	2242.46	35.30	1.425	0.30 ( 0.27)	0.91	1886.6 130.00
5	2335.95	48.91	1.195	0.30 ( 0.28)	0.93	2627.1 20100.00
6	2291.36	54.60	1.120	0.30 ( 0.28)	0.93	2814.2 13600.00
7	2090.26	91.42	0.878	0.30 ( 0.28)	0.93	3793.8 13510.00
8	1979.94	100.93	0.843	0.30 ( 0.28)	0.93	3859.7 13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19968.38	11.53	2.917	0.30 ( 0.23)	0.77	2959.2	429.00
2	21157.74	13.02	2.699	0.30 ( 0.23)	0.77	3393.8	425.00
3	21418.43	13.43	2.639	0.30 ( 0.23)	0.77	3514.6	400.00
4	22054.32	14.88	2.426	0.30 ( 0.23)	0.77	3937.3	300.00
5	23839.93	20.03	1.995	0.30 ( 0.23)	0.77	5418.3	210.00
6	24390.44	22.13	1.887	0.30 ( 0.23)	0.77	6002.6	410.00
7	24807.81	23.18	1.834	0.30 ( 0.23)	0.77	6294.8	200.00
8	25001.77	23.74	1.805	0.30 ( 0.23)	0.77	6450.6	230.00
9	25146.31	24.26	1.779	0.30 ( 0.23)	0.77	6589.7	50700.00
10	25279.41	24.76	1.753	0.30 ( 0.23)	0.77	6720.4	50500.00
11	25302.80	24.85	1.749	0.30 ( 0.23)	0.77	6748.2	220.50
12	25323.59	24.93	1.745	0.30 ( 0.23)	0.77	6773.1	50600.00
13	26296.91	28.56	1.591	0.30 ( 0.23)	0.77	7912.9	110.00
14	26962.81	30.95	1.512	0.30 ( 0.23)	0.77	8704.8	100.00
15	27139.55	31.66	1.498	0.30 ( 0.23)	0.77	8932.7	110.00
16	27283.26	32.23	1.486	0.30 ( 0.23)	0.77	9186.0	100.00
17	28090.52	35.30	1.425	0.30 ( 0.23)	0.78	10527.4	130.00
18	28920.78	38.50	1.360	0.30 ( 0.24)	0.78	11921.4	100.00
19	29602.41	41.16	1.312	0.30 ( 0.24)	0.79	13183.5	50220.00
20	31324.37	48.91	1.195	0.30 ( 0.24)	0.82	16902.2	20100.00
21	31874.83	51.57	1.158	0.30 ( 0.25)	0.82	18118.3	31100.00
22	32297.29	54.60	1.120	0.30 ( 0.25)	0.83	19628.6	13600.00
23	32488.36	55.95	1.103	0.30 ( 0.25)	0.84	20291.8	390.00
24	34383.10	68.61	1.004	0.30 ( 0.26)	0.87	26387.8	13100.00
25	35408.28	75.17	0.967	0.30 ( 0.26)	0.88	29249.5	11801.00
26	37420.89	85.73	0.907	0.30 ( 0.27)	0.89	34570.6	11530.00
27	38207.77	91.42	0.878	0.30 ( 0.27)	0.90	38179.2	13510.00
28	38982.57	97.29	0.856	0.30 ( 0.27)	0.91	41782.3	13010.00
29	39578.51	100.93	0.843	0.30 ( 0.27)	0.91	44131.9	13500.00
30	40106.01	104.17	0.831	0.30 ( 0.27)	0.91	46207.3	11350.00
31	40502.09	108.86	0.813	0.30 ( 0.28)	0.92	49381.5	11130.00
32	40101.57	114.94	0.791	0.30 ( 0.28)	0.92	52308.1	12300.00
33	39335.66	123.71	0.764	0.30 ( 0.28)	0.93	56568.7	12400.00
34	38294.94	133.22	0.743	0.30 ( 0.28)	0.93	59970.3	12201.00
35	37332.16	140.71	0.727	0.30 ( 0.28)	0.93	61863.3	12231.00
36	36333.27	148.19	0.711	0.30 ( 0.28)	0.93	63416.0	10400.00
37	34775.45	157.64	0.690	0.30 ( 0.28)	0.94	64862.4	12010.00
38	33733.14	163.03	0.679	0.30 ( 0.28)	0.94	65125.0	10210.00
39	33061.96	167.08	0.670	0.30 ( 0.28)	0.94	65271.8	12000.00
40	29381.75	193.44	0.629	0.30 ( 0.28)	0.94	65884.8	10100.00

TOTAL AREA (ACRES) = 65884.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 40502.09 Tc (MIN.) = 108.863

EFFECTIVE AREA (ACRES) = 49381.50 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 65884.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.68  
 CHANNEL FLOW THRU SUBAREA (CFS) = 40502.09  
 FLOW VELOCITY (FEET/SEC.) = 19.18 FLOW DEPTH (FEET) = 8.68  
 TRAVEL TIME (MIN.) = 0.15 Tc (MIN.) = 109.01  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19968.38	11.72	2.889	0.30 ( 0.23)	0.77	2959.2	429.00
2	21157.74	13.20	2.672	0.30 ( 0.23)	0.77	3393.8	425.00
3	21418.43	13.61	2.612	0.30 ( 0.23)	0.77	3514.6	400.00
4	22054.32	15.06	2.403	0.30 ( 0.23)	0.77	3937.3	300.00
5	23839.93	20.20	1.986	0.30 ( 0.23)	0.77	5418.3	210.00
6	24390.44	22.30	1.878	0.30 ( 0.23)	0.77	6002.6	410.00
7	24807.81	23.35	1.825	0.30 ( 0.23)	0.77	6294.8	200.00
8	25001.77	23.91	1.796	0.30 ( 0.23)	0.77	6450.6	230.00
9	25146.31	24.43	1.770	0.30 ( 0.23)	0.77	6589.7	50700.00
10	25279.41	24.93	1.744	0.30 ( 0.23)	0.77	6720.4	50500.00
11	25302.80	25.02	1.740	0.30 ( 0.23)	0.77	6748.2	220.50
12	25323.59	25.10	1.737	0.30 ( 0.23)	0.77	6773.1	50600.00
13	26296.91	28.73	1.584	0.30 ( 0.23)	0.77	7912.9	110.00
14	26962.81	31.12	1.508	0.30 ( 0.23)	0.77	8704.8	100.00
15	27139.55	31.83	1.494	0.30 ( 0.23)	0.77	8932.7	110.00
16	27283.26	32.40	1.483	0.30 ( 0.23)	0.77	9186.0	100.00
17	28090.52	35.46	1.421	0.30 ( 0.23)	0.78	10527.4	130.00
18	28920.78	38.67	1.357	0.30 ( 0.24)	0.78	11921.4	100.00
19	29602.41	41.32	1.310	0.30 ( 0.24)	0.79	13183.5	50220.00
20	31324.37	49.07	1.192	0.30 ( 0.24)	0.82	16902.2	20100.00
21	31874.83	51.73	1.156	0.30 ( 0.25)	0.82	18118.3	31100.00
22	32297.29	54.76	1.118	0.30 ( 0.25)	0.83	19628.6	13600.00
23	32488.36	56.11	1.101	0.30 ( 0.25)	0.84	20291.8	390.00
24	34383.10	68.76	1.003	0.30 ( 0.26)	0.87	26387.8	13100.00
25	35408.28	75.32	0.966	0.30 ( 0.26)	0.88	29249.5	11801.00
26	37420.89	85.88	0.906	0.30 ( 0.27)	0.89	34570.6	11530.00
27	38207.77	91.57	0.877	0.30 ( 0.27)	0.90	38179.2	13510.00
28	38982.57	97.44	0.855	0.30 ( 0.27)	0.91	41782.3	13010.00
29	39578.51	101.07	0.842	0.30 ( 0.27)	0.91	44131.9	13500.00
30	40106.01	104.32	0.830	0.30 ( 0.27)	0.91	46207.3	11350.00
31	40502.09	109.01	0.813	0.30 ( 0.28)	0.92	49381.5	11130.00
32	40101.57	115.09	0.790	0.30 ( 0.28)	0.92	52308.1	12300.00
33	39335.66	123.86	0.764	0.30 ( 0.28)	0.93	56568.7	12400.00
34	38294.94	133.37	0.743	0.30 ( 0.28)	0.93	59970.3	12201.00

35	37332.16	140.86	0.727	0.30 ( 0.28)	0.93	61863.3	12231.00
36	36333.27	148.34	0.711	0.30 ( 0.28)	0.93	63416.0	10400.00
37	34775.45	157.79	0.690	0.30 ( 0.28)	0.94	64862.4	12010.00
38	33733.14	163.19	0.678	0.30 ( 0.28)	0.94	65125.0	10210.00
39	33061.96	167.24	0.670	0.30 ( 0.28)	0.94	65271.8	12000.00
40	29381.75	193.61	0.629	0.30 ( 0.28)	0.94	65884.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 40502.09 Tc(MIN.) = 109.01  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 49381.50

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506101D.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	518.50	38.19	0.30 ( 0.30)	0.98	591.0	10100.00
TOTAL AREA(ACRES) = 591.0						

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19968.38	11.72	2.889	0.30 ( 0.23)	0.77	2959.2	429.00
2	21157.74	13.20	2.672	0.30 ( 0.23)	0.77	3393.8	425.00
3	21418.43	13.61	2.612	0.30 ( 0.23)	0.77	3514.6	400.00
4	22054.32	15.06	2.403	0.30 ( 0.23)	0.77	3937.3	300.00
5	23839.93	20.20	1.986	0.30 ( 0.23)	0.77	5418.3	210.00
6	24390.44	22.30	1.878	0.30 ( 0.23)	0.77	6002.6	410.00
7	24807.81	23.35	1.825	0.30 ( 0.23)	0.77	6294.8	200.00
8	25001.77	23.91	1.796	0.30 ( 0.23)	0.77	6450.6	230.00
9	25146.31	24.43	1.770	0.30 ( 0.23)	0.77	6589.7	50700.00
10	25279.41	24.93	1.744	0.30 ( 0.23)	0.77	6720.4	50500.00
11	25302.80	25.02	1.740	0.30 ( 0.23)	0.77	6748.2	220.50
12	25323.59	25.10	1.737	0.30 ( 0.23)	0.77	6773.1	50600.00
13	26296.91	28.73	1.584	0.30 ( 0.23)	0.77	7912.9	110.00
14	26962.81	31.12	1.508	0.30 ( 0.23)	0.77	8704.8	100.00
15	27139.55	31.83	1.494	0.30 ( 0.23)	0.77	8932.7	110.00
16	27283.26	32.40	1.483	0.30 ( 0.23)	0.77	9186.0	100.00
17	28090.52	35.46	1.421	0.30 ( 0.23)	0.78	10527.4	130.00
18	28920.78	38.67	1.357	0.30 ( 0.24)	0.78	11921.4	100.00
19	29602.41	41.32	1.310	0.30 ( 0.24)	0.79	13183.5	50220.00
20	31324.37	49.07	1.192	0.30 ( 0.24)	0.82	16902.2	20100.00

21	31874.83	51.73	1.156	0.30 ( 0.25)	0.82	18118.3	31100.00
22	32297.29	54.76	1.118	0.30 ( 0.25)	0.83	19628.6	13600.00
23	32488.36	56.11	1.101	0.30 ( 0.25)	0.84	20291.8	390.00
24	34383.10	68.76	1.003	0.30 ( 0.26)	0.87	26387.8	13100.00
25	35408.28	75.32	0.966	0.30 ( 0.26)	0.88	29249.5	11801.00
26	37420.89	85.88	0.906	0.30 ( 0.27)	0.89	34570.6	11530.00
27	38207.77	91.57	0.877	0.30 ( 0.27)	0.90	38179.2	13510.00
28	38982.57	97.44	0.855	0.30 ( 0.27)	0.91	41782.3	13010.00
29	39578.51	101.07	0.842	0.30 ( 0.27)	0.91	44131.9	13500.00
30	40106.01	104.32	0.830	0.30 ( 0.27)	0.91	46207.3	11350.00
31	40502.09	109.01	0.813	0.30 ( 0.28)	0.92	49381.5	11130.00
32	40101.57	115.09	0.790	0.30 ( 0.28)	0.92	52308.1	12300.00
33	39335.66	123.86	0.764	0.30 ( 0.28)	0.93	56568.7	12400.00
34	38294.94	133.37	0.743	0.30 ( 0.28)	0.93	59970.3	12201.00
35	37332.16	140.86	0.727	0.30 ( 0.28)	0.93	61863.3	12231.00
36	36333.27	148.34	0.711	0.30 ( 0.28)	0.93	63416.0	10400.00
37	34775.45	157.79	0.690	0.30 ( 0.28)	0.94	64862.4	12010.00
38	33733.14	163.19	0.678	0.30 ( 0.28)	0.94	65125.0	10210.00
39	33061.96	167.24	0.670	0.30 ( 0.28)	0.94	65271.8	12000.00
40	29381.75	193.61	0.629	0.30 ( 0.28)	0.94	65884.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	518.50	38.19	1.366	0.30 ( 0.30)	0.98	591.0	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 14677.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20353.74	11.72	2.889	0.30 ( 0.23)	0.78	3140.6	429.00
2	21555.39	13.20	2.672	0.30 ( 0.23)	0.78	3598.1	425.00
3	21818.06	13.61	2.612	0.30 ( 0.23)	0.78	3725.2	400.00
4	22456.65	15.06	2.403	0.30 ( 0.23)	0.78	4170.4	300.00
5	24272.78	20.20	1.986	0.30 ( 0.23)	0.78	5730.9	210.00
6	24838.01	22.30	1.878	0.30 ( 0.23)	0.78	6347.7	410.00
7	25260.60	23.35	1.825	0.30 ( 0.23)	0.78	6656.2	200.00
8	25456.76	23.91	1.796	0.30 ( 0.23)	0.78	6820.7	230.00
9	25602.97	24.43	1.770	0.30 ( 0.23)	0.78	6967.8	50700.00
10	25737.38	24.93	1.744	0.30 ( 0.23)	0.78	7106.3	50500.00
11	25761.01	25.02	1.740	0.30 ( 0.23)	0.78	7135.4	220.50
12	25782.19	25.10	1.737	0.30 ( 0.23)	0.78	7161.6	50600.00
13	26766.34	28.73	1.584	0.30 ( 0.23)	0.78	8357.5	110.00
14	27441.39	31.12	1.508	0.30 ( 0.23)	0.78	9186.4	100.00
15	27623.24	31.83	1.494	0.30 ( 0.24)	0.78	9425.2	110.00
16	27770.93	32.40	1.483	0.30 ( 0.24)	0.78	9687.4	100.00
17	28596.63	35.46	1.421	0.30 ( 0.24)	0.79	11076.2	130.00
18	29315.85	38.19	1.366	0.30 ( 0.24)	0.79	12305.2	10100.00
19	29434.65	38.67	1.357	0.30 ( 0.24)	0.79	12512.4	100.00
20	30093.58	41.32	1.310	0.30 ( 0.24)	0.80	13774.5	50220.00
21	31758.52	49.07	1.192	0.30 ( 0.25)	0.82	17493.2	20100.00
22	32291.64	51.73	1.156	0.30 ( 0.25)	0.83	18709.3	31100.00
23	32695.61	54.76	1.118	0.30 ( 0.25)	0.84	20219.6	13600.00
24	32878.46	56.11	1.101	0.30 ( 0.25)	0.84	20882.8	390.00
25	34725.56	68.76	1.003	0.30 ( 0.26)	0.87	26978.8	13100.00
26	35732.86	75.32	0.966	0.30 ( 0.26)	0.88	29840.5	11801.00
27	37716.68	85.88	0.906	0.30 ( 0.27)	0.89	35161.6	11530.00

28	38489.52	91.57	0.877	0.30	( 0.27)	0.90	38770.2	13510.00
29	39253.82	97.44	0.855	0.30	( 0.27)	0.91	42373.3	13010.00
30	39843.23	101.07	0.842	0.30	( 0.27)	0.91	44722.9	13500.00
31	40364.93	104.32	0.830	0.30	( 0.27)	0.92	46798.3	11350.00
32	40752.61	109.01	0.813	0.30	( 0.28)	0.92	49972.5	11130.00
33	40341.21	115.09	0.790	0.30	( 0.28)	0.92	52899.1	12300.00
34	39562.45	123.86	0.764	0.30	( 0.28)	0.93	57159.7	12400.00
35	38511.75	133.37	0.743	0.30	( 0.28)	0.93	60561.3	12201.00
36	37541.12	140.86	0.727	0.30	( 0.28)	0.93	62454.3	12231.00
37	36534.38	148.34	0.711	0.30	( 0.28)	0.94	64007.0	10400.00
38	34966.66	157.79	0.690	0.30	( 0.28)	0.94	65453.4	12010.00
39	33918.70	163.19	0.678	0.30	( 0.28)	0.94	65716.0	10210.00
40	33243.27	167.24	0.670	0.30	( 0.28)	0.94	65862.8	12000.00
41	29543.46	193.61	0.629	0.30	( 0.28)	0.94	66475.8	10100.00

TOTAL AREA (ACRES) = 66475.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 40752.61 Tc (MIN.) = 109.011  
EFFECTIVE AREA (ACRES) = 49972.50 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 66475.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 176.93 DOWNSTREAM (FEET) = 173.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 260.10 CHANNEL SLOPE = 0.0151  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 7.86  
CHANNEL FLOW THRU SUBAREA (CFS) = 40752.61  
FLOW VELOCITY (FEET/SEC.) = 21.66 FLOW DEPTH (FEET) = 7.86  
TRAVEL TIME (MIN.) = 0.20 Tc (MIN.) = 109.21  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20353.74	11.98	2.852	0.30 ( 0.23)	0.78	3140.6	429.00
2	21555.39	13.45	2.636	0.30 ( 0.23)	0.78	3598.1	425.00
3	21818.06	13.86	2.576	0.30 ( 0.23)	0.78	3725.2	400.00
4	22456.65	15.31	2.383	0.30 ( 0.23)	0.78	4170.4	300.00
5	24272.78	20.44	1.973	0.30 ( 0.23)	0.78	5730.9	210.00
6	24838.01	22.54	1.866	0.30 ( 0.23)	0.78	6347.7	410.00
7	25260.60	23.59	1.813	0.30 ( 0.23)	0.78	6656.2	200.00
8	25456.76	24.15	1.784	0.30 ( 0.23)	0.78	6820.7	230.00
9	25602.97	24.66	1.758	0.30 ( 0.23)	0.78	6967.8	50700.00
10	25737.38	25.17	1.734	0.30 ( 0.23)	0.78	7106.3	50500.00
11	25761.01	25.25	1.730	0.30 ( 0.23)	0.78	7135.4	220.50
12	25782.19	25.33	1.727	0.30 ( 0.23)	0.78	7161.6	50600.00
13	26766.34	28.96	1.574	0.30 ( 0.23)	0.78	8357.5	110.00
14	27441.39	31.35	1.504	0.30 ( 0.23)	0.78	9186.4	100.00
15	27623.24	32.05	1.490	0.30 ( 0.24)	0.78	9425.2	110.00
16	27770.93	32.63	1.478	0.30 ( 0.24)	0.78	9687.4	100.00

17	28596.63	35.69	1.417	0.30	( 0.24)	0.79	11076.2	130.00
18	29315.85	38.41	1.362	0.30	( 0.24)	0.79	12305.2	10100.00
19	29434.65	38.89	1.352	0.30	( 0.24)	0.79	12512.4	100.00
20	30093.58	41.54	1.307	0.30	( 0.24)	0.80	13774.5	50220.00
21	31758.52	49.29	1.189	0.30	( 0.25)	0.82	17493.2	20100.00
22	32291.64	51.94	1.154	0.30	( 0.25)	0.83	18709.3	31100.00
23	32695.61	54.97	1.115	0.30	( 0.25)	0.84	20219.6	13600.00
24	32878.46	56.32	1.098	0.30	( 0.25)	0.84	20882.8	390.00
25	34725.56	68.97	1.001	0.30	( 0.26)	0.87	26978.8	13100.00
26	35732.86	75.53	0.965	0.30	( 0.26)	0.88	29840.5	11801.00
27	37716.68	86.08	0.905	0.30	( 0.27)	0.89	35161.6	11530.00
28	38489.52	91.77	0.876	0.30	( 0.27)	0.90	38770.2	13510.00
29	39253.82	97.64	0.855	0.30	( 0.27)	0.91	42373.3	13010.00
30	39843.23	101.28	0.841	0.30	( 0.27)	0.91	44722.9	13500.00
31	40364.93	104.52	0.829	0.30	( 0.27)	0.92	46798.3	11350.00
32	40752.61	109.21	0.812	0.30	( 0.28)	0.92	49972.5	11130.00
33	40341.21	115.29	0.789	0.30	( 0.28)	0.92	52899.1	12300.00
34	39562.45	124.06	0.763	0.30	( 0.28)	0.93	57159.7	12400.00
35	38511.75	133.58	0.743	0.30	( 0.28)	0.93	60561.3	12201.00
36	37541.12	141.07	0.726	0.30	( 0.28)	0.93	62454.3	12231.00
37	36534.38	148.55	0.710	0.30	( 0.28)	0.94	64007.0	10400.00
38	34966.66	158.00	0.690	0.30	( 0.28)	0.94	65453.4	12010.00
39	33918.70	163.40	0.678	0.30	( 0.28)	0.94	65716.0	10210.00
40	33243.27	167.46	0.669	0.30	( 0.28)	0.94	65862.8	12000.00
41	29543.46	193.83	0.629	0.30	( 0.28)	0.94	66475.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 40752.61 Tc (MIN.) = 109.21  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 49972.50

\*\*\*\*\*

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

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

\*\*\*\*\*

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

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P508XX25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	168.28	22.49	0.30 ( 0.30)	0.99	131.3	50800.00
TOTAL AREA (ACRES) = 131.3						

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20353.74	11.98	2.852	0.30 ( 0.23)	0.78	3140.6	429.00

2	21555.39	13.45	2.636	0.30 ( 0.23)	0.78	3598.1	425.00
3	21818.06	13.86	2.576	0.30 ( 0.23)	0.78	3725.2	400.00
4	22456.65	15.31	2.383	0.30 ( 0.23)	0.78	4170.4	300.00
5	24272.78	20.44	1.973	0.30 ( 0.23)	0.78	5730.9	210.00
6	24838.01	22.54	1.866	0.30 ( 0.23)	0.78	6347.7	410.00
7	25260.60	23.59	1.813	0.30 ( 0.23)	0.78	6656.2	200.00
8	25456.76	24.15	1.784	0.30 ( 0.23)	0.78	6820.7	230.00
9	25602.97	24.66	1.758	0.30 ( 0.23)	0.78	6967.8	50700.00
10	25737.38	25.17	1.734	0.30 ( 0.23)	0.78	7106.3	50500.00
11	25761.01	25.25	1.730	0.30 ( 0.23)	0.78	7135.4	220.50
12	25782.19	25.33	1.727	0.30 ( 0.23)	0.78	7161.6	50600.00
13	26766.34	28.96	1.574	0.30 ( 0.23)	0.78	8357.5	110.00
14	27441.39	31.35	1.504	0.30 ( 0.23)	0.78	9186.4	100.00
15	27623.24	32.05	1.490	0.30 ( 0.24)	0.78	9425.2	110.00
16	27770.93	32.63	1.478	0.30 ( 0.24)	0.78	9687.4	100.00
17	28596.63	35.69	1.417	0.30 ( 0.24)	0.79	11076.2	130.00
18	29315.85	38.41	1.362	0.30 ( 0.24)	0.79	12305.2	10100.00
19	29434.65	38.89	1.352	0.30 ( 0.24)	0.79	12512.4	100.00
20	30093.58	41.54	1.307	0.30 ( 0.24)	0.80	13774.5	50220.00
21	31758.52	49.29	1.189	0.30 ( 0.25)	0.82	17493.2	20100.00
22	32291.64	51.94	1.154	0.30 ( 0.25)	0.83	18709.3	31100.00
23	32695.61	54.97	1.115	0.30 ( 0.25)	0.84	20219.6	13600.00
24	32878.46	56.32	1.098	0.30 ( 0.25)	0.84	20882.8	390.00
25	34725.56	68.97	1.001	0.30 ( 0.26)	0.87	26978.8	13100.00
26	35732.86	75.53	0.965	0.30 ( 0.26)	0.88	29840.5	11801.00
27	37716.68	86.08	0.905	0.30 ( 0.27)	0.89	35161.6	11530.00
28	38489.52	91.77	0.876	0.30 ( 0.27)	0.90	38770.2	13510.00
29	39253.82	97.64	0.855	0.30 ( 0.27)	0.91	42373.3	13010.00
30	39843.23	101.28	0.841	0.30 ( 0.27)	0.91	44722.9	13500.00
31	40364.93	104.52	0.829	0.30 ( 0.27)	0.92	46798.3	11350.00
32	40752.61	109.21	0.812	0.30 ( 0.28)	0.92	49972.5	11130.00
33	40341.21	115.29	0.789	0.30 ( 0.28)	0.92	52899.1	12300.00
34	39562.45	124.06	0.763	0.30 ( 0.28)	0.93	57159.7	12400.00
35	38511.75	133.58	0.743	0.30 ( 0.28)	0.93	60561.3	12201.00
36	37541.12	141.07	0.726	0.30 ( 0.28)	0.93	62454.3	12231.00
37	36534.38	148.55	0.710	0.30 ( 0.28)	0.94	64007.0	10400.00
38	34966.66	158.00	0.690	0.30 ( 0.28)	0.94	65453.4	12010.00
39	33918.70	163.40	0.678	0.30 ( 0.28)	0.94	65716.0	10210.00
40	33243.27	167.46	0.669	0.30 ( 0.28)	0.94	65862.8	12000.00
41	29543.46	193.83	0.629	0.30 ( 0.28)	0.94	66475.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	168.28	22.49	1.869	0.30 ( 0.30)	0.99	131.3	50800.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20499.36	11.98	2.852	0.30 ( 0.24)	0.79	3210.5	429.00
2	21705.09	13.45	2.636	0.30 ( 0.24)	0.78	3676.6	425.00
3	21968.35	13.86	2.576	0.30 ( 0.24)	0.78	3806.1	400.00
4	22608.60	15.31	2.383	0.30 ( 0.24)	0.78	4259.8	300.00
5	24435.90	20.44	1.973	0.30 ( 0.24)	0.78	5850.3	210.00
6	24991.96	22.49	1.869	0.30 ( 0.24)	0.78	6463.4	50800.00
7	25006.00	22.54	1.866	0.30 ( 0.24)	0.78	6479.0	410.00

8	25422.88	23.59	1.813	0.30 ( 0.24)	0.78	6787.5	200.00
9	25615.98	24.15	1.784	0.30 ( 0.24)	0.78	6952.0	230.00
10	25759.38	24.66	1.758	0.30 ( 0.24)	0.79	7099.1	50700.00
11	25891.20	25.17	1.734	0.30 ( 0.24)	0.79	7237.6	50500.00
12	25914.45	25.25	1.730	0.30 ( 0.24)	0.79	7266.7	220.50
13	25935.27	25.33	1.727	0.30 ( 0.24)	0.79	7292.9	50600.00
14	26903.10	28.96	1.574	0.30 ( 0.24)	0.79	8488.8	110.00
15	27570.59	31.35	1.504	0.30 ( 0.24)	0.79	9317.7	100.00
16	27750.93	32.05	1.490	0.30 ( 0.24)	0.79	9556.5	110.00
17	27897.38	32.63	1.478	0.30 ( 0.24)	0.79	9818.7	100.00
18	28716.50	35.69	1.417	0.30 ( 0.24)	0.79	11207.5	130.00
19	29429.86	38.41	1.362	0.30 ( 0.24)	0.80	12436.5	10100.00
20	29547.63	38.89	1.352	0.30 ( 0.24)	0.80	12643.7	100.00
21	30201.66	41.54	1.307	0.30 ( 0.24)	0.80	13905.8	50220.00
22	31854.01	49.29	1.189	0.30 ( 0.25)	0.82	17624.5	20100.00
23	32383.35	51.94	1.154	0.30 ( 0.25)	0.83	18840.6	31100.00
24	32783.23	54.97	1.115	0.30 ( 0.25)	0.84	20350.9	13600.00
25	32964.27	56.32	1.098	0.30 ( 0.25)	0.84	21014.1	390.00
26	34801.00	68.97	1.001	0.30 ( 0.26)	0.87	27110.1	13100.00
27	35804.35	75.53	0.965	0.30 ( 0.26)	0.88	29971.8	11801.00
28	37781.81	86.08	0.905	0.30 ( 0.27)	0.89	35292.9	11530.00
29	38551.58	91.77	0.876	0.30 ( 0.27)	0.90	38901.5	13510.00
30	39313.56	97.64	0.855	0.30 ( 0.27)	0.91	42504.6	13010.00
31	39901.54	101.28	0.841	0.30 ( 0.27)	0.91	44854.2	13500.00
32	40421.94	104.52	0.829	0.30 ( 0.27)	0.92	46929.6	11350.00
33	40807.77	109.21	0.812	0.30 ( 0.28)	0.92	50103.8	11130.00
34	40393.96	115.29	0.789	0.30 ( 0.28)	0.93	53030.4	12300.00
35	39612.40	124.06	0.763	0.30 ( 0.28)	0.93	57291.0	12400.00
36	38559.50	133.58	0.743	0.30 ( 0.28)	0.93	60692.6	12201.00
37	37587.12	141.07	0.726	0.30 ( 0.28)	0.93	62585.6	12231.00
38	36578.65	148.55	0.710	0.30 ( 0.28)	0.94	64138.3	10400.00
39	35008.74	158.00	0.690	0.30 ( 0.28)	0.94	65584.7	12010.00
40	33959.52	163.40	0.678	0.30 ( 0.28)	0.94	65847.3	10210.00
41	33283.15	167.46	0.669	0.30 ( 0.28)	0.94	65994.1	12000.00
42	29579.04	193.83	0.629	0.30 ( 0.28)	0.94	66607.1	10100.00

TOTAL AREA (ACRES) = 66607.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 40807.77 Tc (MIN.) = 109.211

EFFECTIVE AREA (ACRES) = 50103.80 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 66607.1

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 66607.1 TC (MIN.) = 109.21

EFFECTIVE AREA (ACRES) = 50103.80 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.921

PEAK FLOW RATE (CFS) = 40807.77

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20499.36	11.98	2.852	0.30 ( 0.24)	0.79	3210.5	429.00
2	21705.09	13.45	2.636	0.30 ( 0.24)	0.78	3676.6	425.00
3	21968.35	13.86	2.576	0.30 ( 0.24)	0.78	3806.1	400.00
4	22608.60	15.31	2.383	0.30 ( 0.24)	0.78	4259.8	300.00
5	24435.90	20.44	1.973	0.30 ( 0.24)	0.78	5850.3	210.00

6	24991.96	22.49	1.869	0.30	( 0.24)	0.78	6463.4	50800.00
7	25006.00	22.54	1.866	0.30	( 0.24)	0.78	6479.0	410.00
8	25422.88	23.59	1.813	0.30	( 0.24)	0.78	6787.5	200.00
9	25615.98	24.15	1.784	0.30	( 0.24)	0.78	6952.0	230.00
10	25759.38	24.66	1.758	0.30	( 0.24)	0.79	7099.1	50700.00
11	25891.20	25.17	1.734	0.30	( 0.24)	0.79	7237.6	50500.00
12	25914.45	25.25	1.730	0.30	( 0.24)	0.79	7266.7	220.50
13	25935.27	25.33	1.727	0.30	( 0.24)	0.79	7292.9	50600.00
14	26903.10	28.96	1.574	0.30	( 0.24)	0.79	8488.8	110.00
15	27570.59	31.35	1.504	0.30	( 0.24)	0.79	9317.7	100.00
16	27750.93	32.05	1.490	0.30	( 0.24)	0.79	9556.5	110.00
17	27897.38	32.63	1.478	0.30	( 0.24)	0.79	9818.7	100.00
18	28716.50	35.69	1.417	0.30	( 0.24)	0.79	11207.5	130.00
19	29429.86	38.41	1.362	0.30	( 0.24)	0.80	12436.5	10100.00
20	29547.63	38.89	1.352	0.30	( 0.24)	0.80	12643.7	100.00
21	30201.66	41.54	1.307	0.30	( 0.24)	0.80	13905.8	50220.00
22	31854.01	49.29	1.189	0.30	( 0.25)	0.82	17624.5	20100.00
23	32383.35	51.94	1.154	0.30	( 0.25)	0.83	18840.6	31100.00
24	32783.23	54.97	1.115	0.30	( 0.25)	0.84	20350.9	13600.00
25	32964.27	56.32	1.098	0.30	( 0.25)	0.84	21014.1	390.00
26	34801.00	68.97	1.001	0.30	( 0.26)	0.87	27110.1	13100.00
27	35804.35	75.53	0.965	0.30	( 0.26)	0.88	29971.8	11801.00
28	37781.81	86.08	0.905	0.30	( 0.27)	0.89	35292.9	11530.00
29	38551.58	91.77	0.876	0.30	( 0.27)	0.90	38901.5	13510.00
30	39313.56	97.64	0.855	0.30	( 0.27)	0.91	42504.6	13010.00
31	39901.54	101.28	0.841	0.30	( 0.27)	0.91	44854.2	13500.00
32	40421.94	104.52	0.829	0.30	( 0.27)	0.92	46929.6	11350.00
33	40807.77	109.21	0.812	0.30	( 0.28)	0.92	50103.8	11130.00
34	40393.96	115.29	0.789	0.30	( 0.28)	0.93	53030.4	12300.00
35	39612.40	124.06	0.763	0.30	( 0.28)	0.93	57291.0	12400.00
36	38559.50	133.58	0.743	0.30	( 0.28)	0.93	60692.6	12201.00
37	37587.12	141.07	0.726	0.30	( 0.28)	0.93	62585.6	12231.00
38	36578.65	148.55	0.710	0.30	( 0.28)	0.94	64138.3	10400.00
39	35008.74	158.00	0.690	0.30	( 0.28)	0.94	65584.7	12010.00
40	33959.52	163.40	0.678	0.30	( 0.28)	0.94	65847.3	10210.00
41	33283.15	167.46	0.669	0.30	( 0.28)	0.94	65994.1	12000.00
42	29579.04	193.83	0.629	0.30	( 0.28)	0.94	66607.1	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S36- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV36.DAT  
TIME/DATE OF STUDY: 11:44 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.765
- 2) 10.00; 3.118
- 3) 15.00; 2.394
- 4) 20.00; 1.986
- 5) 25.00; 1.734
- 6) 30.00; 1.526
- 7) 40.00; 1.325
- 8) 50.00; 1.173
- 9) 60.00; 1.046
- 10) 90.00; 0.877
- 11) 120.00; 0.765
- 12) 180.00; 0.636
- 13) 360.00; 0.466
- 14) 1200.00; 0.203

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61  
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.974  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	-	3.39	0.30	1.000	69	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 8.16  
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 8.16

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32  
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.41  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.706  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.45	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.25  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.77  
AVERAGE FLOW DEPTH(FEET) = 0.40 TRAVEL TIME(MIN.) = 1.85  
Tc(MIN.) = 12.85  
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 16.13  
EFFECTIVE AREA(ACRES) = 10.84 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 10.8 PEAK FLOW RATE(CFS) = 23.47  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.49 FLOW VELOCITY(FEET/SEC.) = 4.33  
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13601.00 = 906.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13601.00 TO NODE 13602.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 707.32 DOWNSTREAM(FEET) = 657.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 777.60 CHANNEL SLOPE = 0.0646  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.91  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.364

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.32	0.30	1.000	-
USER-DEFINED	-	4.70	0.30	1.000	-
USER-DEFINED	-	25.05	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	0.44	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 52.30

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.14

AVERAGE FLOW DEPTH(FEET) = 0.87 TRAVEL TIME(MIN.) = 2.52

Tc(MIN.) = 15.37

SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 57.51

EFFECTIVE AREA(ACRES) = 41.80 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 41.8 PEAK FLOW RATE(CFS) = 77.65

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.09 FLOW VELOCITY(FEET/SEC.) = 5.82

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13602.00 = 1684.51 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13602.00 TO NODE 13603.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 657.12 DOWNSTREAM(FEET) = 584.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1186.54 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.28  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.102

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.03	0.30	1.000	-
USER-DEFINED	-	2.51	0.30	1.000	-

USER-DEFINED - 1.52 0.30 1.000 -  
USER-DEFINED - 12.30 0.30 1.000 -

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 96.61

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.15

AVERAGE FLOW DEPTH(FEET) = 1.26 TRAVEL TIME(MIN.) = 3.22

Tc(MIN.) = 18.58

SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 37.88

EFFECTIVE AREA(ACRES) = 65.16 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 65.2 PEAK FLOW RATE(CFS) = 105.65

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.32 FLOW VELOCITY(FEET/SEC.) = 6.32

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13603.00 = 2871.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 584.58 DOWNSTREAM(FEET) = 544.91  
CHANNEL LENGTH THRU SUBAREA(FEET) = 860.98 CHANNEL SLOPE = 0.0461  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.56

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.937

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	10.22	0.30	1.000	-
USER-DEFINED	-	4.19	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-
USER-DEFINED	-	0.09	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 121.30

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.99

AVERAGE FLOW DEPTH(FEET) = 1.55 TRAVEL TIME(MIN.) = 2.39

Tc(MIN.) = 20.98

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 31.29

EFFECTIVE AREA(ACRES) = 86.40 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) = 127.28

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.59 FLOW VELOCITY(FEET/SEC.) = 6.07

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

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*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 10
-----
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 2 <<<<<
=====
PEAK FLOWRATE TABLE FILE NAME: S35X25.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1      1006.57  54.62  0.30( 0.28) 0.95    1513.9  13510.00
  2       918.88  63.50  0.30( 0.28) 0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 14.0
-----
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
=====
MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1      1006.57  54.62  0.30( 0.28) 0.95    1513.9  13510.00
  2       918.88  63.50  0.30( 0.28) 0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13620.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 632.19 DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 2062.96 CHANNEL SLOPE = 0.0423
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.32
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.077
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED            -      17.68    0.30    1.000    -
USER-DEFINED            -      2.36    0.30    1.000    -
USER-DEFINED            -      0.60    0.30    1.000    -
USER-DEFINED            -      0.22    0.30    1.000    -
USER-DEFINED            -      2.22    0.30    1.000    -
USER-DEFINED            -      3.42    0.30    1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1015.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.82

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AVERAGE FLOW DEPTH(FEET) = 2.32 TRAVEL TIME(MIN.) = 2.91
Tc(MIN.) = 57.52
SUBAREA AREA(ACRES) = 26.50 SUBAREA RUNOFF(CFS) = 18.55
EFFECTIVE AREA(ACRES) = 1540.42 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1606.3 PEAK FLOW RATE(CFS) = 1099.65
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.43 FLOW VELOCITY(FEET/SEC.) = 12.13
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 57.52
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.077
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE                GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      1.44    0.30    1.000    65
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      0.01    0.30    1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 1.01
EFFECTIVE AREA(ACRES) = 1541.87 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 1100.66

*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1100.66  57.52  1.077  0.30( 0.28) 0.95    1541.9  13510.00
  2      1050.24  66.50  1.009  0.30( 0.28) 0.95    1607.8  13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      127.28  20.98  1.937  0.30( 0.30) 1.00     86.4  13600.00
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      963.51  20.98  1.937  0.30( 0.29) 0.95    648.7  13600.00

```

2 1161.12 57.52 1.077 0.30( 0.29) 0.95 1628.3 13510.00  
 3 1105.40 66.50 1.009 0.30( 0.28) 0.95 1694.2 13500.00  
 TOTAL AREA (ACRES) = 1694.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1161.12 Tc (MIN.) = 57.525  
 EFFECTIVE AREA (ACRES) = 1628.27 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 1694.2  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13620.00 TO NODE 13640.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 544.91 DOWNSTREAM (FEET) = 489.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1384.37 CHANNEL SLOPE = 0.0404  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.57  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.053

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.39	0.30	1.000	-
USER-DEFINED	-	16.30	0.30	1.000	-
USER-DEFINED	-	4.08	0.30	1.000	-
USER-DEFINED	-	12.36	0.30	1.000	-
USER-DEFINED	-	11.23	0.30	1.000	-
USER-DEFINED	-	5.16	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1179.61  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.19  
 AVERAGE FLOW DEPTH (FEET) = 2.57 TRAVEL TIME (MIN.) = 1.89  
 Tc (MIN.) = 59.42

SUBAREA AREA (ACRES) = 54.52 SUBAREA RUNOFF (CFS) = 36.97  
 EFFECTIVE AREA (ACRES) = 1682.79 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 1748.7 PEAK FLOW RATE (CFS) = 1162.87  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 2.54 FLOW VELOCITY (FEET/SEC.) = 12.15  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 59.42  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.053  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.93	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	3.98	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 58.36 SUBAREA RUNOFF (CFS) = 39.58  
 EFFECTIVE AREA (ACRES) = 1741.15 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 1807.1 PEAK FLOW RATE (CFS) = 1202.45

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P201XX25.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	210.74	17.33	0.30( 0.26)	0.85	133.8	20100.00
TOTAL AREA (ACRES) =		133.8				

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1060.92	22.97	1.836	0.30( 0.29)	0.96	761.6	13600.00
2	1202.45	59.42	1.053	0.30( 0.29)	0.95	1741.1	13510.00
3	1159.89	68.42	0.999	0.30( 0.29)	0.95	1807.1	13500.00
LONGEST FLOWPATH FROM NODE		13500.00 TO NODE 13640.00 = 22062.09 FEET.					

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	210.74	17.33	2.204	0.30( 0.26)	0.85	133.8	20100.00
LONGEST FLOWPATH FROM NODE		20100.00 TO NODE 13640.00 = 5247.00 FEET.					

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1201.19	17.33	2.204	0.30( 0.28)	0.94	708.3	20100.00
2	1231.87	22.97	1.836	0.30( 0.28)	0.95	895.4	13600.00
3	1288.70	59.42	1.053	0.30( 0.28)	0.95	1874.9	13510.00
4	1240.21	68.42	0.999	0.30( 0.28)	0.94	1940.9	13500.00
TOTAL AREA (ACRES) =		1940.9					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1288.70 Tc (MIN.) = 59.417  
 EFFECTIVE AREA (ACRES) = 1874.95 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 1940.9

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

\*\*\*\*\*

FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 489.00 DOWNSTREAM(FEET) = 436.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2994.52 CHANNEL SLOPE = 0.0174  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.44

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.020

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.96	0.30	1.000	-
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	10.45	0.30	1.000	-
USER-DEFINED	-	44.94	0.30	1.000	-
USER-DEFINED	-	9.66	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1310.59

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.46

AVERAGE FLOW DEPTH(FEET) = 3.44 TRAVEL TIME(MIN.) = 5.28

Tc(MIN.) = 64.70

SUBAREA AREA(ACRES) = 67.58 SUBAREA RUNOFF(CFS) = 43.77

EFFECTIVE AREA(ACRES) = 1942.53 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 2008.4 PEAK FLOW RATE(CFS) = 1288.70

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.41 FLOW VELOCITY(FEET/SEC.) = 9.40

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13641.00 = 25056.61 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 64.70

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.020

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	16.49	0.30	1.000	-
USER-DEFINED	-	20.39	0.30	1.000	-
USER-DEFINED	-	7.02	0.30	1.000	-
USER-DEFINED	-	12.58	0.30	1.000	-
USER-DEFINED	-	42.49	0.30	1.000	-
USER-DEFINED	-	5.73	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 104.70 SUBAREA RUNOFF(CFS) = 67.81

EFFECTIVE AREA(ACRES) = 2047.23 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 2113.1 PEAK FLOW RATE(CFS) = 1352.90

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 64.70

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.020

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.78	0.30	1.000	-
USER-DEFINED	-	6.25	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 8.03 SUBAREA RUNOFF(CFS) = 5.20

EFFECTIVE AREA(ACRES) = 2055.26 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 2121.2 PEAK FLOW RATE(CFS) = 1358.10

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 56

ELEVATION DATA: UPSTREAM(FEET) = 436.89 DOWNSTREAM(FEET) = 394.80  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2814.16 CHANNEL SLOPE = 0.0150  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.76

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.991

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	24.24	0.30	1.000	-
USER-DEFINED	-	1.34	0.30	1.000	-
USER-DEFINED	-	74.98	0.30	1.000	-
USER-DEFINED	-	101.12	0.30	1.000	-
USER-DEFINED	-	16.90	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1426.27

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.20

AVERAGE FLOW DEPTH(FEET) = 3.76 TRAVEL TIME(MIN.) = 5.10

Tc(MIN.) = 69.79

SUBAREA AREA(ACRES) = 219.25 SUBAREA RUNOFF(CFS) = 136.33

EFFECTIVE AREA(ACRES) = 2274.51 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96

TOTAL AREA(ACRES) = 2340.4 PEAK FLOW RATE(CFS) = 1441.31

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.78

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 3.78 FLOW VELOCITY(FEET/SEC.) = 9.23  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13642.00 = 27870.77 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 69.79  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.991  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 9.95 0.30 1.000 -  
USER-DEFINED - 10.02 0.30 1.000 -  
USER-DEFINED - 4.45 0.30 1.000 -  
USER-DEFINED - 179.37 0.30 1.000 -  
USER-DEFINED - 11.47 0.30 1.000 -  
USER-DEFINED - 0.17 0.30 0.850 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 215.43 SUBAREA RUNOFF(CFS) = 133.96  
EFFECTIVE AREA(ACRES) = 2489.94 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA(ACRES) = 2555.9 PEAK FLOW RATE(CFS) = 1575.27

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1578.90	27.83	1.616	0.30( 0.29)	0.97	1323.3	20100.00
2	1585.73	33.44	1.457	0.30( 0.29)	0.97	1510.4	13600.00
3	1575.27	69.79	0.991	0.30( 0.29)	0.96	2489.9	13510.00
4	1499.78	78.93	0.939	0.30( 0.29)	0.96	2555.9	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1585.73 Tc(MIN.) = 33.44  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1510.36

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc(MIN.) = 33.44  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.457  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.03 0.30 0.850 -  
USER-DEFINED - 5.14 0.30 1.000 -  
USER-DEFINED - 11.22 0.30 1.000 -  
USER-DEFINED - 0.33 0.30 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 16.72 SUBAREA RUNOFF(CFS) = 17.41  
EFFECTIVE AREA(ACRES) = 1527.08 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
TOTAL AREA(ACRES) = 2572.6 PEAK FLOW RATE(CFS) = 1603.13

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 56  
-----

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 394.80 DOWNSTREAM(FEET) = 342.39  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2913.57 CHANNEL SLOPE = 0.0180  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.90  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.362  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.22 0.30 1.000 -  
USER-DEFINED - 2.17 0.30 1.000 -  
USER-DEFINED - 9.19 0.30 1.000 -  
USER-DEFINED - 67.57 0.30 1.000 -  
USER-DEFINED - 35.19 0.30 1.000 -  
USER-DEFINED - 30.67 0.30 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1672.45  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.30  
AVERAGE FLOW DEPTH(FEET) = 3.90 TRAVEL TIME(MIN.) = 4.72  
Tc(MIN.) = 38.16  
SUBAREA AREA(ACRES) = 145.01 SUBAREA RUNOFF(CFS) = 138.61  
EFFECTIVE AREA(ACRES) = 1672.09 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
TOTAL AREA(ACRES) = 2717.6 PEAK FLOW RATE(CFS) = 1611.48  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 3.82 FLOW VELOCITY(FEET/SEC.) = 10.18  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1598.71	32.55	1.475	0.30( 0.29)	0.97	1485.0	20100.00
2	1611.48	38.16	1.362	0.30( 0.29)	0.97	1672.1	13600.00
3	1611.93	74.55	0.964	0.30( 0.29)	0.96	2651.7	13510.00
4	1526.38	83.75	0.912	0.30( 0.29)	0.96	2717.6	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1611.93 Tc(MIN.) = 74.55  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA(ACRES) = 2651.67

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81  
-----

=====  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 74.55  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.964  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.89 0.30 1.000 -  
USER-DEFINED - 20.65 0.30 1.000 -  
USER-DEFINED - 2.69 0.30 1.000 -  
USER-DEFINED - 8.45 0.30 1.000 -  
USER-DEFINED - 96.93 0.30 1.000 -  
USER-DEFINED - 13.19 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 142.80 SUBAREA RUNOFF(CFS) = 85.35  
EFFECTIVE AREA(ACRES) = 2794.47 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA(ACRES) = 2860.4 PEAK FLOW RATE(CFS) = 1697.29

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1732.48	32.55	1.475	0.30( 0.29)	0.97	1627.8	20100.00
2	1747.98	38.16	1.362	0.30( 0.29)	0.97	1814.9	13600.00
3	1697.29	74.55	0.964	0.30( 0.29)	0.96	2794.5	13510.00
4	1605.07	83.75	0.912	0.30( 0.29)	0.96	2860.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1747.98 Tc(MIN.) = 38.16  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1814.89

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 38.16  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.362  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 42.54 0.30 1.000 -  
USER-DEFINED - 16.96 0.30 1.000 -  
USER-DEFINED - 80.60 0.30 1.000 -  
USER-DEFINED - 1.56 0.30 1.000 -  
USER-DEFINED - 2.00 0.30 1.000 -  
USER-DEFINED - 3.11 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 146.77 SUBAREA RUNOFF(CFS) = 140.29  
EFFECTIVE AREA(ACRES) = 1961.66 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA(ACRES) = 3007.2 PEAK FLOW RATE(CFS) = 1888.27

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56  
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=====  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
=====

>>>>TRAVELTIME THRU SUBAREA<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.77  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.320  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 0.89 0.30 1.000 -  
USER-DEFINED - 23.73 0.30 1.000 -  
USER-DEFINED - 0.27 0.30 1.000 -  
USER-DEFINED - 19.87 0.30 1.000 -  
USER-DEFINED - 6.40 0.30 1.000 -  
USER-DEFINED - 3.14 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1913.20  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.30  
AVERAGE FLOW DEPTH(FEET) = 3.77 TRAVEL TIME(MIN.) = 2.16  
Tc(MIN.) = 40.32  
SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 49.86  
EFFECTIVE AREA(ACRES) = 2015.96 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA(ACRES) = 3061.5 PEAK FLOW RATE(CFS) = 1888.27  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.74 FLOW VELOCITY(FEET/SEC.) = 12.24  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1887.68	34.70	1.432	0.30( 0.29)	0.98	1828.9	20100.00
2	1888.27	40.32	1.320	0.30( 0.29)	0.98	2016.0	13600.00
3	1785.01	76.74	0.952	0.30( 0.29)	0.97	2995.5	13510.00
4	1685.95	85.99	0.900	0.30( 0.29)	0.96	3061.5	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1888.27 Tc(MIN.) = 40.32  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 2015.96

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 40.32  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.320  
SUBAREA LOSS RATE DATA(AMC II):

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DEVELOPMENT TYPE/   SCS SOIL  AREA      Fp      Ap      SCS
LAND USE            GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED        -         0.67     0.30     1.000     -
USER-DEFINED        -         9.52     0.30     1.000     -
USER-DEFINED        -         0.71     0.30     1.000     -
USER-DEFINED        -         0.22     0.30     1.000     -
USER-DEFINED        -        39.42     0.30     1.000     -
USER-DEFINED        -         0.62     0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 51.16      SUBAREA RUNOFF(CFS) = 46.98
EFFECTIVE AREA(ACRES) = 2067.12  AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3112.6      PEAK FLOW RATE(CFS) = 1911.33

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** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)  (DECIMAL)  (ACRES)  NODE
1           1925.95  34.70   1.432     0.30( 0.29) 0.98   1880.1   20100.00
2           1911.33  40.32   1.320     0.30( 0.29) 0.98   2067.1   13600.00
3           1814.12  76.74   0.952     0.30( 0.29) 0.97   3046.7   13510.00
4           1708.80  85.99   0.900     0.30( 0.29) 0.97   3112.6   13500.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1925.95  Tc(MIN.) = 34.70
AREA-AVERAGED Fm(INCH/HR) = 0.29  AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98  EFFECTIVE AREA(ACRES) = 1880.05

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*****
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 34.70
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.432
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL  AREA      Fp      Ap      SCS
LAND USE            GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED        -         0.11     0.30     1.000     -
USER-DEFINED        -         0.77     0.30     1.000     -
USER-DEFINED        -         0.22     0.30     1.000     -
USER-DEFINED        -         2.69     0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 3.79      SUBAREA RUNOFF(CFS) = 3.86
EFFECTIVE AREA(ACRES) = 1883.84  AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3116.4      PEAK FLOW RATE(CFS) = 1929.81

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*****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 1 <<<<
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*****
FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1
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>>>>DEFINE MEMORY BANK # 1 <<<<

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=====
PEAK FLOWRATE TABLE FILE NAME: 2P25EVAA.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)  (MIN.)  (INCH/HR)  (DECIMAL)  (ACRES)  NODE
1           479.23   14.36   0.30( 0.11) 0.36   173.1   110.00
2           481.39   16.87   0.30( 0.11) 0.37   203.9   100.00
3           473.65   18.15   0.30( 0.11) 0.38   213.8   100.00
4           419.54   21.27   0.30( 0.12) 0.40   221.1   130.00
TOTAL AREA(ACRES) = 221.1

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*****
FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31
-----

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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====

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```

ELEVATION DATA: UPSTREAM(FEET) = 338.00  DOWNSTREAM(FEET) = 300.00
FLOW LENGTH(FEET) = 881.07  MANNING'S N = 0.013
DEPTH OF FLOW IN 102.0 INCH PIPE IS 76.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 42.20
ESTIMATED PIPE DIAMETER(INCH) = 102.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1929.81
PIPE TRAVEL TIME(MIN.) = 0.35  Tc(MIN.) = 35.05
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

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*****
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11
-----

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

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** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)  (DECIMAL)  (ACRES)  NODE
1           1929.81  35.05   1.425     0.30( 0.29) 0.98   1883.8   20100.00
2           1914.81  40.66   1.315     0.30( 0.29) 0.98   2070.9   13600.00
3           1816.34  77.09   0.950     0.30( 0.29) 0.97   3050.5   13510.00
4           1710.85  86.35   0.898     0.30( 0.29) 0.97   3116.4   13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

```

```

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)  (DECIMAL)  (ACRES)  NODE
1           479.23   14.36   2.487     0.30( 0.11) 0.36   173.1   110.00
2           481.39   16.87   2.242     0.30( 0.11) 0.37   203.9   100.00
3           473.65   18.15   2.137     0.30( 0.11) 0.38   213.8   100.00
4           419.54   21.27   1.922     0.30( 0.12) 0.40   221.1   130.00
LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

```

```

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)  (MIN.)  (INCH/HR)  (INCH/HR)  (DECIMAL)  (ACRES)  NODE
1           2012.29  14.36   2.487     0.30( 0.26) 0.87   945.0   110.00
2           2080.98  16.87   2.242     0.30( 0.26) 0.87   1110.5   100.00
3           2102.39  18.15   2.137     0.30( 0.26) 0.87   1189.4   100.00
4           2105.75  21.27   1.922     0.30( 0.27) 0.88   1364.4   130.00
5           2233.52  35.05   1.425     0.30( 0.28) 0.92   2104.9   20100.00

```



6 2193.00 40.66 1.315 0.30( 0.28) 0.92 2292.0 13600.00  
 7 2009.48 77.09 0.950 0.30( 0.28) 0.93 3271.6 13510.00  
 8 1891.84 86.35 0.898 0.30( 0.28) 0.93 3337.5 13500.00  
 TOTAL AREA(ACRES) = 3337.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2233.52 Tc(MIN.) = 35.049  
 EFFECTIVE AREA(ACRES) = 2104.94 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
 TOTAL AREA(ACRES) = 3337.5  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 35.05  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.425  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	1.11	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	0.44	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.49	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	1.70	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	1.09	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	18.57	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 24.40 SUBAREA RUNOFF(CFS) = 24.69  
 EFFECTIVE AREA(ACRES) = 2129.34 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3361.9 PEAK FLOW RATE(CFS) = 2233.52  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 35.05  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.425  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL FAIR COVER "ORCHARDS"	B	12.39	0.30	1.000	65
AGRICULTURAL FAIR COVER "ORCHARDS"	B	2.30	0.30	1.000	65
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	5.19	0.30	1.000	79

AGRICULTURAL POOR COVER  
 "ROW CROPS,STRAIGHT ROW" B 28.71 0.30 1.000 81  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.17 0.30 1.000 65  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 48.76 SUBAREA RUNOFF(CFS) = 49.35  
 EFFECTIVE AREA(ACRES) = 2178.10 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3410.7 PEAK FLOW RATE(CFS) = 2251.51

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 300.00 DOWNSTREAM(FEET) = 288.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 933.89 CHANNEL SLOPE = 0.0128  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.02  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	9.23	0.30	1.000	-
USER-DEFINED	-	0.54	0.30	1.000	-
USER-DEFINED	-	5.66	0.30	1.000	-
USER-DEFINED	-	3.66	0.30	1.000	-
USER-DEFINED	-	0.67	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2261.34  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.00  
 AVERAGE FLOW DEPTH(FEET) = 5.02 TRAVEL TIME(MIN.) = 1.56  
 Tc(MIN.) = 36.60  
 SUBAREA AREA(ACRES) = 19.98 SUBAREA RUNOFF(CFS) = 19.66  
 EFFECTIVE AREA(ACRES) = 2198.08 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3430.6 PEAK FLOW RATE(CFS) = 2251.51  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.01

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.01 FLOW VELOCITY(FEET/SEC.) = 9.99  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2038.00	15.96	2.316	0.30( 0.26)	0.88	1038.1	110.00
2	2108.28	18.45	2.112	0.30( 0.26)	0.88	1203.7	100.00
3	2128.98	19.73	2.008	0.30( 0.26)	0.88	1282.5	100.00
4	2141.13	22.85	1.842	0.30( 0.27)	0.89	1457.6	130.00

5 2251.51 36.60 1.393 0.30( 0.28) 0.92 2198.1 20100.00  
6 2209.48 42.23 1.291 0.30( 0.28) 0.92 2385.1 13600.00  
7 2018.73 78.70 0.941 0.30( 0.28) 0.93 3364.7 13510.00  
8 1899.14 87.98 0.888 0.30( 0.28) 0.93 3430.6 13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2251.51 Tc(MIN.) = 36.60  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 2198.08

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 36.60

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	9.40	0.30	1.000	-
USER-DEFINED	-	2.76	0.30	1.000	-
USER-DEFINED	-	17.38	0.30	1.000	-
USER-DEFINED	-	2.46	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 39.12 SUBAREA RUNOFF(CFS) = 38.49

EFFECTIVE AREA(ACRES) = 2237.20 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 3469.8 PEAK FLOW RATE(CFS) = 2251.51

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 36.60

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.65	0.30	1.000	-
USER-DEFINED	-	1.70	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 2.35 SUBAREA RUNOFF(CFS) = 2.31

EFFECTIVE AREA(ACRES) = 2239.55 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 3472.1 PEAK FLOW RATE(CFS) = 2251.51

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 36.60

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.29	0.30	1.000	-
USER-DEFINED	-	31.25	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	6.26	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 43.31 SUBAREA RUNOFF(CFS) = 42.62

EFFECTIVE AREA(ACRES) = 2282.86 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 3515.4 PEAK FLOW RATE(CFS) = 2293.29

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 36.60

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.47	0.30	0.850	-
USER-DEFINED	-	3.06	0.30	0.850	-
USER-DEFINED	-	17.76	0.30	0.500	-
USER-DEFINED	-	7.31	0.30	0.500	-
USER-DEFINED	-	0.34	0.30	1.000	-
USER-DEFINED	-	8.22	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.659

SUBAREA AREA(ACRES) = 39.16 SUBAREA RUNOFF(CFS) = 42.14

EFFECTIVE AREA(ACRES) = 2322.02 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 3554.6 PEAK FLOW RATE(CFS) = 2335.43

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 36.60

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.393

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.53	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 0.52  
 EFFECTIVE AREA(ACRES) = 2322.55 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3555.1 PEAK FLOW RATE(CFS) = 2335.95

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13680.00 TO NODE 13682.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM(FEET) = 288.00 DOWNSTREAM(FEET) = 242.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.77 CHANNEL SLOPE = 0.0161  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.82  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.22 0.30 1.000 -  
 USER-DEFINED - 5.28 0.30 1.000 -  
 USER-DEFINED - 0.52 0.30 1.000 -  
 USER-DEFINED - 3.61 0.30 1.000 -  
 USER-DEFINED - 0.67 0.30 1.000 -  
 USER-DEFINED - 1.37 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2341.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.93  
 AVERAGE FLOW DEPTH(FEET) = 4.82 TRAVEL TIME(MIN.) = 4.36  
 Tc(MIN.) = 40.97  
 SUBAREA AREA(ACRES) = 11.67 SUBAREA RUNOFF(CFS) = 10.61  
 EFFECTIVE AREA(ACRES) = 2334.22 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3566.8 PEAK FLOW RATE(CFS) = 2335.95

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.81  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 4.81 FLOW VELOCITY(FEET/SEC.) = 10.93  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	20.42	1.965	0.30( 0.26)	0.88	1174.3	110.00
2	2209.70	22.88	1.841	0.30( 0.26)	0.88	1339.8	100.00
3	2208.11	24.16	1.776	0.30( 0.26)	0.88	1418.7	100.00
4	2242.46	27.26	1.640	0.30( 0.27)	0.89	1593.7	130.00
5	2335.95	40.97	1.310	0.30( 0.28)	0.92	2334.2	20100.00
6	2291.36	46.61	1.225	0.30( 0.28)	0.92	2521.3	13600.00
7	2078.40	83.21	0.915	0.30( 0.28)	0.93	3500.9	13510.00
8	1950.98	92.58	0.867	0.30( 0.28)	0.93	3566.8	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2335.95 Tc(MIN.) = 40.97  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 2334.22

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 40.97  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.90 0.30 1.000 -  
 USER-DEFINED - 23.04 0.30 1.000 -  
 USER-DEFINED - 1.18 0.30 1.000 -  
 USER-DEFINED - 1.56 0.30 1.000 -  
 USER-DEFINED - 53.20 0.30 1.000 -  
 USER-DEFINED - 2.08 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 87.96 SUBAREA RUNOFF(CFS) = 79.99  
 EFFECTIVE AREA(ACRES) = 2422.18 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3654.7 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 40.97  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.01 0.30 1.000 -  
 USER-DEFINED - 0.18 0.30 1.000 -  
 USER-DEFINED - 0.38 0.30 1.000 -  
 USER-DEFINED - 0.22 0.30 1.000 -  
 USER-DEFINED - 7.73 0.30 1.000 -  
 USER-DEFINED - 4.37 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 12.89 SUBAREA RUNOFF(CFS) = 11.72  
 EFFECTIVE AREA(ACRES) = 2435.07 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3667.6 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 40.97  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	2.57	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	1.97	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.98	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.39	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	1.67	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 12.58 SUBAREA RUNOFF(CFS) = 11.44  
 EFFECTIVE AREA(ACRES) = 2447.65 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3680.2 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 40.97  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.44	0.30	1.000	66
PUBLIC PARK	B	2.65	0.30	0.850	56
PUBLIC PARK	B	1.16	0.30	0.850	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.47	0.30	0.500	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.25	0.30	0.500	56
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	20.24	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.963  
 SUBAREA AREA(ACRES) = 25.21 SUBAREA RUNOFF(CFS) = 23.17  
 EFFECTIVE AREA(ACRES) = 2472.86 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3705.4 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 40.97  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.310  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.08	0.30	1.000	-
USER-DEFINED	-	6.75	0.30	1.000	-
USER-DEFINED	-	0.02	0.30	1.000	-
USER-DEFINED	-	0.93	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 14.78 SUBAREA RUNOFF(CFS) = 13.44  
 EFFECTIVE AREA(ACRES) = 2487.64 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3720.2 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 242.00 DOWNSTREAM(FEET) = 208.53  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2526.22 CHANNEL SLOPE = 0.0132  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.09  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.30	1.000	-
USER-DEFINED	-	13.31	0.30	1.000	-
USER-DEFINED	-	0.87	0.30	1.000	-
USER-DEFINED	-	20.26	0.30	1.000	-
USER-DEFINED	-	1.21	0.30	1.000	-
USER-DEFINED	-	0.05	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2354.80  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.24  
 AVERAGE FLOW DEPTH(FEET) = 5.08 TRAVEL TIME(MIN.) = 4.11  
 Tc(MIN.) = 45.08  
 SUBAREA AREA(ACRES) = 44.19 SUBAREA RUNOFF(CFS) = 37.70  
 EFFECTIVE AREA(ACRES) = 2531.83 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 3764.4 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.06 FLOW VELOCITY(FEET/SEC.) = 10.21  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	24.64	1.752	0.30( 0.27)	0.90	1371.9	110.00
2	2209.70	27.06	1.648	0.30( 0.27)	0.89	1537.4	100.00
3	2208.11	28.34	1.595	0.30( 0.27)	0.90	1616.3	100.00
4	2242.46	31.42	1.497	0.30( 0.27)	0.90	1791.3	130.00
5	2335.95	45.08	1.248	0.30( 0.28)	0.93	2531.8	20100.00
6	2291.36	50.75	1.164	0.30( 0.28)	0.93	2718.9	13600.00
7	2090.26	87.46	0.891	0.30( 0.28)	0.93	3698.5	13510.00
8	1968.40	96.91	0.851	0.30( 0.28)	0.93	3764.4	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2335.95 Tc(MIN.) = 45.08  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2531.83

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc(MIN.) = 45.08  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ LAND USE SCS SOIL GROUP AREA (ACRES) Fp (INCH/HR) Ap (DECIMAL) SCS CN  
 USER-DEFINED - 12.56 0.30 1.000 -  
 USER-DEFINED - 0.81 0.30 1.000 -  
 USER-DEFINED - 0.01 0.30 1.000 -  
 USER-DEFINED - 1.11 0.30 1.000 -  
 USER-DEFINED - 0.59 0.30 1.000 -  
 USER-DEFINED - 3.04 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 18.12 SUBAREA RUNOFF(CFS) = 15.46  
 EFFECTIVE AREA(ACRES) = 2549.95 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 3782.5 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc(MIN.) = 45.08  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ LAND USE SCS SOIL GROUP AREA (ACRES) Fp (INCH/HR) Ap (DECIMAL) SCS CN  
 RESIDENTIAL  
 "8-10 DWELLINGS/ACRE" B 0.10 0.30 0.400 56  
 PUBLIC PARK B 1.30 0.30 0.850 56  
 RESIDENTIAL  
 "8-10 DWELLINGS/ACRE" B 0.10 0.30 0.400 56  
 PUBLIC PARK B 1.70 0.30 0.850 56  
 PUBLIC PARK B 0.10 0.30 0.850 56  
 PUBLIC PARK B 2.90 0.30 0.850 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835  
 SUBAREA AREA(ACRES) = 6.20 SUBAREA RUNOFF(CFS) = 5.56  
 EFFECTIVE AREA(ACRES) = 2556.15 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 3788.7 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc(MIN.) = 45.08  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ LAND USE SCS SOIL GROUP AREA (ACRES) Fp (INCH/HR) Ap (DECIMAL) SCS CN  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 0.10 0.30 0.500 56  
 CONDOMINIUMS B 0.10 0.30 0.350 56  
 PUBLIC PARK B 6.90 0.30 0.850 56  
 PUBLIC PARK B 0.40 0.30 0.850 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839  
 SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 6.72  
 EFFECTIVE AREA(ACRES) = 2563.65 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 3796.2 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 3 <<<<  
 =====

\*\*\*MEMORY BANK # 3 IS EMPTY - PROCESS IGNORED.\*\*\*  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc(MIN.) = 45.08  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ LAND USE SCS SOIL GROUP AREA (ACRES) Fp (INCH/HR) Ap (DECIMAL) SCS CN  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 2.55 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 0.01 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 1.35 0.30 1.000 86  
 NATURAL FAIR COVER  
 "GRASS" B 0.44 0.30 1.000 69  
 NATURAL FAIR COVER  
 "GRASS" B 0.67 0.30 1.000 69  
 NATURAL FAIR COVER

"OPEN BRUSH" B 1.06 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 6.08 SUBAREA RUNOFF (CFS) = 5.19  
 EFFECTIVE AREA (ACRES) = 2569.73 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3802.3 PEAK FLOW RATE (CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 45.08  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.16 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.45 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 6.15 0.30 1.000 66  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, STRAIGHT ROW" B 1.34 0.30 1.000 81  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, STRAIGHT ROW" B 18.46 0.30 1.000 81  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, STRAIGHT ROW" B 4.13 0.30 1.000 81  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 34.69 SUBAREA RUNOFF (CFS) = 29.59  
 EFFECTIVE AREA (ACRES) = 2604.42 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3837.0 PEAK FLOW RATE (CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 45.08  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.248  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, STRAIGHT ROW" B 8.69 0.30 1.000 81  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.73 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.41 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 1.37 0.30 1.000 65  
 NATURAL FAIR COVER

"WOODLAND, GRASS" B 3.11 0.30 1.000 65  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 14.31 SUBAREA RUNOFF (CFS) = 12.21  
 EFFECTIVE AREA (ACRES) = 2618.73 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3851.3 PEAK FLOW RATE (CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13685.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 208.53 DOWNSTREAM (FEET) = 194.24  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 289.01 CHANNEL SLOPE = 0.0494  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.54  
 CHANNEL FLOW THRU SUBAREA (CFS) = 2335.95  
 FLOW VELOCITY (FEET/SEC.) = 16.22 FLOW DEPTH (FEET) = 3.54  
 TRAVEL TIME (MIN.) = 0.30 Tc (MIN.) = 45.38  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13685.00 = 39866.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	24.94	1.737	0.30 ( 0.27)	0.90	1458.8	110.00
2	2209.70	27.36	1.636	0.30 ( 0.27)	0.90	1624.3	100.00
3	2208.11	28.64	1.583	0.30 ( 0.27)	0.90	1703.2	100.00
4	2242.46	31.72	1.491	0.30 ( 0.27)	0.91	1878.2	130.00
5	2335.95	45.38	1.243	0.30 ( 0.28)	0.93	2618.7	20100.00
6	2291.36	51.05	1.160	0.30 ( 0.28)	0.93	2805.8	13600.00
7	2090.26	87.77	0.890	0.30 ( 0.28)	0.93	3785.4	13510.00
8	1979.94	97.22	0.850	0.30 ( 0.28)	0.93	3851.3	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 2335.95 Tc (MIN.) = 45.38  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 2618.73

\*\*\*\*\*

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

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 194.24 DOWNSTREAM (FEET) = 178.72  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1843.57 CHANNEL SLOPE = 0.0084  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.71  
 \* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.190  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.23 0.30 1.000 -  
 USER-DEFINED - 1.52 0.30 1.000 -

USER-DEFINED - 0.06 0.30 1.000 -  
 USER-DEFINED - 0.13 0.30 1.000 -  
 USER-DEFINED - 6.45 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2339.31  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.69  
 AVERAGE FLOW DEPTH(FEET) = 5.71 TRAVEL TIME(MIN.) = 3.54  
 Tc(MIN.) = 48.91  
 SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 6.72  
 EFFECTIVE AREA(ACRES) = 2627.12 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 2335.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.70 FLOW VELOCITY(FEET/SEC.) = 8.69  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	28.56	1.586	0.30( 0.27)	0.90	1467.2	110.00
2	2209.70	30.95	1.507	0.30( 0.27)	0.90	1632.7	100.00
3	2208.11	32.23	1.481	0.30( 0.27)	0.90	1711.6	100.00
4	2242.46	35.30	1.420	0.30( 0.27)	0.91	1886.6	130.00
5	2335.95	48.91	1.190	0.30( 0.28)	0.93	2627.1	20100.00
6	2291.36	54.60	1.115	0.30( 0.28)	0.93	2814.2	13600.00
7	2090.26	91.42	0.872	0.30( 0.28)	0.93	3793.8	13510.00
8	1979.94	100.93	0.836	0.30( 0.28)	0.93	3859.7	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2335.95 Tc(MIN.) = 48.91  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2627.12

=====  
 END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 48.91  
 EFFECTIVE AREA(ACRES) = 2627.12 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.927  
 PEAK FLOW RATE(CFS) = 2335.95

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.94	28.56	1.586	0.30( 0.27)	0.90	1467.2	110.00
2	2209.70	30.95	1.507	0.30( 0.27)	0.90	1632.7	100.00
3	2208.11	32.23	1.481	0.30( 0.27)	0.90	1711.6	100.00
4	2242.46	35.30	1.420	0.30( 0.27)	0.91	1886.6	130.00
5	2335.95	48.91	1.190	0.30( 0.28)	0.93	2627.1	20100.00
6	2291.36	54.60	1.115	0.30( 0.28)	0.93	2814.2	13600.00
7	2090.26	91.42	0.872	0.30( 0.28)	0.93	3793.8	13510.00
8	1979.94	100.93	0.836	0.30( 0.28)	0.93	3859.7	13500.00

=====  
 END OF RATIONAL METHOD ANALYSIS





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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S37- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV37.DAT  
TIME/DATE OF STUDY: 15:27 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.753
- 2) 10.00; 3.112
- 3) 15.00; 2.390
- 4) 20.00; 1.984
- 5) 25.00; 1.732
- 6) 30.00; 1.524
- 7) 40.00; 1.323
- 8) 50.00; 1.171
- 9) 60.00; 1.045
- 10) 90.00; 0.875
- 11) 120.00; 0.763
- 12) 180.00; 0.634
- 13) 360.00; 0.464
- 14) 1200.00; 0.203

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV34.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22608.60	15.31	0.30 ( 0.24)	0.78	4259.8	300.00
2	26903.10	28.96	0.30 ( 0.24)	0.79	8488.8	110.00
3	28716.50	35.69	0.30 ( 0.24)	0.79	11207.5	130.00
4	30201.66	41.54	0.30 ( 0.24)	0.80	13905.8	50220.00
5	32964.27	56.32	0.30 ( 0.25)	0.84	21014.1	390.00
6	34801.00	68.97	0.30 ( 0.26)	0.87	27110.1	13100.00
7	35804.35	75.53	0.30 ( 0.26)	0.88	29971.8	11801.00
8	37781.81	86.08	0.30 ( 0.27)	0.89	35292.9	11530.00
9	38551.58	91.77	0.30 ( 0.27)	0.90	38901.5	13510.00
10	39313.56	97.64	0.30 ( 0.27)	0.91	42504.6	13010.00
11	40421.94	104.52	0.30 ( 0.27)	0.92	46929.6	11350.00
12	40807.77	109.21	0.30 ( 0.28)	0.92	50103.8	11130.00
13	40393.96	115.29	0.30 ( 0.28)	0.93	53030.4	12300.00
14	39612.40	124.06	0.30 ( 0.28)	0.93	57291.0	12400.00
15	38559.50	133.58	0.30 ( 0.28)	0.93	60692.6	12201.00
16	37587.12	141.07	0.30 ( 0.28)	0.93	62585.6	12231.00
17	36578.65	148.55	0.30 ( 0.28)	0.94	64138.3	10400.00
18	35008.74	158.00	0.30 ( 0.28)	0.94	65584.7	12010.00
19	33959.52	163.40	0.30 ( 0.28)	0.94	65847.3	10210.00
20	29579.04	193.83	0.30 ( 0.28)	0.94	66607.1	10100.00
TOTAL AREA (ACRES) =						66607.1

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 3 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22608.60	15.31	0.30 ( 0.24)	0.78	4259.8	300.00
2	26903.10	28.96	0.30 ( 0.24)	0.79	8488.8	110.00
3	28716.50	35.69	0.30 ( 0.24)	0.79	11207.5	130.00
4	30201.66	41.54	0.30 ( 0.24)	0.80	13905.8	50220.00
5	32964.27	56.32	0.30 ( 0.25)	0.84	21014.1	390.00
6	34801.00	68.97	0.30 ( 0.26)	0.87	27110.1	13100.00
7	35804.35	75.53	0.30 ( 0.26)	0.88	29971.8	11801.00
8	37781.81	86.08	0.30 ( 0.27)	0.89	35292.9	11530.00
9	38551.58	91.77	0.30 ( 0.27)	0.90	38901.5	13510.00
10	39313.56	97.64	0.30 ( 0.27)	0.91	42504.6	13010.00
11	40421.94	104.52	0.30 ( 0.27)	0.92	46929.6	11350.00
12	40807.77	109.21	0.30 ( 0.28)	0.92	50103.8	11130.00
13	40393.96	115.29	0.30 ( 0.28)	0.93	53030.4	12300.00

14 39612.40 124.06 0.30( 0.28) 0.93 57291.0 12400.00  
 15 38559.50 133.58 0.30( 0.28) 0.93 60692.6 12201.00  
 16 37587.12 141.07 0.30( 0.28) 0.93 62585.6 12231.00  
 17 36578.65 148.55 0.30( 0.28) 0.94 64138.3 10400.00  
 18 35008.74 158.00 0.30( 0.28) 0.94 65584.7 12010.00  
 19 33959.52 163.40 0.30( 0.28) 0.94 65847.3 10210.00  
 20 29579.04 193.83 0.30( 0.28) 0.94 66607.1 10100.00  
 TOTAL AREA (ACRES) = 66607.1

\*\*\*\*\*

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 170.00 DOWNSTREAM (FEET) = 165.51  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1891.83 CHANNEL SLOPE = 0.0024  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 13.23  
 CHANNEL FLOW THRU SUBAREA (CFS) = 40807.77  
 FLOW VELOCITY (FEET/SEC.) = 11.58 FLOW DEPTH (FEET) = 13.23  
 TRAVEL TIME (MIN.) = 2.72 Tc (MIN.) = 111.93  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506102D.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	321.17	15.37	2.360	0.30( 0.29)	0.96	192.9	10230.00
2	293.25	24.48	1.758	0.30( 0.29)	0.95	241.2	10200.00
3	292.00	24.71	1.747	0.30( 0.29)	0.95	241.7	10250.00
4	266.33	28.63	1.581	0.30( 0.29)	0.95	246.3	10220.00
TOTAL AREA (ACRES) =							246.3

\*\*\*\*\*

FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22608.60	18.59	2.098	0.30( 0.24)	0.78	4259.8	300.00
2	26903.10	32.07	1.482	0.30( 0.24)	0.79	8488.8	110.00
3	28716.50	38.73	1.349	0.30( 0.24)	0.79	11207.5	130.00

4 30201.66 44.54 1.254 0.30( 0.24) 0.80 13905.8 50220.00  
 5 32964.27 59.23 1.055 0.30( 0.25) 0.84 21014.1 390.00  
 6 34801.00 71.83 0.978 0.30( 0.26) 0.87 27110.1 13100.00  
 7 35804.35 78.36 0.941 0.30( 0.26) 0.88 29971.8 11801.00  
 8 37781.81 88.87 0.881 0.30( 0.27) 0.89 35292.9 11530.00  
 9 38551.58 94.55 0.858 0.30( 0.27) 0.90 38901.5 13510.00  
 10 39313.56 100.39 0.836 0.30( 0.27) 0.91 42504.6 13010.00  
 11 40421.94 107.25 0.811 0.30( 0.27) 0.92 46929.6 11350.00  
 12 40807.77 111.93 0.793 0.30( 0.28) 0.92 50103.8 11130.00  
 13 40393.96 118.02 0.770 0.30( 0.28) 0.93 53030.4 12300.00  
 14 39612.40 126.81 0.748 0.30( 0.28) 0.93 57291.0 12400.00  
 15 38559.50 136.35 0.728 0.30( 0.28) 0.93 60692.6 12201.00  
 16 37587.12 143.86 0.712 0.30( 0.28) 0.93 62585.6 12231.00  
 17 36578.65 151.37 0.696 0.30( 0.28) 0.94 64138.3 10400.00  
 18 35008.74 160.86 0.675 0.30( 0.28) 0.94 65584.7 12010.00  
 19 33959.52 166.28 0.663 0.30( 0.28) 0.94 65847.3 10210.00  
 20 29579.04 196.84 0.618 0.30( 0.28) 0.94 66607.1 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	321.17	15.37	2.360	0.30( 0.29)	0.96	192.9	10230.00
2	293.25	24.48	1.758	0.30( 0.29)	0.95	241.2	10200.00
3	292.00	24.71	1.747	0.30( 0.29)	0.95	241.7	10250.00
4	266.33	28.63	1.581	0.30( 0.29)	0.95	246.3	10220.00
LONGEST FLOWPATH FROM NODE 10200.00 TO NODE 13720.00 =							9099.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21635.79	15.37	2.360	0.30( 0.24)	0.79	3714.3	10230.00
2	22919.89	18.59	2.098	0.30( 0.24)	0.79	4469.8	300.00
3	24777.59	24.48	1.758	0.30( 0.24)	0.79	6348.1	10200.00
4	24850.52	24.71	1.747	0.30( 0.24)	0.79	6421.7	10250.00
5	26072.64	28.63	1.581	0.30( 0.24)	0.79	7655.0	10220.00
6	27149.13	32.07	1.482	0.30( 0.24)	0.79	8735.1	110.00
7	28935.01	38.73	1.349	0.30( 0.24)	0.80	11453.8	130.00
8	30400.74	44.54	1.254	0.30( 0.24)	0.80	14152.0	50220.00
9	33122.34	59.23	1.055	0.30( 0.25)	0.84	21260.3	390.00
10	34943.29	71.83	0.978	0.30( 0.26)	0.87	27356.4	13100.00
11	35939.03	78.36	0.941	0.30( 0.26)	0.88	30218.0	11801.00
12	37904.24	88.87	0.881	0.30( 0.27)	0.89	35539.2	11530.00
13	38669.21	94.55	0.858	0.30( 0.27)	0.90	39147.8	13510.00
14	39426.70	100.39	0.836	0.30( 0.27)	0.91	42750.9	13010.00
15	40529.81	107.25	0.811	0.30( 0.27)	0.92	47175.9	11350.00
16	40912.05	111.93	0.793	0.30( 0.28)	0.92	50350.1	11130.00
17	40493.57	118.02	0.770	0.30( 0.28)	0.93	53276.6	12300.00
18	39707.47	126.81	0.748	0.30( 0.28)	0.93	57537.2	12400.00
19	38650.36	136.35	0.728	0.30( 0.28)	0.93	60938.8	12201.00
20	37674.66	143.86	0.712	0.30( 0.28)	0.93	62831.8	12231.00
21	36662.87	151.37	0.696	0.30( 0.28)	0.94	64384.6	10400.00
22	35088.76	160.86	0.675	0.30( 0.28)	0.94	65831.0	12010.00
23	34037.14	166.28	0.663	0.30( 0.28)	0.94	66093.6	10210.00
24	29647.32	196.84	0.618	0.30( 0.28)	0.94	66853.3	10100.00
TOTAL AREA (ACRES) =							66853.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 40912.05 Tc(MIN.) = 111.932  
 EFFECTIVE AREA(ACRES) = 50350.06 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89  
 TOTAL AREA(ACRES) = 66853.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 165.51 DOWNSTREAM(FEET) = 161.03  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2067.54 CHANNEL SLOPE = 0.0022  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 13.59  
 CHANNEL FLOW THRU SUBAREA(CFS) = 40912.05  
 FLOW VELOCITY(FEET/SEC.) = 11.23 FLOW DEPTH(FEET) = 13.59  
 TRAVEL TIME(MIN.) = 3.07 Tc(MIN.) = 115.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: 0506103D.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	651.40	18.38	0.30( 0.23)	0.76	399.7	10300.00
2	652.99	19.22	0.30( 0.23)	0.76	413.6	10380.00
3	641.00	21.63	0.30( 0.23)	0.76	440.0	10320.00
4	618.06	23.73	0.30( 0.23)	0.76	451.6	10360.00
5	581.15	26.62	0.30( 0.23)	0.76	460.8	10340.00
TOTAL AREA(ACRES) =						460.8

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 11

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

\*\*\*\*\*

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21635.79	19.13	2.055	0.30( 0.24)	0.79	3714.3	10230.00
2	22919.89	22.28	1.869	0.30( 0.24)	0.79	4469.8	300.00
3	24777.59	28.07	1.604	0.30( 0.24)	0.79	6348.1	10200.00
4	24850.52	28.30	1.595	0.30( 0.24)	0.79	6421.7	10250.00
5	26072.64	32.16	1.481	0.30( 0.24)	0.79	7655.0	10220.00

6	27149.13	35.56	1.412	0.30( 0.24)	0.79	8735.1	110.00
7	28935.01	42.15	1.290	0.30( 0.24)	0.80	11453.8	130.00
8	30400.74	47.90	1.203	0.30( 0.24)	0.80	14152.0	50220.00
9	33122.34	62.51	1.031	0.30( 0.25)	0.84	21260.3	390.00
10	34943.29	75.06	0.960	0.30( 0.26)	0.87	27356.4	13100.00
11	35939.03	81.56	0.923	0.30( 0.26)	0.88	30218.0	11801.00
12	37904.24	92.01	0.867	0.30( 0.27)	0.89	35539.2	11530.00
13	38669.21	97.67	0.846	0.30( 0.27)	0.90	39147.8	13510.00
14	39426.70	103.50	0.825	0.30( 0.27)	0.91	42750.9	13010.00
15	40529.81	110.33	0.799	0.30( 0.27)	0.92	47175.9	11350.00
16	40912.05	115.00	0.782	0.30( 0.28)	0.92	50350.1	11130.00
17	40493.57	121.09	0.761	0.30( 0.28)	0.93	53276.6	12300.00
18	39707.47	129.90	0.742	0.30( 0.28)	0.93	57537.2	12400.00
19	38650.36	139.47	0.721	0.30( 0.28)	0.93	60938.8	12201.00
20	37674.66	147.01	0.705	0.30( 0.28)	0.93	62831.8	12231.00
21	36662.87	154.54	0.689	0.30( 0.28)	0.94	64384.6	10400.00
22	35088.76	164.08	0.668	0.30( 0.28)	0.94	65831.0	12010.00
23	34037.14	169.53	0.657	0.30( 0.28)	0.94	66093.6	10210.00
24	29647.32	200.24	0.615	0.30( 0.28)	0.94	66853.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	651.40	18.38	2.116	0.30( 0.23)	0.76	399.7	10300.00
2	652.99	19.22	2.047	0.30( 0.23)	0.76	413.6	10380.00
3	641.00	21.63	1.902	0.30( 0.23)	0.76	440.0	10320.00
4	618.06	23.73	1.796	0.30( 0.23)	0.76	451.6	10360.00
5	581.15	26.62	1.665	0.30( 0.23)	0.76	460.8	10340.00

LONGEST FLOWPATH FROM NODE 10320.00 TO NODE 13740.00 = 8457.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22136.41	18.38	2.116	0.30( 0.24)	0.79	3969.1	10300.00
2	22288.60	19.13	2.055	0.30( 0.24)	0.79	4126.3	10230.00
3	22326.52	19.22	2.047	0.30( 0.24)	0.79	4150.1	10380.00
4	23298.70	21.63	1.902	0.30( 0.24)	0.79	4755.5	10320.00
5	23553.86	22.28	1.869	0.30( 0.24)	0.79	4913.3	300.00
6	24004.01	23.73	1.796	0.30( 0.24)	0.79	5392.6	10360.00
7	24892.68	26.62	1.665	0.30( 0.24)	0.79	6337.6	10340.00
8	25334.26	28.07	1.604	0.30( 0.24)	0.79	6808.9	10200.00
9	25403.33	28.30	1.595	0.30( 0.24)	0.79	6882.5	10250.00
10	26579.27	32.16	1.481	0.30( 0.24)	0.79	8115.8	10220.00
11	27628.12	35.56	1.412	0.30( 0.24)	0.79	9195.9	110.00
12	29364.65	42.15	1.290	0.30( 0.24)	0.79	11914.6	130.00
13	30794.96	47.90	1.203	0.30( 0.24)	0.80	14612.8	50220.00
14	33446.90	62.51	1.031	0.30( 0.25)	0.84	21721.1	390.00
15	35239.07	75.06	0.960	0.30( 0.26)	0.87	27817.2	13100.00
16	36219.89	81.56	0.923	0.30( 0.26)	0.88	30678.8	11801.00
17	38162.70	92.01	0.867	0.30( 0.27)	0.89	36000.0	11530.00
18	38919.12	97.67	0.846	0.30( 0.27)	0.90	39608.6	13510.00
19	39667.80	103.50	0.825	0.30( 0.27)	0.91	43211.7	13010.00
20	40760.59	110.33	0.799	0.30( 0.27)	0.91	47636.7	11350.00
21	41135.77	115.00	0.782	0.30( 0.28)	0.92	50810.9	11130.00
22	40708.78	121.09	0.761	0.30( 0.28)	0.92	53737.4	12300.00
23	39915.01	129.90	0.742	0.30( 0.28)	0.93	57998.0	12400.00
24	38849.57	139.47	0.721	0.30( 0.28)	0.93	61399.6	12201.00

25 37867.31 147.01 0.705 0.30( 0.28) 0.93 63292.6 12231.00  
 26 36848.96 154.54 0.689 0.30( 0.28) 0.93 64845.4 10400.00  
 27 35266.55 164.08 0.668 0.30( 0.28) 0.94 66291.8 12010.00  
 28 34210.19 169.53 0.657 0.30( 0.28) 0.94 66554.4 10210.00  
 29 29803.52 200.24 0.615 0.30( 0.28) 0.94 67314.1 10100.00  
 TOTAL AREA (ACRES) = 67314.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41135.77 Tc(MIN.) = 115.000  
 EFFECTIVE AREA(ACRES) = 50810.86 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 67314.1  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 161.03 DOWNSTREAM(FEET) = 141.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 364.08 CHANNEL SLOPE = 0.0550  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.89  
 CHANNEL FLOW THRU SUBAREA(CFS) = 41135.77  
 FLOW VELOCITY(FEET/SEC.) = 39.61 FLOW DEPTH(FEET) = 7.89  
 TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 115.15  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506104D.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	65.97	19.78	0.30( 0.24)	0.80	44.3	10400.00
TOTAL AREA(ACRES) =						44.3

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22136.41	18.57	2.100	0.30( 0.24)	0.79	3969.1	10300.00

2	22288.60	19.31	2.040	0.30( 0.24)	0.79	4126.3	10230.00
3	23226.52	19.40	2.032	0.30( 0.24)	0.79	4150.1	10380.00
4	23298.70	21.82	1.892	0.30( 0.24)	0.79	4755.5	10320.00
5	23553.86	22.46	1.860	0.30( 0.24)	0.79	4913.3	300.00
6	24004.01	23.91	1.787	0.30( 0.24)	0.79	5392.6	10360.00
7	24892.68	26.80	1.657	0.30( 0.24)	0.79	6337.6	10340.00
8	25334.26	28.25	1.597	0.30( 0.24)	0.79	6808.9	10200.00
9	25403.33	28.48	1.587	0.30( 0.24)	0.79	6882.5	10250.00
10	26579.27	32.34	1.477	0.30( 0.24)	0.79	8115.8	10220.00
11	27628.12	35.73	1.409	0.30( 0.24)	0.79	9195.9	110.00
12	29364.65	42.32	1.288	0.30( 0.24)	0.79	11914.6	130.00
13	30794.96	48.07	1.200	0.30( 0.24)	0.80	14612.8	50220.00
14	33446.90	62.67	1.030	0.30( 0.25)	0.84	21721.1	390.00
15	35239.07	75.22	0.959	0.30( 0.26)	0.87	27817.2	13100.00
16	36219.89	81.72	0.922	0.30( 0.26)	0.88	30678.8	11801.00
17	38162.70	92.17	0.867	0.30( 0.27)	0.89	36000.0	11530.00
18	38919.12	97.82	0.846	0.30( 0.27)	0.90	39608.6	13510.00
19	39667.80	103.65	0.824	0.30( 0.27)	0.91	43211.7	13010.00
20	40760.59	110.48	0.799	0.30( 0.27)	0.91	47636.7	11350.00
21	41135.77	115.15	0.781	0.30( 0.28)	0.92	50810.9	11130.00
22	40708.78	121.25	0.760	0.30( 0.28)	0.92	53737.4	12300.00
23	39915.01	130.06	0.741	0.30( 0.28)	0.93	57998.0	12400.00
24	38849.57	139.62	0.721	0.30( 0.28)	0.93	61399.6	12201.00
25	37867.31	147.16	0.705	0.30( 0.28)	0.93	63292.6	12231.00
26	36848.96	154.70	0.688	0.30( 0.28)	0.93	64845.4	10400.00
27	35266.55	164.24	0.668	0.30( 0.28)	0.94	66291.8	12010.00
28	34210.19	169.69	0.656	0.30( 0.28)	0.94	66554.4	10210.00
29	29803.52	200.41	0.615	0.30( 0.28)	0.94	67314.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	65.97	19.78	2.002	0.30( 0.24)	0.80	44.3	10400.00

LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 = 6237.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22201.80	18.57	2.100	0.30( 0.24)	0.79	4010.7	10300.00
2	22354.40	19.31	2.040	0.30( 0.24)	0.79	4169.6	10230.00
3	22392.37	19.40	2.032	0.30( 0.24)	0.79	4193.5	10380.00
4	22543.26	19.78	2.002	0.30( 0.24)	0.79	4288.2	10400.00
5	23360.57	21.82	1.892	0.30( 0.24)	0.79	4799.8	10320.00
6	23614.51	22.46	1.860	0.30( 0.24)	0.79	4957.6	300.00
7	24061.92	23.91	1.787	0.30( 0.24)	0.79	5436.9	10360.00
8	24945.74	26.80	1.657	0.30( 0.24)	0.79	6381.9	10340.00
9	25385.06	28.25	1.597	0.30( 0.24)	0.79	6853.2	10200.00
10	25453.78	28.48	1.587	0.30( 0.24)	0.79	6926.8	10250.00
11	26625.59	32.34	1.477	0.30( 0.24)	0.79	8160.1	10220.00
12	27671.89	35.73	1.409	0.30( 0.24)	0.79	9240.2	110.00
13	29403.89	42.32	1.288	0.30( 0.24)	0.79	11958.9	130.00
14	30830.93	48.07	1.200	0.30( 0.24)	0.80	14657.1	50220.00
15	33476.48	62.67	1.030	0.30( 0.25)	0.84	21765.4	390.00
16	35266.00	75.22	0.959	0.30( 0.26)	0.87	27861.5	13100.00
17	36245.44	81.72	0.922	0.30( 0.26)	0.88	30723.1	11801.00
18	38186.19	92.17	0.867	0.30( 0.27)	0.89	36044.3	11530.00
19	38941.82	97.82	0.846	0.30( 0.27)	0.90	39652.9	13510.00

20	39689.68	103.65	0.824	0.30	( 0.27)	0.91	43256.0	13010.00
21	40781.51	110.48	0.799	0.30	( 0.27)	0.91	47681.0	11350.00
22	41156.04	115.15	0.781	0.30	( 0.28)	0.92	50855.2	11130.00
23	40728.27	121.25	0.760	0.30	( 0.28)	0.92	53781.7	12300.00
24	39933.80	130.06	0.741	0.30	( 0.28)	0.93	58042.3	12400.00
25	38867.59	139.62	0.721	0.30	( 0.28)	0.93	61443.9	12201.00
26	37884.72	147.16	0.705	0.30	( 0.28)	0.93	63336.9	12231.00
27	36865.77	154.70	0.688	0.30	( 0.28)	0.93	64889.7	10400.00
28	35282.59	164.24	0.668	0.30	( 0.28)	0.94	66336.1	12010.00
29	34225.79	169.69	0.656	0.30	( 0.28)	0.94	66598.7	10210.00
30	29817.56	200.41	0.615	0.30	( 0.28)	0.94	67358.4	10100.00

TOTAL AREA (ACRES) = 67358.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 41156.04 Tc (MIN.) = 115.153  
EFFECTIVE AREA (ACRES) = 50855.16 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 67358.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 141.00 DOWNSTREAM (FEET) = 135.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1533.41 CHANNEL SLOPE = 0.0039  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 16.03  
CHANNEL FLOW THRU SUBAREA (CFS) = 41156.04  
FLOW VELOCITY (FEET/SEC.) = 15.64 FLOW DEPTH (FEET) = 16.03  
TRAVEL TIME (MIN.) = 1.63 Tc (MIN.) = 116.79  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506105K.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	355.73	14.74	0.30 ( 0.27)	0.90	206.7	10520.00
2	414.68	31.61	0.30 ( 0.28)	0.93	403.6	10500.00
TOTAL AREA (ACRES) =						403.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22201.80	20.52	1.958	0.30 ( 0.24)	0.79	4010.7	10300.00
2	22354.40	21.26	1.920	0.30 ( 0.24)	0.79	4169.6	10230.00
3	22392.37	21.35	1.916	0.30 ( 0.24)	0.79	4193.5	10380.00
4	22543.26	21.72	1.897	0.30 ( 0.24)	0.79	4288.2	10400.00
5	23360.57	23.74	1.795	0.30 ( 0.24)	0.79	4799.8	10320.00
6	23614.51	24.38	1.763	0.30 ( 0.24)	0.79	4957.6	300.00
7	24061.92	25.82	1.698	0.30 ( 0.24)	0.79	5436.9	10360.00
8	24945.74	28.69	1.579	0.30 ( 0.24)	0.79	6381.9	10340.00
9	25385.06	30.13	1.521	0.30 ( 0.24)	0.79	6853.2	10200.00
10	25453.78	30.36	1.517	0.30 ( 0.24)	0.79	6926.8	10250.00
11	26625.59	34.19	1.440	0.30 ( 0.24)	0.79	8160.1	10220.00
12	27671.89	37.57	1.372	0.30 ( 0.24)	0.79	9240.2	110.00
13	29403.89	44.12	1.260	0.30 ( 0.24)	0.79	11958.9	130.00
14	30830.93	49.85	1.173	0.30 ( 0.24)	0.80	14657.1	50220.00
15	33476.48	64.41	1.020	0.30 ( 0.25)	0.84	21765.4	390.00
16	35266.00	76.92	0.949	0.30 ( 0.26)	0.87	27861.5	13100.00
17	36245.44	83.41	0.912	0.30 ( 0.26)	0.88	30723.1	11801.00
18	38186.19	93.84	0.861	0.30 ( 0.27)	0.89	36044.3	11530.00
19	38941.82	99.48	0.840	0.30 ( 0.27)	0.90	39652.9	13510.00
20	39689.68	105.30	0.818	0.30 ( 0.27)	0.91	43256.0	13010.00
21	40781.51	112.12	0.792	0.30 ( 0.27)	0.91	47681.0	11350.00
22	41156.04	116.79	0.775	0.30 ( 0.28)	0.92	50855.2	11130.00
23	40728.27	122.89	0.757	0.30 ( 0.28)	0.92	53781.7	12300.00
24	39933.80	131.71	0.738	0.30 ( 0.28)	0.93	58042.3	12400.00
25	38867.59	141.29	0.717	0.30 ( 0.28)	0.93	61443.9	12201.00
26	37884.72	148.84	0.701	0.30 ( 0.28)	0.93	63336.9	12231.00
27	36865.77	156.39	0.685	0.30 ( 0.28)	0.93	64889.7	10400.00
28	35282.59	165.95	0.664	0.30 ( 0.28)	0.94	66336.1	12010.00
29	34225.79	171.42	0.652	0.30 ( 0.28)	0.94	66598.7	10210.00
30	29817.56	202.20	0.613	0.30 ( 0.28)	0.94	67358.4	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	355.73	14.74	2.428	0.30 ( 0.27)	0.90	206.7	10520.00
2	414.68	31.61	1.492	0.30 ( 0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20656.82	14.74	2.428	0.30 ( 0.24)	0.80	3087.1	10520.00
2	22577.73	20.52	1.958	0.30 ( 0.24)	0.80	4284.8	10300.00
3	22732.92	21.26	1.920	0.30 ( 0.24)	0.80	4452.4	10230.00
4	22771.21	21.35	1.916	0.30 ( 0.24)	0.80	4477.4	10380.00
5	22923.40	21.72	1.897	0.30 ( 0.24)	0.80	4576.4	10400.00
6	23747.76	23.74	1.795	0.30 ( 0.24)	0.80	5111.5	10320.00
7	24003.92	24.38	1.763	0.30 ( 0.24)	0.80	5276.8	300.00
8	24456.37	25.82	1.698	0.30 ( 0.24)	0.80	5772.9	10360.00
9	25350.20	28.69	1.579	0.30 ( 0.24)	0.80	6751.4	10340.00
10	25794.56	30.13	1.521	0.30 ( 0.24)	0.80	7239.5	10200.00

11	25864.07	30.36	1.517	0.30	( 0.24)	0.80	7315.7	10250.00
12	26252.58	31.61	1.492	0.30	( 0.24)	0.80	7734.7	10500.00
13	27022.57	34.19	1.440	0.30	( 0.24)	0.80	8563.7	10220.00
14	28045.70	37.57	1.372	0.30	( 0.24)	0.79	9643.8	110.00
15	29739.59	44.12	1.260	0.30	( 0.24)	0.80	12362.5	130.00
16	31136.87	49.85	1.173	0.30	( 0.24)	0.81	15060.7	50220.00
17	33730.04	64.41	1.020	0.30	( 0.25)	0.84	22169.0	390.00
18	35495.32	76.92	0.949	0.30	( 0.26)	0.87	28265.1	13100.00
19	36462.20	83.41	0.912	0.30	( 0.26)	0.88	31126.7	11801.00
20	38385.29	93.84	0.861	0.30	( 0.27)	0.89	36447.9	11530.00
21	39133.72	99.48	0.840	0.30	( 0.27)	0.90	40056.5	13510.00
22	39874.16	105.30	0.818	0.30	( 0.27)	0.91	43659.6	13010.00
23	40957.29	112.12	0.792	0.30	( 0.27)	0.91	48084.6	11350.00
24	41325.87	116.79	0.775	0.30	( 0.28)	0.92	51258.8	11130.00
25	40891.88	122.89	0.757	0.30	( 0.28)	0.92	54185.3	12300.00
26	40090.93	131.71	0.738	0.30	( 0.28)	0.93	58445.9	12400.00
27	39017.68	141.29	0.717	0.30	( 0.28)	0.93	61847.5	12201.00
28	38029.27	148.84	0.701	0.30	( 0.28)	0.93	63740.6	12231.00
29	37004.76	156.39	0.685	0.30	( 0.28)	0.93	65293.3	10400.00
30	35414.56	165.95	0.664	0.30	( 0.28)	0.94	66739.7	12010.00
31	34353.74	171.42	0.652	0.30	( 0.28)	0.94	67002.3	10210.00
32	29932.05	202.20	0.613	0.30	( 0.28)	0.94	67762.0	10100.00

TOTAL AREA (ACRES) = 67762.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 41325.87 Tc (MIN.) = 116.787  
EFFECTIVE AREA (ACRES) = 51258.77 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 67762.0  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 135.00 DOWNSTREAM (FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 207.23 CHANNEL SLOPE = 0.0097  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.69  
CHANNEL FLOW THRU SUBAREA (CFS) = 41325.87  
FLOW VELOCITY (FEET/SEC.) = 21.60 FLOW DEPTH (FEET) = 12.69  
TRAVEL TIME (MIN.) = 0.16 Tc (MIN.) = 116.95  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506106D.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	59.23	17.66	0.30 ( 0.20)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =			36.9			

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11  
-----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20656.82	14.93	2.399	0.30 ( 0.24)	0.80	3087.1	10520.00
2	22577.73	20.71	1.948	0.30 ( 0.24)	0.80	4284.8	10300.00
3	22732.92	21.45	1.911	0.30 ( 0.24)	0.80	4452.4	10230.00
4	22771.21	21.54	1.906	0.30 ( 0.24)	0.80	4477.4	10380.00
5	22923.40	21.92	1.887	0.30 ( 0.24)	0.80	4576.4	10400.00
6	23747.76	23.93	1.786	0.30 ( 0.24)	0.80	5111.5	10320.00
7	24003.92	24.57	1.754	0.30 ( 0.24)	0.80	5276.8	300.00
8	24456.37	26.01	1.690	0.30 ( 0.24)	0.80	5772.9	10360.00
9	25350.20	28.87	1.571	0.30 ( 0.24)	0.80	6751.4	10340.00
10	25794.56	30.32	1.518	0.30 ( 0.24)	0.80	7239.5	10200.00
11	25864.07	30.54	1.513	0.30 ( 0.24)	0.80	7315.7	10250.00
12	26252.58	31.80	1.488	0.30 ( 0.24)	0.80	7734.7	10500.00
13	27022.57	34.37	1.436	0.30 ( 0.24)	0.80	8563.7	10220.00
14	28045.70	37.74	1.368	0.30 ( 0.24)	0.79	9643.8	110.00
15	29739.59	44.29	1.258	0.30 ( 0.24)	0.80	12362.5	130.00
16	31136.87	50.02	1.171	0.30 ( 0.24)	0.81	15060.7	50220.00
17	33730.04	64.58	1.019	0.30 ( 0.25)	0.84	22169.0	390.00
18	35495.32	77.09	0.948	0.30 ( 0.26)	0.87	28265.1	13100.00
19	36462.20	83.58	0.911	0.30 ( 0.26)	0.88	31126.7	11801.00
20	38385.29	94.00	0.860	0.30 ( 0.27)	0.89	36447.9	11530.00
21	39133.72	99.65	0.839	0.30 ( 0.27)	0.90	40056.5	13510.00
22	39874.16	105.46	0.817	0.30 ( 0.27)	0.91	43659.6	13010.00
23	40957.29	112.28	0.792	0.30 ( 0.27)	0.91	48084.6	11350.00
24	41325.87	116.95	0.774	0.30 ( 0.28)	0.92	51258.8	11130.00
25	40891.88	123.05	0.756	0.30 ( 0.28)	0.92	54185.3	12300.00
26	40090.93	131.87	0.737	0.30 ( 0.28)	0.93	58445.9	12400.00
27	39017.68	141.45	0.717	0.30 ( 0.28)	0.93	61847.5	12201.00
28	38029.27	149.00	0.701	0.30 ( 0.28)	0.93	63740.6	12231.00
29	37004.76	156.55	0.684	0.30 ( 0.28)	0.93	65293.3	10400.00
30	35414.56	166.11	0.664	0.30 ( 0.28)	0.94	66739.7	12010.00
31	34353.74	171.59	0.652	0.30 ( 0.28)	0.94	67002.3	10210.00
32	29932.05	202.38	0.613	0.30 ( 0.28)	0.94	67762.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	59.23	17.66	2.174	0.30 ( 0.20)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	20712.64	14.93	2.399	0.30 ( 0.24)	0.80	3118.3 10520.00
2	21621.61	17.66	2.174	0.30 ( 0.24)	0.80	3688.7 10600.00
3	22630.18	20.71	1.948	0.30 ( 0.24)	0.80	4321.7 10300.00
4	22784.25	21.45	1.911	0.30 ( 0.24)	0.80	4489.3 10230.00
5	22822.39	21.54	1.906	0.30 ( 0.24)	0.80	4514.3 10380.00
6	22974.03	21.92	1.887	0.30 ( 0.24)	0.80	4613.3 10400.00
7	23795.33	23.93	1.786	0.30 ( 0.24)	0.80	5148.4 10320.00
8	24050.54	24.57	1.754	0.30 ( 0.24)	0.80	5313.7 300.00
9	24501.07	26.01	1.690	0.30 ( 0.24)	0.80	5809.8 10360.00
10	25391.32	28.87	1.571	0.30 ( 0.24)	0.80	6788.3 10340.00
11	25834.09	30.32	1.518	0.30 ( 0.24)	0.80	7276.4 10200.00
12	25903.46	30.54	1.513	0.30 ( 0.24)	0.80	7352.6 10250.00
13	26291.21	31.80	1.488	0.30 ( 0.24)	0.80	7771.6 10500.00
14	27059.64	34.37	1.436	0.30 ( 0.24)	0.80	8600.6 10220.00
15	28080.74	37.74	1.368	0.30 ( 0.24)	0.79	9680.7 110.00
16	29771.32	44.29	1.258	0.30 ( 0.24)	0.80	12399.4 130.00
17	31165.98	50.02	1.171	0.30 ( 0.24)	0.81	15097.6 50220.00
18	33754.60	64.58	1.019	0.30 ( 0.25)	0.84	22205.9 390.00
19	35517.75	77.09	0.948	0.30 ( 0.26)	0.87	28302.0 13100.00
20	36483.52	83.58	0.911	0.30 ( 0.26)	0.88	31163.6 11801.00
21	38405.07	94.00	0.860	0.30 ( 0.27)	0.89	36484.8 11530.00
22	39152.87	99.65	0.839	0.30 ( 0.27)	0.90	40093.4 13510.00
23	39892.66	105.46	0.817	0.30 ( 0.27)	0.91	43696.5 13010.00
24	40975.03	112.28	0.792	0.30 ( 0.27)	0.91	48121.5 11350.00
25	41343.08	116.95	0.774	0.30 ( 0.28)	0.92	51295.7 11130.00
26	40908.56	123.05	0.756	0.30 ( 0.28)	0.92	54222.2 12300.00
27	40107.04	131.87	0.737	0.30 ( 0.28)	0.93	58482.8 12400.00
28	39033.17	141.45	0.717	0.30 ( 0.28)	0.93	61884.4 12201.00
29	38044.27	149.00	0.701	0.30 ( 0.28)	0.93	63777.4 12231.00
30	37019.27	156.55	0.684	0.30 ( 0.28)	0.93	65330.2 10400.00
31	35428.45	166.11	0.664	0.30 ( 0.28)	0.94	66776.6 12010.00
32	34367.29	171.59	0.652	0.30 ( 0.28)	0.94	67039.2 10210.00
33	29944.41	202.38	0.613	0.30 ( 0.28)	0.94	67798.9 10100.00

TOTAL AREA (ACRES) = 67798.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 41343.08 Tc (MIN.) = 116.947  
EFFECTIVE AREA (ACRES) = 51295.66 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 67798.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 67798.9 TC (MIN.) = 116.95  
EFFECTIVE AREA (ACRES) = 51295.66 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.920  
PEAK FLOW RATE (CFS) = 41343.08

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20712.64	14.93	2.399	0.30 ( 0.24)	0.80	3118.3	10520.00
2	21621.61	17.66	2.174	0.30 ( 0.24)	0.80	3688.7	10600.00
3	22630.18	20.71	1.948	0.30 ( 0.24)	0.80	4321.7	10300.00
4	22784.25	21.45	1.911	0.30 ( 0.24)	0.80	4489.3	10230.00
5	22822.39	21.54	1.906	0.30 ( 0.24)	0.80	4514.3	10380.00
6	22974.03	21.92	1.887	0.30 ( 0.24)	0.80	4613.3	10400.00

7	23795.33	23.93	1.786	0.30 ( 0.24)	0.80	5148.4	10320.00
8	24050.54	24.57	1.754	0.30 ( 0.24)	0.80	5313.7	300.00
9	24501.07	26.01	1.690	0.30 ( 0.24)	0.80	5809.8	10360.00
10	25391.32	28.87	1.571	0.30 ( 0.24)	0.80	6788.3	10340.00
11	25834.09	30.32	1.518	0.30 ( 0.24)	0.80	7276.4	10200.00
12	25903.46	30.54	1.513	0.30 ( 0.24)	0.80	7352.6	10250.00
13	26291.21	31.80	1.488	0.30 ( 0.24)	0.80	7771.6	10500.00
14	27059.64	34.37	1.436	0.30 ( 0.24)	0.80	8600.6	10220.00
15	28080.74	37.74	1.368	0.30 ( 0.24)	0.79	9680.7	110.00
16	29771.32	44.29	1.258	0.30 ( 0.24)	0.80	12399.4	130.00
17	31165.98	50.02	1.171	0.30 ( 0.24)	0.81	15097.6	50220.00
18	33754.60	64.58	1.019	0.30 ( 0.25)	0.84	22205.9	390.00
19	35517.75	77.09	0.948	0.30 ( 0.26)	0.87	28302.0	13100.00
20	36483.52	83.58	0.911	0.30 ( 0.26)	0.88	31163.6	11801.00
21	38405.07	94.00	0.860	0.30 ( 0.27)	0.89	36484.8	11530.00
22	39152.87	99.65	0.839	0.30 ( 0.27)	0.90	40093.4	13510.00
23	39892.66	105.46	0.817	0.30 ( 0.27)	0.91	43696.5	13010.00
24	40975.03	112.28	0.792	0.30 ( 0.27)	0.91	48121.5	11350.00
25	41343.08	116.95	0.774	0.30 ( 0.28)	0.92	51295.7	11130.00
26	40908.56	123.05	0.756	0.30 ( 0.28)	0.92	54222.2	12300.00
27	40107.04	131.87	0.737	0.30 ( 0.28)	0.93	58482.8	12400.00
28	39033.17	141.45	0.717	0.30 ( 0.28)	0.93	61884.4	12201.00
29	38044.27	149.00	0.701	0.30 ( 0.28)	0.93	63777.4	12231.00
30	37019.27	156.55	0.684	0.30 ( 0.28)	0.93	65330.2	10400.00
31	35428.45	166.11	0.664	0.30 ( 0.28)	0.94	66776.6	12010.00
32	34367.29	171.59	0.652	0.30 ( 0.28)	0.94	67039.2	10210.00
33	29944.41	202.38	0.613	0.30 ( 0.28)	0.94	67798.9	10100.00

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S38- FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV38.DAT  
TIME/DATE OF STUDY: 15:28 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.741
- 2) 10.00; 3.104
- 3) 15.00; 2.386
- 4) 20.00; 1.981
- 5) 25.00; 1.730
- 6) 30.00; 1.523
- 7) 40.00; 1.322
- 8) 50.00; 1.169
- 9) 60.00; 1.043
- 10) 90.00; 0.873
- 11) 120.00; 0.761
- 12) 180.00; 0.632
- 13) 360.00; 0.462
- 14) 1200.00; 0.202

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES: LIP (FT)	MANNING HIKE (FT)	FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV37.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22974.03	21.92	0.30 ( 0.24)	0.80	4613.3	10400.00
2	28080.74	37.74	0.30 ( 0.24)	0.79	9680.7	110.00
3	29771.32	44.29	0.30 ( 0.24)	0.80	12399.4	130.00
4	31165.98	50.02	0.30 ( 0.24)	0.81	15097.6	50220.00
5	33754.60	64.58	0.30 ( 0.25)	0.84	22205.9	390.00
6	35517.75	77.09	0.30 ( 0.26)	0.87	28302.0	13100.00
7	36483.52	83.58	0.30 ( 0.26)	0.88	31163.6	11801.00
8	38405.07	94.00	0.30 ( 0.27)	0.89	36484.8	11530.00
9	39152.87	99.65	0.30 ( 0.27)	0.90	40093.4	13510.00
10	39892.66	105.46	0.30 ( 0.27)	0.91	43696.5	13010.00
11	40975.03	112.28	0.30 ( 0.27)	0.91	48121.5	11350.00
12	41343.08	116.95	0.30 ( 0.28)	0.92	51295.7	11130.00
13	40908.56	123.05	0.30 ( 0.28)	0.92	54222.2	12300.00
14	40107.04	131.87	0.30 ( 0.28)	0.93	58482.8	12400.00
15	39033.17	141.45	0.30 ( 0.28)	0.93	61884.4	12201.00
16	38044.27	149.00	0.30 ( 0.28)	0.93	63777.4	12231.00
17	37019.27	156.55	0.30 ( 0.28)	0.93	65330.2	10400.00
18	35428.45	166.11	0.30 ( 0.28)	0.94	66776.6	12010.00
19	34367.29	171.59	0.30 ( 0.28)	0.94	67039.2	10210.00
20	29944.41	202.38	0.30 ( 0.28)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22974.03	21.92	0.30 ( 0.24)	0.80	4613.3	10400.00
2	28080.74	37.74	0.30 ( 0.24)	0.79	9680.7	110.00
3	29771.32	44.29	0.30 ( 0.24)	0.80	12399.4	130.00
4	31165.98	50.02	0.30 ( 0.24)	0.81	15097.6	50220.00
5	33754.60	64.58	0.30 ( 0.25)	0.84	22205.9	390.00
6	35517.75	77.09	0.30 ( 0.26)	0.87	28302.0	13100.00
7	36483.52	83.58	0.30 ( 0.26)	0.88	31163.6	11801.00
8	38405.07	94.00	0.30 ( 0.27)	0.89	36484.8	11530.00
9	39152.87	99.65	0.30 ( 0.27)	0.90	40093.4	13510.00
10	39892.66	105.46	0.30 ( 0.27)	0.91	43696.5	13010.00
11	40975.03	112.28	0.30 ( 0.27)	0.91	48121.5	11350.00
12	41343.08	116.95	0.30 ( 0.28)	0.92	51295.7	11130.00
13	40908.56	123.05	0.30 ( 0.28)	0.92	54222.2	12300.00

14 40107.04 131.87 0.30( 0.28) 0.93 58482.8 12400.00  
 15 39033.17 141.45 0.30( 0.28) 0.93 61884.4 12201.00  
 16 38044.27 149.00 0.30( 0.28) 0.93 63777.4 12231.00  
 17 37019.27 156.55 0.30( 0.28) 0.93 65330.2 10400.00  
 18 35428.45 166.11 0.30( 0.28) 0.94 66776.6 12010.00  
 19 34367.29 171.59 0.30( 0.28) 0.94 67039.2 10210.00  
 20 29944.41 202.38 0.30( 0.28) 0.94 67798.9 10100.00  
 TOTAL AREA (ACRES) = 67798.9

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM(FEET) = 140.00 DOWNSTREAM(FEET) = 137.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 926.91 CHANNEL SLOPE = 0.0032  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 16.88  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.768

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

USER-DEFINED - 31.44 0.30 0.983 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.983

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41349.78  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.62  
 AVERAGE FLOW DEPTH(FEET) = 16.88 TRAVEL TIME(MIN.) = 1.06  
 Tc(MIN.) = 118.00

SUBAREA AREA(ACRES) = 31.44 SUBAREA RUNOFF(CFS) = 13.40  
 EFFECTIVE AREA(ACRES) = 51327.11 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 67830.4 PEAK FLOW RATE(CFS) = 41343.08

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 16.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 16.88 FLOW VELOCITY(FEET/SEC.) = 14.62  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 =====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 118.00  
 RAINFALL INTENSITY(INCH/HR) = 0.77  
 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA(ACRES) = 51327.11  
 TOTAL STREAM AREA(ACRES) = 67830.36

PEAK FLOW RATE(CFS) AT CONFLUENCE = 41343.08

\*\*\*\*\*

FLOW PROCESS FROM NODE 13810.00 TO NODE 13811.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 =====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 648.54  
 ELEVATION DATA: UPSTREAM(FEET) = 756.46 DOWNSTREAM(FEET) = 586.02

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.293  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.775

SUBAREA Tc AND LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" - 5.58 0.30 1.000 0 12.29  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 12.43  
 TOTAL AREA(ACRES) = 5.58 PEAK FLOW RATE(CFS) = 12.43

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM(FEET) = 586.02 DOWNSTREAM(FEET) = 437.69  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 696.28 CHANNEL SLOPE = 0.2130  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.43  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.497

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

USER-DEFINED - 14.79 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 27.10  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.00  
 AVERAGE FLOW DEPTH(FEET) = 0.42 TRAVEL TIME(MIN.) = 1.93  
 Tc(MIN.) = 14.23

SUBAREA AREA(ACRES) = 14.79 SUBAREA RUNOFF(CFS) = 29.25  
 EFFECTIVE AREA(ACRES) = 20.37 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 20.4 PEAK FLOW RATE(CFS) = 40.28

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.53 FLOW VELOCITY(FEET/SEC.) = 6.88  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

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FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 437.69 DOWNSTREAM(FEET) = 402.36
CHANNEL LENGTH THRU SUBAREA(FEET) = 681.04 CHANNEL SLOPE = 0.0519
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.99
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.261
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -         18.41    0.30     1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 56.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.91
AVERAGE FLOW DEPTH(FEET) = 0.97 TRAVEL TIME(MIN.) = 2.31
Tc(MIN.) = 16.54
SUBAREA AREA(ACRES) = 18.41 SUBAREA RUNOFF(CFS) = 32.50
EFFECTIVE AREA(ACRES) = 38.78 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 38.8 PEAK FLOW RATE(CFS) = 68.45
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.08 FLOW VELOCITY(FEET/SEC.) = 5.21
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13812.00 = 2025.86 FEET.

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*****
FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 402.36 DOWNSTREAM(FEET) = 259.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 1282.56 CHANNEL SLOPE = 0.1112
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.03
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.027
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -         27.87    0.30     0.858   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.858
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 90.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.39
AVERAGE FLOW DEPTH(FEET) = 1.02 TRAVEL TIME(MIN.) = 2.89
Tc(MIN.) = 19.43
SUBAREA AREA(ACRES) = 27.87 SUBAREA RUNOFF(CFS) = 44.38
EFFECTIVE AREA(ACRES) = 66.65 AREA-AVERAGED Fm(INCH/HR) = 0.28

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AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66.7 PEAK FLOW RATE(CFS) = 104.66
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.11

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.11 FLOW VELOCITY(FEET/SEC.) = 7.72
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

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FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00
FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 22.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 22.06
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 104.66
PIPE TRAVEL TIME(MIN.) = 1.82 Tc(MIN.) = 21.26
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

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FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc(MIN.) = 21.26
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.918
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap   SCS
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -         83.64    0.30     0.570   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570
SUBAREA AREA(ACRES) = 83.64 SUBAREA RUNOFF(CFS) = 131.50
EFFECTIVE AREA(ACRES) = 150.29 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 150.3 PEAK FLOW RATE(CFS) = 229.62

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*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
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TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 21.26
RAINFALL INTENSITY(INCH/HR) = 1.92
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.73
EFFECTIVE STREAM AREA(ACRES) = 150.29

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TOTAL STREAM AREA(ACRES) = 150.29  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 229.62

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22974.03	23.16	1.822	0.30 ( 0.24)	0.80	4644.8	10400.00
1	28080.74	38.92	1.344	0.30 ( 0.24)	0.80	9712.1	110.00
1	29771.32	45.45	1.239	0.30 ( 0.24)	0.80	12430.8	130.00
1	31165.98	51.16	1.154	0.30 ( 0.24)	0.81	15129.1	50220.00
1	33754.60	65.69	1.011	0.30 ( 0.25)	0.84	22237.4	390.00
1	35517.75	78.19	0.940	0.30 ( 0.26)	0.87	28333.4	13100.00
1	36483.52	84.67	0.903	0.30 ( 0.26)	0.88	31195.1	11801.00
1	38405.07	95.08	0.854	0.30 ( 0.27)	0.89	36516.2	11530.00
1	39152.87	100.72	0.833	0.30 ( 0.27)	0.90	40124.8	13510.00
1	39892.66	106.53	0.811	0.30 ( 0.27)	0.91	43727.9	13010.00
1	40975.03	113.34	0.786	0.30 ( 0.27)	0.91	48152.9	11350.00
1	41343.08	118.00	0.768	0.30 ( 0.28)	0.92	51327.1	11130.00
1	40908.56	124.11	0.752	0.30 ( 0.28)	0.92	54253.7	12300.00
1	40107.04	132.93	0.733	0.30 ( 0.28)	0.93	58514.3	12400.00
1	39033.17	142.52	0.713	0.30 ( 0.28)	0.93	61915.9	12201.00
1	38044.27	150.08	0.696	0.30 ( 0.28)	0.93	63808.9	12231.00
1	37019.27	157.64	0.680	0.30 ( 0.28)	0.93	65361.6	10400.00
1	35428.45	167.22	0.659	0.30 ( 0.28)	0.94	66808.0	12010.00
1	34367.29	172.70	0.648	0.30 ( 0.28)	0.94	67070.6	10210.00
1	29944.41	203.53	0.610	0.30 ( 0.28)	0.94	67830.4	10100.00
2	229.62	21.26	1.918	0.30 ( 0.22)	0.73	150.3	13810.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22587.17	21.26	1.918	0.30 ( 0.24)	0.80	4412.6	13810.00
2	23190.70	23.16	1.822	0.30 ( 0.24)	0.80	4795.1	10400.00
3	28232.69	38.92	1.344	0.30 ( 0.24)	0.79	9862.4	110.00
4	29909.05	45.45	1.239	0.30 ( 0.24)	0.80	12581.1	130.00
5	31292.32	51.16	1.154	0.30 ( 0.24)	0.81	15279.3	50220.00
6	33861.52	65.69	1.011	0.30 ( 0.25)	0.84	22387.6	390.00
7	35615.09	78.19	0.940	0.30 ( 0.26)	0.87	28483.7	13100.00
8	36575.89	84.67	0.903	0.30 ( 0.26)	0.88	31345.4	11801.00
9	38490.80	95.08	0.854	0.30 ( 0.27)	0.89	36666.5	11530.00
10	39235.75	100.72	0.833	0.30 ( 0.27)	0.90	40275.1	13510.00
11	39972.60	106.53	0.811	0.30 ( 0.27)	0.91	43878.2	13010.00
12	41051.54	113.34	0.786	0.30 ( 0.27)	0.91	48303.2	11350.00
13	41417.23	118.00	0.768	0.30 ( 0.28)	0.92	51477.4	11130.00
14	40980.50	124.11	0.752	0.30 ( 0.28)	0.92	54404.0	12300.00
15	40176.41	132.93	0.733	0.30 ( 0.28)	0.93	58664.6	12400.00
16	39099.76	142.52	0.713	0.30 ( 0.28)	0.93	62066.2	12201.00
17	38108.66	150.08	0.696	0.30 ( 0.28)	0.93	63959.2	12231.00
18	37081.47	157.64	0.680	0.30 ( 0.28)	0.93	65511.9	10400.00
19	35487.86	167.22	0.659	0.30 ( 0.28)	0.93	66958.3	12010.00
20	34425.10	172.70	0.648	0.30 ( 0.28)	0.94	67220.9	10210.00
21	29997.10	203.53	0.610	0.30 ( 0.28)	0.94	67980.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41417.23 Tc(MIN.) = 118.00

EFFECTIVE AREA(ACRES) = 51477.39 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 67980.6  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 16.99

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.763

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.60	0.30	0.683	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41425.17

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.53

AVERAGE FLOW DEPTH(FEET) = 16.98 TRAVEL TIME(MIN.) = 1.45

Tc(MIN.) = 119.45

SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 15.88

EFFECTIVE AREA(ACRES) = 51509.00 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 68012.2 PEAK FLOW RATE(CFS) = 41417.23

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 16.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 16.98 FLOW VELOCITY(FEET/SEC.) = 14.53

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

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FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 119.45

RAINFALL INTENSITY(INCH/HR) = 0.76

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92

EFFECTIVE STREAM AREA(ACRES) = 51509.00

TOTAL STREAM AREA(ACRES) = 68012.25

PEAK FLOW RATE(CFS) AT CONFLUENCE = 41417.23

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FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH (FEET) = 744.71
ELEVATION DATA: UPSTREAM (FEET) = 1100.95 DOWNSTREAM (FEET) = 959.21

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.858
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 2.550
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" - 5.06 0.30 1.000 0 13.86
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 10.25
TOTAL AREA (ACRES) = 5.06 PEAK FLOW RATE (CFS) = 10.25

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FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM (FEET) = 959.21 DOWNSTREAM (FEET) = 832.83
CHANNEL LENGTH THRU SUBAREA (FEET) = 1076.71 CHANNEL SLOPE = 0.1174
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.65
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 2.219
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.57 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 38.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.60
AVERAGE FLOW DEPTH (FEET) = 0.61 TRAVEL TIME (MIN.) = 3.21
Tc (MIN.) = 17.06
SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 56.25
EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 64.99
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.83

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.83 FLOW VELOCITY (FEET/SEC.) = 6.73
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

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*****
FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

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>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM (FEET) = 832.83 DOWNSTREAM (FEET) = 572.49
CHANNEL LENGTH THRU SUBAREA (FEET) = 1883.58 CHANNEL SLOPE = 0.1382
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.97
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.928
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.23 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 88.65
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.85
AVERAGE FLOW DEPTH (FEET) = 0.95 TRAVEL TIME (MIN.) = 4.00
Tc (MIN.) = 21.06
SUBAREA AREA (ACRES) = 32.23 SUBAREA RUNOFF (CFS) = 47.22
EFFECTIVE AREA (ACRES) = 69.86 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 69.9 PEAK FLOW RATE (CFS) = 102.34
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.03

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.03 FLOW VELOCITY (FEET/SEC.) = 8.27
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

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FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM (FEET) = 572.49 DOWNSTREAM (FEET) = 471.65
CHANNEL LENGTH THRU SUBAREA (FEET) = 943.78 CHANNEL SLOPE = 0.1068
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.23
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.829
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 27.51 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 121.28
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.01
AVERAGE FLOW DEPTH (FEET) = 1.22 TRAVEL TIME (MIN.) = 1.96
Tc (MIN.) = 23.03
SUBAREA AREA (ACRES) = 27.51 SUBAREA RUNOFF (CFS) = 37.86
EFFECTIVE AREA (ACRES) = 97.37 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 97.4 PEAK FLOW RATE (CFS) = 134.01
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

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\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.29  
END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.29 FLOW VELOCITY (FEET/SEC.) = 8.24  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 471.65 DOWNSTREAM (FEET) = 347.06  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1647.45 CHANNEL SLOPE = 0.0756  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.77  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.673

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	94.21	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 192.28

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.18

AVERAGE FLOW DEPTH (FEET) = 1.74 TRAVEL TIME (MIN.) = 3.36

Tc (MIN.) = 26.38

SUBAREA AREA (ACRES) = 94.21 SUBAREA RUNOFF (CFS) = 116.41

EFFECTIVE AREA (ACRES) = 191.58 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 191.6 PEAK FLOW RATE (CFS) = 236.72

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.95 FLOW VELOCITY (FEET/SEC.) = 8.73

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 347.06 DOWNSTREAM (FEET) = 269.29  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1696.71 CHANNEL SLOPE = 0.0458  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.88

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.531

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	233.25	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 366.16  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.28  
AVERAGE FLOW DEPTH (FEET) = 2.83 TRAVEL TIME (MIN.) = 3.42  
Tc (MIN.) = 29.80  
SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 258.52  
EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 470.85  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.22

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.22 FLOW VELOCITY (FEET/SEC.) = 8.89

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 56  
-----

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

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ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.86

\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.421

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.70	0.30	0.880	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 540.99

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.98

AVERAGE FLOW DEPTH (FEET) = 3.83 TRAVEL TIME (MIN.) = 5.28

Tc (MIN.) = 35.08

SUBAREA AREA (ACRES) = 134.70 SUBAREA RUNOFF (CFS) = 140.27

EFFECTIVE AREA (ACRES) = 559.53 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA (ACRES) = 559.5 PEAK FLOW RATE (CFS) = 568.89

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.93 FLOW VELOCITY (FEET/SEC.) = 8.09

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13837.00 = 10522.15 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 31  
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 191.87 DOWNSTREAM (FEET) = 133.00  
FLOW LENGTH (FEET) = 1151.02 MANNING'S N = 0.013

DEPTH OF FLOW IN 63.0 INCH PIPE IS 46.5 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 33.24  
 ESTIMATED PIPE DIAMETER(INCH) = 63.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 568.89  
 PIPE TRAVEL TIME(MIN.) = 0.58 Tc(MIN.) = 35.65  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 35.65  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.409  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 5.97 0.30 0.622 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622  
 SUBAREA AREA(ACRES) = 5.97 SUBAREA RUNOFF(CFS) = 6.57  
 EFFECTIVE AREA(ACRES) = 565.50 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 565.5 PEAK FLOW RATE(CFS) = 569.62

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 35.65  
 RAINFALL INTENSITY(INCH/HR) = 1.41  
 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97  
 EFFECTIVE STREAM AREA(ACRES) = 565.50  
 TOTAL STREAM AREA(ACRES) = 565.50  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 569.62

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22587.17	22.98	1.831	0.30( 0.24)	0.79	4444.2	13810.00
1	23190.70	24.87	1.736	0.30( 0.24)	0.79	4826.7	10400.00
1	28232.69	40.54	1.314	0.30( 0.24)	0.79	9894.0	110.00
1	29909.05	47.04	1.214	0.30( 0.24)	0.80	12612.7	130.00
1	31292.32	52.73	1.135	0.30( 0.24)	0.81	15310.9	50220.00
1	33861.52	67.23	1.002	0.30( 0.25)	0.84	22419.2	390.00
1	35615.09	79.70	0.931	0.30( 0.26)	0.87	28515.3	13100.00
1	36575.89	86.17	0.895	0.30( 0.26)	0.88	31377.0	11801.00
1	38490.80	96.56	0.849	0.30( 0.27)	0.89	36698.1	11530.00
1	39235.75	102.19	0.827	0.30( 0.27)	0.90	40306.7	13510.00
1	39972.60	107.99	0.806	0.30( 0.27)	0.91	43909.8	13010.00
1	41051.54	114.79	0.780	0.30( 0.27)	0.91	48334.8	11350.00
1	41417.23	119.45	0.763	0.30( 0.28)	0.92	51509.0	11130.00

1	40980.50	125.56	0.749	0.30( 0.28)	0.92	54435.6	12300.00
1	40176.41	134.39	0.730	0.30( 0.28)	0.93	58696.2	12400.00
1	39099.76	143.99	0.709	0.30( 0.28)	0.93	62097.8	12201.00
1	38108.66	151.56	0.693	0.30( 0.28)	0.93	63990.8	12231.00
1	37081.47	159.13	0.677	0.30( 0.28)	0.93	65543.5	10400.00
1	35487.86	168.73	0.656	0.30( 0.28)	0.93	66989.9	12010.00
1	34425.10	174.22	0.644	0.30( 0.28)	0.94	67252.5	10210.00
1	29997.10	205.12	0.608	0.30( 0.28)	0.94	68012.2	10100.00
2	569.62	35.65	1.409	0.30( 0.29)	0.97	565.5	13830.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23092.75	22.98	1.831	0.30( 0.24)	0.81	4808.6	13810.00
2	23704.19	24.87	1.736	0.30( 0.24)	0.81	5221.2	10400.00
3	27230.26	35.65	1.409	0.30( 0.24)	0.81	8879.6	13830.00
4	28753.66	40.54	1.314	0.30( 0.24)	0.80	10459.5	110.00
5	30379.39	47.04	1.214	0.30( 0.24)	0.80	13178.2	130.00
6	31722.09	52.73	1.135	0.30( 0.24)	0.81	15876.4	50220.00
7	34223.84	67.23	1.002	0.30( 0.25)	0.84	22984.7	390.00
8	35941.42	79.70	0.931	0.30( 0.26)	0.87	29080.8	13100.00
9	36883.57	86.17	0.895	0.30( 0.26)	0.88	31942.5	11801.00
10	38774.98	96.56	0.849	0.30( 0.27)	0.89	37263.6	11530.00
11	39509.23	102.19	0.827	0.30( 0.27)	0.90	40872.2	13510.00
12	40235.05	107.99	0.806	0.30( 0.27)	0.91	44475.3	13010.00
13	41301.07	114.79	0.780	0.30( 0.27)	0.91	48900.3	11350.00
14	41657.91	119.45	0.763	0.30( 0.28)	0.92	52074.5	11130.00
15	41214.05	125.56	0.749	0.30( 0.28)	0.92	55001.1	12300.00
16	40400.30	134.39	0.730	0.30( 0.28)	0.93	59261.7	12400.00
17	39313.14	143.99	0.709	0.30( 0.28)	0.93	62663.3	12201.00
18	38313.75	151.56	0.693	0.30( 0.28)	0.93	64556.3	12231.00
19	37278.28	159.13	0.677	0.30( 0.28)	0.93	66109.0	10400.00
20	35674.18	168.73	0.656	0.30( 0.28)	0.94	67555.4	12010.00
21	34605.40	174.22	0.644	0.30( 0.28)	0.94	67818.0	10210.00
22	30159.00	205.12	0.608	0.30( 0.28)	0.94	68577.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41657.91 Tc(MIN.) = 119.45  
 EFFECTIVE AREA(ACRES) = 52074.50 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 68577.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 15.49  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.761

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	6.61	0.30	0.975	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41659.30  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.60  
AVERAGE FLOW DEPTH(FEET) = 15.49 TRAVEL TIME(MIN.) = 0.66  
Tc(MIN.) = 120.11  
SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 2.79  
EFFECTIVE AREA(ACRES) = 52081.11 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68584.4 PEAK FLOW RATE(CFS) = 41657.91  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 15.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 15.49 FLOW VELOCITY(FEET/SEC.) = 16.60  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 1

-----  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

-----  
TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 120.11  
RAINFALL INTENSITY(INCH/HR) = 0.76  
AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92  
EFFECTIVE STREAM AREA(ACRES) = 52081.11  
TOTAL STREAM AREA(ACRES) = 68584.36  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 41657.91

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21

-----  
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

-----  
INITIAL SUBAREA FLOW-LENGTH(FEET) = 617.57  
ELEVATION DATA: UPSTREAM(FEET) = 646.95 DOWNSTREAM(FEET) = 490.10

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.137  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.797  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	-	4.95	0.30	1.000	0	12.14

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF(CFS) = 11.12  
TOTAL AREA(ACRES) = 4.95 PEAK FLOW RATE(CFS) = 11.12

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 56

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 490.10 DOWNSTREAM(FEET) = 440.98  
CHANNEL LENGTH THRU SUBAREA(FEET) = 351.14 CHANNEL SLOPE = 0.1399  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.34  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.598

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.02	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.29  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.23  
AVERAGE FLOW DEPTH(FEET) = 0.34 TRAVEL TIME(MIN.) = 1.38  
Tc(MIN.) = 13.52  
SUBAREA AREA(ACRES) = 4.02 SUBAREA RUNOFF(CFS) = 8.32  
EFFECTIVE AREA(ACRES) = 8.97 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 18.56  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.38 FLOW VELOCITY(FEET/SEC.) = 4.58  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 56

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 440.98 DOWNSTREAM(FEET) = 395.76  
CHANNEL LENGTH THRU SUBAREA(FEET) = 512.91 CHANNEL SLOPE = 0.0882  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.53  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.349

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.17	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 25.17  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.42  
AVERAGE FLOW DEPTH(FEET) = 0.52 TRAVEL TIME(MIN.) = 1.93



Tc(MIN.) = 15.45  
SUBAREA AREA(ACRES) = 7.17 SUBAREA RUNOFF(CFS) = 13.22  
EFFECTIVE AREA(ACRES) = 16.14 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 16.1 PEAK FLOW RATE(CFS) = 29.77  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.57 FLOW VELOCITY(FEET/SEC.) = 4.69  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 395.76 DOWNSTREAM(FEET) = 354.94  
CHANNEL LENGTH THRU SUBAREA(FEET) = 443.69 CHANNEL SLOPE = 0.0920  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.63

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.230  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 6.76 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 35.64  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.04  
AVERAGE FLOW DEPTH(FEET) = 0.63 TRAVEL TIME(MIN.) = 1.47  
Tc(MIN.) = 16.92  
SUBAREA AREA(ACRES) = 6.76 SUBAREA RUNOFF(CFS) = 11.74  
EFFECTIVE AREA(ACRES) = 22.90 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 22.9 PEAK FLOW RATE(CFS) = 39.79  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.67 FLOW VELOCITY(FEET/SEC.) = 5.25  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13853.00 = 1925.31 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13853.00 TO NODE 13854.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 354.94 DOWNSTREAM(FEET) = 263.57  
CHANNEL LENGTH THRU SUBAREA(FEET) = 962.09 CHANNEL SLOPE = 0.0950  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.81

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.009  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 18.16 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 53.77  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.87  
AVERAGE FLOW DEPTH(FEET) = 0.79 TRAVEL TIME(MIN.) = 2.73  
Tc(MIN.) = 19.65  
SUBAREA AREA(ACRES) = 18.16 SUBAREA RUNOFF(CFS) = 27.94  
EFFECTIVE AREA(ACRES) = 41.06 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 41.1 PEAK FLOW RATE(CFS) = 63.16  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.87 FLOW VELOCITY(FEET/SEC.) = 6.21  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13854.00 = 2887.40 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13854.00 TO NODE 13855.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 263.57 DOWNSTREAM(FEET) = 188.74  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1228.77 CHANNEL SLOPE = 0.0609  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.23

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.828  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 38.75 0.30 0.879 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.879  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 90.46  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.02  
AVERAGE FLOW DEPTH(FEET) = 1.21 TRAVEL TIME(MIN.) = 3.40  
Tc(MIN.) = 23.06  
SUBAREA AREA(ACRES) = 38.75 SUBAREA RUNOFF(CFS) = 54.54  
EFFECTIVE AREA(ACRES) = 79.81 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 79.8 PEAK FLOW RATE(CFS) = 111.00  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.36 FLOW VELOCITY(FEET/SEC.) = 6.41  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13855.00 = 4116.17 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 31  
 -----  
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<<  
 -----  
 ELEVATION DATA: UPSTREAM(FEET) = 188.74 DOWNSTREAM(FEET) = 130.00  
 FLOW LENGTH(FEET) = 2092.67 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 39.0 INCH PIPE IS 27.5 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 17.74  
 ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 111.00  
 PIPE TRAVEL TIME(MIN.) = 1.97 Tc(MIN.) = 25.02  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13860.00 = 6208.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 -----  
 MAINLINE Tc(MIN.) = 25.02  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.729  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 43.41 0.30 0.707 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707  
 SUBAREA AREA(ACRES) = 43.41 SUBAREA RUNOFF(CFS) = 59.27  
 EFFECTIVE AREA(ACRES) = 123.22 AREA-AVERAGED Fm(INCH/HR) = 0.26  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
 TOTAL AREA(ACRES) = 123.2 PEAK FLOW RATE(CFS) = 163.19

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<<  
 -----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 25.02  
 RAINFALL INTENSITY(INCH/HR) = 1.73  
 AREA-AVERAGED Fm(INCH/HR) = 0.26  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.86  
 EFFECTIVE STREAM AREA(ACRES) = 123.22  
 TOTAL STREAM AREA(ACRES) = 123.22  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 163.19

\*\* CONFLUENCE DATA \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23092.75	23.76	1.792	0.30( 0.24)	0.81	4815.2	13810.00
1	23704.19	25.65	1.703	0.30( 0.24)	0.81	5227.8	10400.00
1	27230.26	36.40	1.394	0.30( 0.24)	0.81	8886.2	13830.00
1	28753.66	41.27	1.303	0.30( 0.24)	0.80	10466.1	110.00
1	30379.39	47.76	1.203	0.30( 0.24)	0.80	13184.8	130.00
1	31722.09	53.44	1.126	0.30( 0.24)	0.81	15883.1	50220.00

1	34223.84	67.92	0.998	0.30( 0.25)	0.84	22991.3	390.00
1	35941.42	80.39	0.927	0.30( 0.26)	0.87	29087.4	13100.00
1	36883.57	86.85	0.891	0.30( 0.26)	0.88	31949.1	11801.00
1	38774.98	97.23	0.846	0.30( 0.27)	0.89	37270.2	11530.00
1	39509.23	102.85	0.825	0.30( 0.27)	0.90	40878.8	13510.00
1	40235.05	108.66	0.803	0.30( 0.27)	0.91	44481.9	13010.00
1	41301.07	115.45	0.778	0.30( 0.27)	0.91	48906.9	11350.00
1	41657.91	120.11	0.761	0.30( 0.28)	0.92	52081.1	11130.00
1	41214.05	126.22	0.748	0.30( 0.28)	0.92	55007.7	12300.00
1	40400.30	135.06	0.729	0.30( 0.28)	0.93	59268.3	12400.00
1	39313.14	144.66	0.708	0.30( 0.28)	0.93	62669.9	12201.00
1	38313.75	152.24	0.692	0.30( 0.28)	0.93	64562.9	12231.00
1	37278.28	159.81	0.675	0.30( 0.28)	0.93	66115.6	10400.00
1	35674.18	169.41	0.655	0.30( 0.28)	0.94	67562.0	12010.00
1	34605.40	174.92	0.643	0.30( 0.28)	0.94	67824.6	10210.00
1	30159.00	205.84	0.608	0.30( 0.28)	0.94	68584.4	10100.00
2	163.19	25.02	1.729	0.30( 0.26)	0.86	123.2	13850.00

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

\*\* PEAK FLOW RATE TABLE \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23254.36	23.76	1.792	0.30( 0.24)	0.81	4932.2	13810.00
2	23664.95	25.02	1.729	0.30( 0.24)	0.81	5214.4	13850.00
3	23864.51	25.65	1.703	0.30( 0.24)	0.81	5351.0	10400.00
4	27356.34	36.40	1.394	0.30( 0.24)	0.81	9009.4	13830.00
5	28869.55	41.27	1.303	0.30( 0.24)	0.80	10589.4	110.00
6	30484.27	47.76	1.203	0.30( 0.24)	0.81	13308.0	130.00
7	31818.36	53.44	1.126	0.30( 0.24)	0.81	16006.3	50220.00
8	34305.96	67.92	0.998	0.30( 0.25)	0.84	23114.6	390.00
9	36015.71	80.39	0.927	0.30( 0.26)	0.87	29210.6	13100.00
10	36953.80	86.85	0.891	0.30( 0.26)	0.88	32072.3	11801.00
11	38840.23	97.23	0.846	0.30( 0.27)	0.89	37393.4	11530.00
12	39572.16	102.85	0.825	0.30( 0.27)	0.90	41002.0	13510.00
13	40295.58	108.66	0.803	0.30( 0.27)	0.91	44605.2	13010.00
14	41358.78	115.45	0.778	0.30( 0.27)	0.91	49030.1	11350.00
15	41713.71	120.11	0.761	0.30( 0.28)	0.92	52204.3	11130.00
16	41268.40	126.22	0.748	0.30( 0.28)	0.92	55130.9	12300.00
17	40452.54	135.06	0.729	0.30( 0.28)	0.93	59391.5	12400.00
18	39363.09	144.66	0.708	0.30( 0.28)	0.93	62793.1	12201.00
19	38361.90	152.24	0.692	0.30( 0.28)	0.93	64686.1	12231.00
20	37324.62	159.81	0.675	0.30( 0.28)	0.93	66238.8	10400.00
21	35718.22	169.41	0.655	0.30( 0.28)	0.93	67685.2	12010.00
22	34648.14	174.92	0.643	0.30( 0.28)	0.94	67947.8	10210.00
23	30197.82	205.84	0.608	0.30( 0.28)	0.94	68707.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 41713.71 Tc(MIN.) = 120.11  
 EFFECTIVE AREA(ACRES) = 52204.32 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 68707.6  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 130.00 DOWNSTREAM(FEET) = 120.57
CHANNEL LENGTH THRU SUBAREA(FEET) = 610.77 CHANNEL SLOPE = 0.0154
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.25
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.760
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 4.89 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41714.72
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 25.57
AVERAGE FLOW DEPTH(FEET) = 11.25 TRAVEL TIME(MIN.) = 0.40
Tc(MIN.) = 120.51
SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 2.02
EFFECTIVE AREA(ACRES) = 52209.21 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 68712.5 PEAK FLOW RATE(CFS) = 41713.71
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.25 FLOW VELOCITY(FEET/SEC.) = 25.57
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

*****
FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 120.51
RAINFALL INTENSITY(INCH/HR) = 0.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.92
EFFECTIVE STREAM AREA(ACRES) = 52209.21
TOTAL STREAM AREA(ACRES) = 68712.47
PEAK FLOW RATE(CFS) AT CONFLUENCE = 41713.71

*****
FLOW PROCESS FROM NODE 13870.00 TO NODE 13871.00 IS CODE = 21
-----
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 872.65
ELEVATION DATA: UPSTREAM(FEET) = 558.52 DOWNSTREAM(FEET) = 436.47

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20

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SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 15.704
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.329
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"GRASS" - 7.32 0.30 1.000 0 15.70
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 13.37
TOTAL AREA(ACRES) = 7.32 PEAK FLOW RATE(CFS) = 13.37

*****
FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 436.47 DOWNSTREAM(FEET) = 337.62
CHANNEL LENGTH THRU SUBAREA(FEET) = 827.95 CHANNEL SLOPE = 0.1194
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.48
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.094
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 13.01 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.90
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.75
AVERAGE FLOW DEPTH(FEET) = 0.46 TRAVEL TIME(MIN.) = 2.91
Tc(MIN.) = 18.61
SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 21.00
EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 32.82
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.55 FLOW VELOCITY(FEET/SEC.) = 5.33
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

*****
FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88
CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.88
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.895

```

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	32.99	0.30	0.923	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.923  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 56.89  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.65  
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 3.10  
Tc(MIN.) = 21.70  
SUBAREA AREA(ACRES) = 32.99 SUBAREA RUNOFF(CFS) = 48.06  
EFFECTIVE AREA(ACRES) = 53.32 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 53.3 PEAK FLOW RATE(CFS) = 77.25  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.03 FLOW VELOCITY(FEET/SEC.) = 6.25  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 56

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 253.88 DOWNSTREAM(FEET) = 160.73  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1518.60 CHANNEL SLOPE = 0.0613  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.01  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.739

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	30.94	0.30	0.900	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.900  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 97.73  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.12  
AVERAGE FLOW DEPTH(FEET) = 1.00 TRAVEL TIME(MIN.) = 3.12  
Tc(MIN.) = 24.82  
SUBAREA AREA(ACRES) = 30.94 SUBAREA RUNOFF(CFS) = 40.91  
EFFECTIVE AREA(ACRES) = 84.26 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 84.3 PEAK FLOW RATE(CFS) = 110.65  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.07 FLOW VELOCITY(FEET/SEC.) = 8.49  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 56

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 160.73 DOWNSTREAM(FEET) = 158.14  
CHANNEL LENGTH THRU SUBAREA(FEET) = 582.74 CHANNEL SLOPE = 0.0044  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.72  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.631

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	73.67	0.30	0.930	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.930  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 155.49  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.76  
AVERAGE FLOW DEPTH(FEET) = 2.69 TRAVEL TIME(MIN.) = 2.58  
Tc(MIN.) = 27.40  
SUBAREA AREA(ACRES) = 73.67 SUBAREA RUNOFF(CFS) = 89.62  
EFFECTIVE AREA(ACRES) = 157.93 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 157.9 PEAK FLOW RATE(CFS) = 192.04  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 3.00 FLOW VELOCITY(FEET/SEC.) = 4.00  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31

-----  
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 158.14 DOWNSTREAM(FEET) = 120.57  
FLOW LENGTH(FEET) = 1855.67 MANNING'S N = 0.013  
DEPTH OF FLOW IN 48.0 INCH PIPE IS 38.9 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.59  
ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 192.04  
PIPE TRAVEL TIME(MIN.) = 1.76 Tc(MIN.) = 29.16  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81

-----  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc(MIN.) = 29.16  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.558  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.90	0.30	0.743	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743  
 SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 41.93  
 EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 223.63

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 29.16  
 RAINFALL INTENSITY(INCH/HR) = 1.56  
 AREA-AVERAGED Fm(INCH/HR) = 0.27  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.90  
 EFFECTIVE STREAM AREA(ACRES) = 192.83  
 TOTAL STREAM AREA(ACRES) = 192.83  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 223.63

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23254.36	24.23	1.769	0.30( 0.24)	0.81	4937.1	13810.00
1	23664.95	25.49	1.710	0.30( 0.24)	0.81	5219.3	13850.00
1	23864.51	26.12	1.684	0.30( 0.24)	0.81	5355.9	10400.00
1	27356.34	36.85	1.385	0.30( 0.24)	0.81	9014.3	13830.00
1	28869.55	41.71	1.296	0.30( 0.24)	0.80	10594.2	110.00
1	30484.27	48.20	1.197	0.30( 0.24)	0.81	13312.9	130.00
1	31818.36	53.87	1.120	0.30( 0.24)	0.81	16011.2	50220.00
1	34305.96	68.34	0.996	0.30( 0.25)	0.84	23119.5	390.00
1	36015.71	80.81	0.925	0.30( 0.26)	0.87	29215.5	13100.00
1	36953.80	87.26	0.889	0.30( 0.26)	0.88	32077.2	11801.00
1	38840.23	97.63	0.844	0.30( 0.27)	0.89	37398.3	11530.00
1	39572.16	103.26	0.823	0.30( 0.27)	0.90	41006.9	13510.00
1	40295.58	109.06	0.802	0.30( 0.27)	0.91	44610.0	13010.00
1	41358.78	115.85	0.776	0.30( 0.27)	0.91	49035.0	11350.00
1	41713.71	120.51	0.760	0.30( 0.28)	0.92	52209.2	11130.00
1	41268.40	126.62	0.747	0.30( 0.28)	0.92	55135.8	12300.00
1	40452.54	135.46	0.728	0.30( 0.28)	0.93	59396.4	12400.00
1	39363.09	145.07	0.707	0.30( 0.28)	0.93	62798.0	12201.00
1	38361.90	152.64	0.691	0.30( 0.28)	0.93	64691.0	12231.00
1	37324.62	160.22	0.675	0.30( 0.28)	0.93	66243.7	10400.00
1	35718.22	169.83	0.654	0.30( 0.28)	0.93	67690.1	12010.00
1	34648.14	175.34	0.642	0.30( 0.28)	0.94	67952.7	10210.00
1	30197.82	206.28	0.607	0.30( 0.28)	0.94	68712.5	10100.00
2	223.63	29.16	1.558	0.30( 0.27)	0.90	192.8	13870.00

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

\*\* PEAK FLOW RATE TABLE \*\*

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

1	23470.59	24.23	1.769	0.30( 0.24)	0.81	5097.4	13810.00
2	23883.48	25.49	1.710	0.30( 0.24)	0.81	5387.9	13850.00
3	24084.38	26.12	1.684	0.30( 0.24)	0.81	5528.6	10400.00
4	25078.21	29.16	1.558	0.30( 0.24)	0.81	6586.0	13870.00
5	27550.04	36.85	1.385	0.30( 0.24)	0.81	9207.1	13830.00
6	29047.71	41.71	1.296	0.30( 0.24)	0.81	10787.1	110.00
7	30645.21	48.20	1.197	0.30( 0.24)	0.81	13505.8	130.00
8	31966.04	53.87	1.120	0.30( 0.24)	0.81	16204.0	50220.00
9	34432.05	68.34	0.996	0.30( 0.25)	0.84	23312.3	390.00
10	36129.54	80.81	0.925	0.30( 0.26)	0.87	29408.4	13100.00
11	37061.28	87.26	0.889	0.30( 0.26)	0.88	32270.0	11801.00
12	38940.07	97.63	0.844	0.30( 0.27)	0.89	37591.2	11530.00
13	39668.36	103.26	0.823	0.30( 0.27)	0.90	41199.8	13510.00
14	40388.02	109.06	0.802	0.30( 0.27)	0.91	44802.9	13010.00
15	41446.82	115.85	0.776	0.30( 0.27)	0.91	49227.8	11350.00
16	41798.88	120.51	0.760	0.30( 0.28)	0.92	52402.0	11130.00
17	41351.29	126.62	0.747	0.30( 0.28)	0.92	55328.6	12300.00
18	40532.12	135.46	0.728	0.30( 0.28)	0.93	59589.2	12400.00
19	39439.09	145.07	0.707	0.30( 0.28)	0.93	62990.8	12201.00
20	38435.07	152.64	0.691	0.30( 0.28)	0.93	64883.8	12231.00
21	37394.96	160.22	0.675	0.30( 0.28)	0.93	66436.6	10400.00
22	35784.98	169.83	0.654	0.30( 0.28)	0.93	67883.0	12010.00
23	34712.84	175.34	0.642	0.30( 0.28)	0.94	68145.5	10210.00
24	30256.48	206.28	0.607	0.30( 0.28)	0.94	68905.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41798.88 Tc(MIN.) = 120.51  
 EFFECTIVE AREA(ACRES) = 52402.04 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 68905.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 120.57 DOWNSTREAM(FEET) = 119.70  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1190.21 CHANNEL SLOPE = 0.0007  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 24.64  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.755

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41827.36  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.55  
 AVERAGE FLOW DEPTH(FEET) = 24.63 TRAVEL TIME(MIN.) = 2.32  
 Tc(MIN.) = 122.82

SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 56.96  
 EFFECTIVE AREA(ACRES) = 52519.73 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69023.0 PEAK FLOW RATE(CFS) = 41798.88

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 24.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 24.62 FLOW VELOCITY (FEET/SEC.) = 8.55  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION (MIN.) = 122.82  
RAINFALL INTENSITY (INCH/HR) = 0.75  
AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92  
EFFECTIVE STREAM AREA (ACRES) = 52519.73  
TOTAL STREAM AREA (ACRES) = 69022.98  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 41798.88

\*\*\*\*\*

FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 447.89  
ELEVATION DATA: UPSTREAM (FEET) = 564.89 DOWNSTREAM (FEET) = 421.92

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 6.976  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 4.094  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
PUBLIC PARK	-	3.03	0.30	0.960	0	6.98

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.960  
SUBAREA RUNOFF (CFS) = 10.38  
TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 10.38

\*\*\*\*\*

FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64  
CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.43  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 3.621

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.12	0.30	0.986	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.986  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 22.58  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.03  
AVERAGE FLOW DEPTH (FEET) = 0.41 TRAVEL TIME (MIN.) = 1.44  
Tc (MIN.) = 8.42

SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 24.30  
EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 33.40  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.52 FLOW VELOCITY (FEET/SEC.) = 5.80  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 392.64 DOWNSTREAM (FEET) = 324.46  
CHANNEL LENGTH THRU SUBAREA (FEET) = 662.40 CHANNEL SLOPE = 0.1029  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.60  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 3.151

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.50	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 49.47  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.69  
AVERAGE FLOW DEPTH (FEET) = 0.58 TRAVEL TIME (MIN.) = 1.44  
Tc (MIN.) = 9.86

SUBAREA AREA (ACRES) = 12.50 SUBAREA RUNOFF (CFS) = 32.08  
EFFECTIVE AREA (ACRES) = 23.65 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 23.6 PEAK FLOW RATE (CFS) = 60.75  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.65 FLOW VELOCITY (FEET/SEC.) = 8.23  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 56

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 324.46 DOWNSTREAM(FEET) = 240.82  
CHANNEL LENGTH THRU SUBAREA(FEET) = 980.03 CHANNEL SLOPE = 0.0853  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.82  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.847  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 15.87 0.30 1.000 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 78.96  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.46  
AVERAGE FLOW DEPTH(FEET) = 0.80 TRAVEL TIME(MIN.) = 1.93  
Tc(MIN.) = 11.79  
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 36.39  
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 90.68  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.87 FLOW VELOCITY(FEET/SEC.) = 8.85  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 56  
-----

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

-----  
ELEVATION DATA: UPSTREAM(FEET) = 240.82 DOWNSTREAM(FEET) = 163.04  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1144.35 CHANNEL SLOPE = 0.0680  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.11  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.542  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 28.41 0.30 0.985 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.985  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 119.45  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.96  
AVERAGE FLOW DEPTH(FEET) = 1.09 TRAVEL TIME(MIN.) = 2.13  
Tc(MIN.) = 13.91  
SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 57.44  
EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 137.24

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.18 FLOW VELOCITY(FEET/SEC.) = 9.41  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31  
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70  
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013  
DEPTH OF FLOW IN 42.0 INCH PIPE IS 32.7 INCHES  
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.06  
ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1  
PIPE-FLOW(CFS) = 137.24  
PIPE TRAVEL TIME(MIN.) = 1.86 Tc(MIN.) = 15.77  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

-----  
MAINLINE Tc(MIN.) = 15.77  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.324  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 11.69 0.30 0.634 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.634  
SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 22.45  
EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 146.34

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1  
-----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

-----  
TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
TIME OF CONCENTRATION(MIN.) = 15.77  
RAINFALL INTENSITY(INCH/HR) = 2.32  
AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.94  
EFFECTIVE STREAM AREA(ACRES) = 79.62  
TOTAL STREAM AREA(ACRES) = 79.62  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 146.34

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23470.59	26.95	1.649	0.30 ( 0.24)	0.81	5215.1	13810.00
1	23883.48	28.19	1.598	0.30 ( 0.24)	0.81	5505.6	13850.00
1	24084.38	28.81	1.572	0.30 ( 0.24)	0.81	5646.3	10400.00
1	25078.21	31.82	1.486	0.30 ( 0.24)	0.81	6703.7	13870.00
1	27550.04	39.45	1.333	0.30 ( 0.24)	0.81	9324.8	13830.00
1	29047.71	44.27	1.257	0.30 ( 0.24)	0.80	10904.8	110.00
1	30645.21	50.72	1.160	0.30 ( 0.24)	0.81	13623.5	130.00
1	31966.04	56.37	1.089	0.30 ( 0.24)	0.81	16321.7	50220.00
1	34432.05	70.79	0.982	0.30 ( 0.25)	0.84	23430.0	390.00
1	36129.54	83.22	0.911	0.30 ( 0.26)	0.87	29526.1	13100.00
1	37061.28	89.66	0.875	0.30 ( 0.26)	0.88	32387.7	11801.00
1	38940.07	100.00	0.836	0.30 ( 0.27)	0.89	37708.9	11530.00
1	39668.36	105.61	0.815	0.30 ( 0.27)	0.90	41317.5	13510.00
1	40388.02	111.40	0.793	0.30 ( 0.27)	0.91	44920.6	13010.00
1	41446.82	118.17	0.768	0.30 ( 0.27)	0.91	49345.5	11350.00
1	41798.88	122.82	0.755	0.30 ( 0.28)	0.92	52519.7	11130.00
1	41351.29	128.94	0.742	0.30 ( 0.28)	0.92	55446.3	12300.00
1	40532.12	137.80	0.723	0.30 ( 0.28)	0.93	59706.9	12400.00
1	39439.09	147.42	0.702	0.30 ( 0.28)	0.93	63108.5	12201.00
1	38435.07	155.02	0.686	0.30 ( 0.28)	0.93	65001.5	12231.00
1	37394.96	162.61	0.669	0.30 ( 0.28)	0.93	66554.2	10400.00
1	35784.98	172.25	0.649	0.30 ( 0.28)	0.93	68000.7	12010.00
1	34712.84	177.78	0.637	0.30 ( 0.28)	0.93	68263.2	10210.00
1	30256.48	208.81	0.605	0.30 ( 0.28)	0.94	69023.0	10100.00
2	146.34	15.77	2.324	0.30 ( 0.28)	0.94	79.6	13889.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20467.08	15.77	2.324	0.30 ( 0.24)	0.81	3131.8	13889.00
2	23568.63	26.95	1.649	0.30 ( 0.24)	0.81	5294.7	13810.00
3	23977.82	28.19	1.598	0.30 ( 0.24)	0.81	5585.2	13850.00
4	24176.88	28.81	1.572	0.30 ( 0.24)	0.81	5725.9	10400.00
5	25164.56	31.82	1.486	0.30 ( 0.24)	0.81	6783.3	13870.00
6	27625.42	39.45	1.333	0.30 ( 0.24)	0.81	9404.4	13830.00
7	29117.60	44.27	1.257	0.30 ( 0.24)	0.81	10984.4	110.00
8	30708.17	50.72	1.160	0.30 ( 0.24)	0.81	13703.1	130.00
9	32023.90	56.37	1.089	0.30 ( 0.24)	0.81	16401.3	50220.00
10	34482.25	70.79	0.982	0.30 ( 0.25)	0.84	23509.6	390.00
11	36174.69	83.22	0.911	0.30 ( 0.26)	0.87	29605.7	13100.00
12	37103.82	89.66	0.875	0.30 ( 0.26)	0.88	32467.3	11801.00
13	38979.80	100.00	0.836	0.30 ( 0.27)	0.89	37788.5	11530.00
14	39706.58	105.61	0.815	0.30 ( 0.27)	0.90	41397.1	13510.00
15	40424.69	111.40	0.793	0.30 ( 0.27)	0.91	45000.2	13010.00
16	41481.68	118.17	0.768	0.30 ( 0.27)	0.91	49425.2	11350.00
17	41832.81	122.82	0.755	0.30 ( 0.28)	0.92	52599.4	11130.00
18	41384.28	128.94	0.742	0.30 ( 0.28)	0.92	55525.9	12300.00
19	40563.75	137.80	0.723	0.30 ( 0.28)	0.93	59786.5	12400.00
20	39469.23	147.42	0.702	0.30 ( 0.28)	0.93	63188.1	12201.00
21	38464.05	155.02	0.686	0.30 ( 0.28)	0.93	65081.1	12231.00
22	37422.77	162.61	0.669	0.30 ( 0.28)	0.93	66633.9	10400.00
23	35811.30	172.25	0.649	0.30 ( 0.28)	0.93	68080.3	12010.00

24	34738.32	177.78	0.637	0.30 ( 0.28)	0.93	68342.8	10210.00
25	30279.66	208.81	0.605	0.30 ( 0.28)	0.94	69102.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41832.81 Tc(MIN.) = 122.82  
 EFFECTIVE AREA(ACRES) = 52599.36 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69102.6  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

=====  
 END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69102.6 TC(MIN.) = 122.82  
 EFFECTIVE AREA(ACRES) = 52599.36 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.919  
 PEAK FLOW RATE(CFS) = 41832.81

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20467.08	15.77	2.324	0.30 ( 0.24)	0.81	3131.8	13889.00
2	23568.63	26.95	1.649	0.30 ( 0.24)	0.81	5294.7	13810.00
3	23977.82	28.19	1.598	0.30 ( 0.24)	0.81	5585.2	13850.00
4	24176.88	28.81	1.572	0.30 ( 0.24)	0.81	5725.9	10400.00
5	25164.56	31.82	1.486	0.30 ( 0.24)	0.81	6783.3	13870.00
6	27625.42	39.45	1.333	0.30 ( 0.24)	0.81	9404.4	13830.00
7	29117.60	44.27	1.257	0.30 ( 0.24)	0.81	10984.4	110.00
8	30708.17	50.72	1.160	0.30 ( 0.24)	0.81	13703.1	130.00
9	32023.90	56.37	1.089	0.30 ( 0.24)	0.81	16401.3	50220.00
10	34482.25	70.79	0.982	0.30 ( 0.25)	0.84	23509.6	390.00
11	36174.69	83.22	0.911	0.30 ( 0.26)	0.87	29605.7	13100.00
12	37103.82	89.66	0.875	0.30 ( 0.26)	0.88	32467.3	11801.00
13	38979.80	100.00	0.836	0.30 ( 0.27)	0.89	37788.5	11530.00
14	39706.58	105.61	0.815	0.30 ( 0.27)	0.90	41397.1	13510.00
15	40424.69	111.40	0.793	0.30 ( 0.27)	0.91	45000.2	13010.00
16	41481.68	118.17	0.768	0.30 ( 0.27)	0.91	49425.2	11350.00
17	41832.81	122.82	0.755	0.30 ( 0.28)	0.92	52599.4	11130.00
18	41384.28	128.94	0.742	0.30 ( 0.28)	0.92	55525.9	12300.00
19	40563.75	137.80	0.723	0.30 ( 0.28)	0.93	59786.5	12400.00
20	39469.23	147.42	0.702	0.30 ( 0.28)	0.93	63188.1	12201.00
21	38464.05	155.02	0.686	0.30 ( 0.28)	0.93	65081.1	12231.00
22	37422.77	162.61	0.669	0.30 ( 0.28)	0.93	66633.9	10400.00
23	35811.30	172.25	0.649	0.30 ( 0.28)	0.93	68080.3	12010.00
24	34738.32	177.78	0.637	0.30 ( 0.28)	0.93	68342.8	10210.00
25	30279.66	208.81	0.605	0.30 ( 0.28)	0.94	69102.6	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====





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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S39 - FREE DRAINING - ULTIMATE CONDITION \*  
\* 25-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU25EV39.DAT  
TIME/DATE OF STUDY: 15:28 04/01/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 25.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 4.737
- 2) 10.00; 3.102
- 3) 15.00; 2.384
- 4) 20.00; 1.980
- 5) 25.00; 1.729
- 6) 30.00; 1.522
- 7) 40.00; 1.321
- 8) 50.00; 1.169
- 9) 60.00; 1.042
- 10) 90.00; 0.872
- 11) 120.00; 0.761
- 12) 180.00; 0.631
- 13) 360.00; 0.462
- 14) 1200.00; 0.201

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0313 0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13900.00 TO NODE 13901.00 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65  
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.979  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
AGRICULTURAL POOR COVER "FALLOW"	-	4.00	0.30	1.000	0	10.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 9.64  
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 9.64

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 385.16 DOWNSTREAM(FEET) = 288.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.42 CHANNEL SLOPE = 0.1497  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.30  
\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.725  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.47	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 18.90  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.10  
AVERAGE FLOW DEPTH(FEET) = 0.29 TRAVEL TIME(MIN.) = 1.77  
Tc(MIN.) = 12.63  
SUBAREA AREA(ACRES) = 8.47 SUBAREA RUNOFF(CFS) = 18.48  
EFFECTIVE AREA(ACRES) = 12.47 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) = 27.21  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.36 FLOW VELOCITY(FEET/SEC.) = 6.98  
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13902.00 = 1248.07 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13902.00 TO NODE 13903.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 288.21 DOWNSTREAM(FEET) = 184.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 669.27 CHANNEL SLOPE = 0.1544  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.54

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.544

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.85	0.30	0.982	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.982

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 51.37

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.88

AVERAGE FLOW DEPTH(FEET) = 0.52 TRAVEL TIME(MIN.) = 1.26

Tc(MIN.) = 13.88

SUBAREA AREA(ACRES) = 23.85 SUBAREA RUNOFF(CFS) = 48.29

EFFECTIVE AREA(ACRES) = 36.32 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 36.3 PEAK FLOW RATE(CFS) = 73.48

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 9.98

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13903.00 = 1917.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 31

-----  
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 184.89 DOWNSTREAM(FEET) = 155.08

FLOW LENGTH(FEET) = 876.66 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000

DEPTH OF FLOW IN 36.0 INCH PIPE IS 20.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 17.45

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 73.48

PIPE TRAVEL TIME(MIN.) = 0.84 Tc(MIN.) = 14.72

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13904.00 = 2794.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 81

-----  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 14.72

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.424

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	21.29	0.30	0.996	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996

SUBAREA AREA(ACRES) = 21.29 SUBAREA RUNOFF(CFS) = 40.72

EFFECTIVE AREA(ACRES) = 57.61 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 57.6 PEAK FLOW RATE(CFS) = 110.27

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 31

-----  
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 155.08 DOWNSTREAM(FEET) = 118.00

FLOW LENGTH(FEET) = 1961.38 MANNING'S N = 0.013

DEPTH OF FLOW IN 42.0 INCH PIPE IS 29.5 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 15.28

ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 110.27

PIPE TRAVEL TIME(MIN.) = 2.14 Tc(MIN.) = 16.86

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 81

-----  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 16.86

\* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.234

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.53	0.30	0.649	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.649

SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 79.88

EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 180.28

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

-----  
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

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>>>>DEFINE MEMORY BANK # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU25EV38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20467.08	15.77	0.30 ( 0.24)	0.81	3131.8	13889.00
2	25164.56	31.82	0.30 ( 0.24)	0.81	6783.3	13870.00
3	29117.60	44.27	0.30 ( 0.24)	0.81	10984.4	110.00
4	30708.17	50.72	0.30 ( 0.24)	0.81	13703.1	130.00
5	32023.90	56.37	0.30 ( 0.24)	0.81	16401.3	50220.00
6	34482.25	70.79	0.30 ( 0.25)	0.84	23509.6	390.00
7	36174.69	83.22	0.30 ( 0.26)	0.87	29605.7	13100.00
8	37103.82	89.66	0.30 ( 0.26)	0.88	32467.3	11801.00
9	38979.80	100.00	0.30 ( 0.27)	0.89	37788.5	11530.00
10	39706.58	105.61	0.30 ( 0.27)	0.90	41397.1	13510.00
11	40424.69	111.40	0.30 ( 0.27)	0.91	45000.2	13010.00
12	41832.81	122.82	0.30 ( 0.28)	0.92	52599.4	11130.00
13	41384.28	128.94	0.30 ( 0.28)	0.92	55525.9	12300.00
14	40563.75	137.80	0.30 ( 0.28)	0.93	59786.5	12400.00
15	39469.23	147.42	0.30 ( 0.28)	0.93	63188.1	12201.00
16	38464.05	155.02	0.30 ( 0.28)	0.93	65081.1	12231.00
17	37422.77	162.61	0.30 ( 0.28)	0.93	66633.9	10400.00
18	35811.30	172.25	0.30 ( 0.28)	0.93	68080.3	12010.00
19	34738.32	177.78	0.30 ( 0.28)	0.93	68342.8	10210.00
20	30279.66	208.81	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20467.08	15.77	0.30 ( 0.24)	0.81	3131.8	13889.00
2	25164.56	31.82	0.30 ( 0.24)	0.81	6783.3	13870.00
3	29117.60	44.27	0.30 ( 0.24)	0.81	10984.4	110.00
4	30708.17	50.72	0.30 ( 0.24)	0.81	13703.1	130.00
5	32023.90	56.37	0.30 ( 0.24)	0.81	16401.3	50220.00
6	34482.25	70.79	0.30 ( 0.25)	0.84	23509.6	390.00
7	36174.69	83.22	0.30 ( 0.26)	0.87	29605.7	13100.00
8	37103.82	89.66	0.30 ( 0.26)	0.88	32467.3	11801.00
9	38979.80	100.00	0.30 ( 0.27)	0.89	37788.5	11530.00
10	39706.58	105.61	0.30 ( 0.27)	0.90	41397.1	13510.00
11	40424.69	111.40	0.30 ( 0.27)	0.91	45000.2	13010.00
12	41832.81	122.82	0.30 ( 0.28)	0.92	52599.4	11130.00
13	41384.28	128.94	0.30 ( 0.28)	0.92	55525.9	12300.00
14	40563.75	137.80	0.30 ( 0.28)	0.93	59786.5	12400.00
15	39469.23	147.42	0.30 ( 0.28)	0.93	63188.1	12201.00
16	38464.05	155.02	0.30 ( 0.28)	0.93	65081.1	12231.00
17	37422.77	162.61	0.30 ( 0.28)	0.93	66633.9	10400.00
18	35811.30	172.25	0.30 ( 0.28)	0.93	68080.3	12010.00
19	34738.32	177.78	0.30 ( 0.28)	0.93	68342.8	10210.00
20	30279.66	208.81	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1376.26 CHANNEL SLOPE = 0.0012  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 21.66  
\* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.750  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.09	0.30	0.535	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 41858.31  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.36  
AVERAGE FLOW DEPTH (FEET) = 21.66 TRAVEL TIME (MIN.) = 2.21  
Tc (MIN.) = 125.04  
SUBAREA AREA (ACRES) = 96.09 SUBAREA RUNOFF (CFS) = 50.99  
EFFECTIVE AREA (ACRES) = 52695.45 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 69198.7 PEAK FLOW RATE (CFS) = 41832.81  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 21.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 21.65 FLOW VELOCITY (FEET/SEC.) = 10.36

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20467.08	18.47	2.104	0.30 ( 0.24)	0.81	3227.9	13889.00
2	25164.56	34.37	1.434	0.30 ( 0.24)	0.81	6879.4	13870.00
3	29117.60	46.72	1.219	0.30 ( 0.24)	0.80	11080.5	110.00
4	30708.17	53.13	1.129	0.30 ( 0.24)	0.80	13799.2	130.00
5	32023.90	58.75	1.058	0.30 ( 0.24)	0.81	16497.4	50220.00
6	34482.25	73.12	0.968	0.30 ( 0.25)	0.84	23605.7	390.00
7	36174.69	85.52	0.897	0.30 ( 0.26)	0.87	29701.8	13100.00
8	37103.82	91.95	0.865	0.30 ( 0.26)	0.88	32563.4	11801.00
9	38979.80	102.26	0.827	0.30 ( 0.27)	0.89	37884.6	11530.00
10	39706.58	107.86	0.806	0.30 ( 0.27)	0.90	41493.2	13510.00
11	40424.69	113.64	0.785	0.30 ( 0.27)	0.90	45096.3	13010.00
12	41832.81	125.04	0.750	0.30 ( 0.28)	0.92	52695.4	11130.00
13	41384.28	131.16	0.737	0.30 ( 0.28)	0.92	55622.0	12300.00
14	40563.75	140.03	0.718	0.30 ( 0.28)	0.93	59882.6	12400.00
15	39469.23	149.67	0.697	0.30 ( 0.28)	0.93	63284.2	12201.00
16	38464.05	157.28	0.680	0.30 ( 0.28)	0.93	65177.2	12231.00

17 37422.77 164.90 0.664 0.30( 0.28) 0.93 66730.0 10400.00  
 18 35811.30 174.56 0.643 0.30( 0.28) 0.93 68176.4 12010.00  
 19 34738.32 180.11 0.631 0.30( 0.28) 0.93 68438.9 10210.00  
 20 30279.66 211.23 0.602 0.30( 0.28) 0.93 69198.7 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	180.28	16.86	2.234	0.30( 0.25)	0.84	101.1	13900.00

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20168.63	16.86	2.234	0.30( 0.24)	0.81	3047.7	13900.00
2	20635.52	18.47	2.104	0.30( 0.24)	0.81	3329.0	13889.00
3	25272.06	34.37	1.434	0.30( 0.24)	0.81	6980.6	13870.00
4	29205.51	46.72	1.219	0.30( 0.24)	0.80	11181.6	110.00
5	30787.92	53.13	1.129	0.30( 0.24)	0.80	13900.3	130.00
6	32097.16	58.75	1.058	0.30( 0.24)	0.81	16598.5	50220.00
7	34547.29	73.12	0.968	0.30( 0.25)	0.84	23706.8	390.00
8	36233.34	85.52	0.897	0.30( 0.26)	0.87	29802.9	13100.00
9	37159.50	91.95	0.865	0.30( 0.26)	0.88	32664.6	11801.00
10	39032.00	102.26	0.827	0.30( 0.27)	0.89	37985.7	11530.00
11	39756.90	107.86	0.806	0.30( 0.27)	0.90	41594.3	13510.00
12	40473.07	113.64	0.785	0.30( 0.27)	0.90	45197.4	13010.00
13	41878.05	125.04	0.750	0.30( 0.28)	0.92	52796.6	11130.00
14	41428.31	131.16	0.737	0.30( 0.28)	0.92	55723.2	12300.00
15	40606.04	140.03	0.718	0.30( 0.28)	0.93	59983.8	12400.00
16	39509.61	149.67	0.697	0.30( 0.28)	0.93	63385.3	12201.00
17	38502.93	157.28	0.680	0.30( 0.28)	0.93	65278.4	12231.00
18	37460.15	164.90	0.664	0.30( 0.28)	0.93	66831.1	10400.00
19	35846.78	174.56	0.643	0.30( 0.28)	0.93	68277.5	12010.00
20	34772.71	180.11	0.631	0.30( 0.28)	0.93	68540.1	10210.00
21	30311.39	211.23	0.602	0.30( 0.28)	0.93	69299.8	10100.00

TOTAL AREA (ACRES) = 69299.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41878.05 Tc(MIN.) = 125.040  
 EFFECTIVE AREA(ACRES) = 52796.59 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA(ACRES) = 69299.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13920.00 TO NODE 13921.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 118.00 DOWNSTREAM(FEET) = 115.28  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 335.44 CHANNEL SLOPE = 0.0081  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 13.39  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.749  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.30	0.30	0.658	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.658  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41911.42  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 20.39  
 AVERAGE FLOW DEPTH(FEET) = 13.39 TRAVEL TIME(MIN.) = 0.27  
 Tc(MIN.) = 125.31  
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 66.74  
 EFFECTIVE AREA(ACRES) = 52930.89 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69434.1 PEAK FLOW RATE(CFS) = 41878.05  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 13.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 13.38 FLOW VELOCITY(FEET/SEC.) = 20.38  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13921.00 = 136971.41 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13921.00 TO NODE 14010.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 115.28 DOWNSTREAM(FEET) = 100.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1396.08 CHANNEL SLOPE = 0.0109  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 12.37  
 \* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.747  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.27	0.30	0.723	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.723  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41901.03  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 22.67  
 AVERAGE FLOW DEPTH(FEET) = 12.36 TRAVEL TIME(MIN.) = 1.03  
 Tc(MIN.) = 126.34  
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 45.96  
 EFFECTIVE AREA(ACRES) = 53027.16 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69530.4 PEAK FLOW RATE(CFS) = 41878.05  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 12.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 12.36 FLOW VELOCITY(FEET/SEC.) = 22.67  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 69530.4 TC (MIN.) = 126.34  
 EFFECTIVE AREA (ACRES) = 53027.16 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.917  
 PEAK FLOW RATE (CFS) = 41878.05

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20168.63	18.48	2.103	0.30 ( 0.24)	0.80	3278.3	13900.00
2	20635.52	20.08	1.976	0.30 ( 0.24)	0.80	3559.6	13889.00
3	25272.06	35.88	1.404	0.30 ( 0.24)	0.80	7211.1	13870.00
4	29205.51	48.17	1.197	0.30 ( 0.24)	0.80	11412.2	110.00
5	30787.92	54.55	1.111	0.30 ( 0.24)	0.80	14130.9	130.00
6	32097.16	60.16	1.041	0.30 ( 0.24)	0.81	16829.1	50220.00
7	34547.29	74.50	0.960	0.30 ( 0.25)	0.84	23937.4	390.00
8	36233.34	86.88	0.890	0.30 ( 0.26)	0.87	30033.5	13100.00
9	37159.50	93.30	0.860	0.30 ( 0.26)	0.88	32895.1	11801.00
10	39032.00	103.58	0.822	0.30 ( 0.27)	0.89	38216.3	11530.00
11	39756.90	109.18	0.801	0.30 ( 0.27)	0.90	41824.9	13510.00
12	40473.07	114.95	0.780	0.30 ( 0.27)	0.90	45428.0	13010.00
13	41878.05	126.34	0.747	0.30 ( 0.28)	0.92	53027.2	11130.00
14	41428.31	132.47	0.734	0.30 ( 0.28)	0.92	55953.7	12300.00
15	40606.04	141.34	0.715	0.30 ( 0.28)	0.93	60214.3	12400.00
16	39509.61	151.00	0.694	0.30 ( 0.28)	0.93	63615.9	12201.00
17	38502.93	158.62	0.677	0.30 ( 0.28)	0.93	65508.9	12231.00
18	37460.15	166.24	0.661	0.30 ( 0.28)	0.93	67061.7	10400.00
19	35846.78	175.92	0.640	0.30 ( 0.28)	0.93	68508.1	12010.00
20	34772.71	181.48	0.630	0.30 ( 0.28)	0.93	68770.6	10210.00
21	30311.39	212.66	0.600	0.30 ( 0.28)	0.93	69530.4	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* SAN JUAN CREEK WATERSHED STUDY - RATIONAL METHOD \*  
\* REGIONAL WATERSHED S19- FREE DRAINING \*  
\* 50-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV19.DAT  
TIME/DATE OF STUDY: 11:48 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.535
- 2) 10.00; 3.529
- 3) 15.00; 2.693
- 4) 20.00; 2.246
- 5) 25.00; 1.938
- 6) 30.00; 1.744
- 7) 40.00; 1.475
- 8) 50.00; 1.313
- 9) 60.00; 1.214
- 10) 90.00; 1.010
- 11) 120.00; 0.880
- 12) 180.00; 0.760
- 13) 360.00; 0.566
- 14) 1200.00; 0.250

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 295.79  
ELEVATION DATA: UPSTREAM(FEET) = 2369.48 DOWNSTREAM(FEET) = 2332.92

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.203  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 4.651  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL ".4 DWELLING/ACRE"	-	1.62	0.30	0.999	0	7.20

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
SUBAREA RUNOFF(CFS) = 6.34  
TOTAL AREA(ACRES) = 1.62 PEAK FLOW RATE(CFS) = 6.34

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11901.00 TO NODE 11902.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2332.92 DOWNSTREAM(FEET) = 2297.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 664.26 CHANNEL SLOPE = 0.0530  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.57  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.443  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.35	0.30	0.906	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 18.40  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.34  
AVERAGE FLOW DEPTH(FEET) = 0.50 TRAVEL TIME(MIN.) = 3.31  
Tc(MIN.) = 10.52  
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 23.83  
EFFECTIVE AREA(ACRES) = 9.97 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 28.41  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 3.90  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.00 = 960.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.00 TO NODE 11902.50 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2297.70 DOWNSTREAM(FEET) = 2263.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 928.77 CHANNEL SLOPE = 0.0369  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.28  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.887

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.48	0.30	0.904	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 69.30  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.65  
AVERAGE FLOW DEPTH(FEET) = 1.20 TRAVEL TIME(MIN.) = 3.33  
Tc(MIN.) = 13.84

SUBAREA AREA(ACRES) = 34.48 SUBAREA RUNOFF(CFS) = 81.16  
EFFECTIVE AREA(ACRES) = 44.45 AREA-AVERAGED Fm(INCH/HR) = 0.27  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA(ACRES) = 44.5 PEAK FLOW RATE(CFS) = 104.58  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.51 FLOW VELOCITY(FEET/SEC.) = 5.30  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.50 = 1888.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.50 TO NODE 11903.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2263.40 DOWNSTREAM(FEET) = 2252.14  
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.50 CHANNEL SLOPE = 0.0126  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.32  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.451

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.65	0.30	0.958	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.958  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 127.65  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.87  
AVERAGE FLOW DEPTH(FEET) = 2.27 TRAVEL TIME(MIN.) = 3.86

Tc(MIN.) = 17.70  
SUBAREA AREA(ACRES) = 23.65 SUBAREA RUNOFF(CFS) = 46.06  
EFFECTIVE AREA(ACRES) = 68.10 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 68.1 PEAK FLOW RATE(CFS) = 133.24  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.32 FLOW VELOCITY(FEET/SEC.) = 3.91  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11903.00 = 2784.32 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11903.00 TO NODE 11904.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2252.14 DOWNSTREAM(FEET) = 2186.04  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1924.35 CHANNEL SLOPE = 0.0343  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.21  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.067

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	68.53	0.30	0.961	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 188.28  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.16  
AVERAGE FLOW DEPTH(FEET) = 2.14 TRAVEL TIME(MIN.) = 5.20  
Tc(MIN.) = 22.91

SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 109.71  
EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 219.39  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.32 FLOW VELOCITY(FEET/SEC.) = 6.45  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.86



\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.901  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	63.15	0.30	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 264.91  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.57  
 AVERAGE FLOW DEPTH (FEET) = 1.83 TRAVEL TIME (MIN.) = 3.04  
 Tc (MIN.) = 25.94  
 SUBAREA AREA (ACRES) = 63.15 SUBAREA RUNOFF (CFS) = 91.02  
 EFFECTIVE AREA (ACRES) = 199.78 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 199.8 PEAK FLOW RATE (CFS) = 290.04  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.93  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.93 FLOW VELOCITY (FEET/SEC.) = 10.86  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 -----  
 ELEVATION DATA: UPSTREAM (FEET) = 1957.34 DOWNSTREAM (FEET) = 1244.16  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2498.96 CHANNEL SLOPE = 0.2854  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.68  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.797  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	84.87	0.30	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 347.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.54  
 AVERAGE FLOW DEPTH (FEET) = 1.67 TRAVEL TIME (MIN.) = 2.68  
 Tc (MIN.) = 28.62  
 SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 114.38  
 EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 385.73  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.77  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.77 FLOW VELOCITY (FEET/SEC.) = 16.06  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 -----  
 ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.70  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.659  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	199.43	0.30	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 507.80  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.43  
 AVERAGE FLOW DEPTH (FEET) = 2.67 TRAVEL TIME (MIN.) = 4.52  
 Tc (MIN.) = 33.14  
 SUBAREA AREA (ACRES) = 199.43 SUBAREA RUNOFF (CFS) = 244.01  
 EFFECTIVE AREA (ACRES) = 484.08 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 484.1 PEAK FLOW RATE (CFS) = 594.38  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.90  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.90 FLOW VELOCITY (FEET/SEC.) = 12.99  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 -----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 33.14  
 RAINFALL INTENSITY (INCH/HR) = 1.66  
 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98  
 EFFECTIVE STREAM AREA (ACRES) = 484.08  
 TOTAL STREAM AREA (ACRES) = 484.08  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 594.38

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----  
 INITIAL SUBAREA FLOW-LENGTH (FEET) = 517.62  
 ELEVATION DATA: UPSTREAM (FEET) = 2531.88 DOWNSTREAM (FEET) = 2441.33

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.185  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.164  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	-	3.46	0.30	1.000	0	12.19

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 8.92  
 TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 8.92

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2441.33 DOWNSTREAM(FEET) = 2382.20  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 397.30 CHANNEL SLOPE = 0.1488  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.35  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.909

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.79	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.73  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.35  
 AVERAGE FLOW DEPTH(FEET) = 0.34 TRAVEL TIME(MIN.) = 1.52  
 Tc(MIN.) = 13.71  
 SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 13.60  
 EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 21.72  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.41 FLOW VELOCITY(FEET/SEC.) = 4.93  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2382.20 DOWNSTREAM(FEET) = 2263.77  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.47 CHANNEL SLOPE = 0.0626  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.16

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.308  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	54.30	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 71.48  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.63  
 AVERAGE FLOW DEPTH(FEET) = 1.05 TRAVEL TIME(MIN.) = 5.60  
 Tc(MIN.) = 19.31  
 SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 98.12  
 EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 114.83  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.38 FLOW VELOCITY(FEET/SEC.) = 6.54  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 2263.77 DOWNSTREAM(FEET) = 1845.23  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1957.31 CHANNEL SLOPE = 0.2138  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.23  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.110

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	65.14	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 167.95  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.26  
 AVERAGE FLOW DEPTH(FEET) = 1.20 TRAVEL TIME(MIN.) = 2.90  
 Tc(MIN.) = 22.21  
 SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 106.12  
 EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 209.64  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.37 FLOW VELOCITY(FEET/SEC.) = 12.03  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.69
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.966

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.52 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 268.54

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.02

AVERAGE FLOW DEPTH(FEET) = 1.67 TRAVEL TIME(MIN.) = 2.34

Tc(MIN.) = 24.55

SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 117.73

EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 310.69

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.81 FLOW VELOCITY(FEET/SEC.) = 12.58

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.42
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.833

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 70.48 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 359.32

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.08

AVERAGE FLOW DEPTH(FEET) = 2.41 TRAVEL TIME(MIN.) = 3.16

Tc(MIN.) = 27.70

SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 97.25

EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 383.17
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.49 FLOW VELOCITY(FEET/SEC.) = 10.27

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.47
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.747

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 232.20 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 534.42

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.62

AVERAGE FLOW DEPTH(FEET) = 2.45 TRAVEL TIME(MIN.) = 2.22

Tc(MIN.) = 29.92

SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 302.42

EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 664.09

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.75

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.75 FLOW VELOCITY(FEET/SEC.) = 15.57

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.51
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.653

SUBAREA LOSS RATE DATA(AMC II):

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

USER-DEFINED - 110.82 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 731.56  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.30  
 AVERAGE FLOW DEPTH (FEET) = 3.50 TRAVEL TIME (MIN.) = 3.47  
 Tc (MIN.) = 33.40  
 SUBAREA AREA (ACRES) = 110.82 SUBAREA RUNOFF (CFS) = 134.92  
 EFFECTIVE AREA (ACRES) = 620.71 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 620.7 PEAK FLOW RATE (CFS) = 755.69  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.56 FLOW VELOCITY (FEET/SEC.) = 12.41  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<  
 =====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 33.40  
 RAINFALL INTENSITY (INCH/HR) = 1.65  
 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00  
 EFFECTIVE STREAM AREA (ACRES) = 620.71  
 TOTAL STREAM AREA (ACRES) = 620.71  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 755.69

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	594.38	33.14	1.659	0.30 ( 0.30)	0.98	484.1	11900.00
2	755.69	33.40	1.653	0.30 ( 0.30)	1.00	620.7	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1348.14	33.14	1.659	0.30 ( 0.30)	0.99	1100.1	11900.00
2	1347.14	33.40	1.653	0.30 ( 0.30)	0.99	1104.8	11910.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE (CFS) = 1348.14 Tc (MIN.) = 33.14  
 EFFECTIVE AREA (ACRES) = 1100.13 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA (ACRES) = 1104.8  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11920.00 TO NODE 11921.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 873.95 DOWNSTREAM (FEET) = 827.94  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1417.25 CHANNEL SLOPE = 0.0325  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.07  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.599

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 107.47 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1410.97  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.52  
 AVERAGE FLOW DEPTH (FEET) = 6.06 TRAVEL TIME (MIN.) = 2.25  
 Tc (MIN.) = 35.39  
 SUBAREA AREA (ACRES) = 107.47 SUBAREA RUNOFF (CFS) = 125.65  
 EFFECTIVE AREA (ACRES) = 1207.60 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA (ACRES) = 1212.3 PEAK FLOW RATE (CFS) = 1413.99  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 6.07 FLOW VELOCITY (FEET/SEC.) = 10.52  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 827.94 DOWNSTREAM (FEET) = 753.55  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1886.43 CHANNEL SLOPE = 0.0394  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.18  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.527

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 344.27 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1604.04  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.68  
 AVERAGE FLOW DEPTH (FEET) = 6.15 TRAVEL TIME (MIN.) = 2.69  
 Tc (MIN.) = 38.08  
 SUBAREA AREA (ACRES) = 344.27 SUBAREA RUNOFF (CFS) = 380.08  
 EFFECTIVE AREA (ACRES) = 1551.87 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 1556.5 PEAK FLOW RATE(CFS) = 1715.40  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.35 FLOW VELOCITY(FEET/SEC.) = 11.89  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 753.55 DOWNSTREAM(FEET) = 641.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.88 CHANNEL SLOPE = 0.0391  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.53  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.442

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1800.27

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.01

AVERAGE FLOW DEPTH(FEET) = 6.51 TRAVEL TIME(MIN.) = 3.97

Tc(MIN.) = 42.05

SUBAREA AREA(ACRES) = 165.18 SUBAREA RUNOFF(CFS) = 169.74

EFFECTIVE AREA(ACRES) = 1717.05 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 1721.7 PEAK FLOW RATE(CFS) = 1766.60

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 6.46 FLOW VELOCITY(FEET/SEC.) = 11.94  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11923.00 = 19034.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11923.00 TO NODE 11924.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 641.58 DOWNSTREAM(FEET) = 579.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1844.02 CHANNEL SLOPE = 0.0335  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.08

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.399

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 433.73 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1981.09  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.61  
AVERAGE FLOW DEPTH(FEET) = 7.07 TRAVEL TIME(MIN.) = 2.65  
Tc(MIN.) = 44.70  
SUBAREA AREA(ACRES) = 433.73 SUBAREA RUNOFF(CFS) = 428.97  
EFFECTIVE AREA(ACRES) = 2150.78 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2155.4 PEAK FLOW RATE(CFS) = 2129.29  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 7.31 FLOW VELOCITY(FEET/SEC.) = 11.83  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11924.00 = 20878.18 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11924.00 TO NODE 11925.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 579.89 DOWNSTREAM(FEET) = 494.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2756.15 CHANNEL SLOPE = 0.0311  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.65

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.335

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	265.42	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2252.94

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.68

AVERAGE FLOW DEPTH(FEET) = 7.63 TRAVEL TIME(MIN.) = 3.93

Tc(MIN.) = 48.63

SUBAREA AREA(ACRES) = 265.42 SUBAREA RUNOFF(CFS) = 247.29

EFFECTIVE AREA(ACRES) = 2416.20 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 2420.9 PEAK FLOW RATE(CFS) = 2253.25

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 7.63 FLOW VELOCITY(FEET/SEC.) = 11.68  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11925.00 = 23634.33 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11925.00 TO NODE 11926.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 494.12 DOWNSTREAM(FEET) = 458.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1922.70 CHANNEL SLOPE = 0.0186  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.68  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.294

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	97.46	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2296.83  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.69  
AVERAGE FLOW DEPTH(FEET) = 8.67 TRAVEL TIME(MIN.) = 3.31  
Tc(MIN.) = 51.94  
SUBAREA AREA(ACRES) = 97.46 SUBAREA RUNOFF(CFS) = 87.17  
EFFECTIVE AREA(ACRES) = 2513.66 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2518.3 PEAK FLOW RATE(CFS) = 2253.25  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 8.60 FLOW VELOCITY(FEET/SEC.) = 9.64  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11926.00 = 25557.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 458.40 DOWNSTREAM(FEET) = 399.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2170.13 CHANNEL SLOPE = 0.0274  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.90  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.262

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.83	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2276.54  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.17  
AVERAGE FLOW DEPTH(FEET) = 7.90 TRAVEL TIME(MIN.) = 3.24  
Tc(MIN.) = 55.18  
SUBAREA AREA(ACRES) = 53.83 SUBAREA RUNOFF(CFS) = 46.60  
EFFECTIVE AREA(ACRES) = 2567.49 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 2572.1 PEAK FLOW RATE(CFS) = 2253.25  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 7.86 FLOW VELOCITY(FEET/SEC.) = 11.14  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 10  
-----

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: P401XX50.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	850.75	25.74	0.30( 0.30)	1.00	624.8	40130.00
2	844.35	27.56	0.30( 0.30)	1.00	654.2	40100.00
TOTAL AREA(ACRES) =						654.2

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 11  
-----

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

\*\*\*\*\*  
\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2253.25	55.18	1.262	0.30( 0.30)	1.00	2567.5	11900.00
2	2248.71	55.45	1.259	0.30( 0.30)	1.00	2572.1	11910.00
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	850.75	25.74	1.909	0.30( 0.30)	1.00	624.8	40130.00
2	844.35	27.56	1.839	0.30( 0.30)	1.00	654.2	40100.00
LONGEST FLOWPATH FROM NODE 40100.00 TO NODE 11927.00 = 10245.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2608.92	25.74	1.909	0.30( 0.30)	1.00	1822.6	40130.00
2	2644.22	27.56	1.839	0.30( 0.30)	1.00	1936.6	40100.00
3	2781.01	55.18	1.262	0.30( 0.30)	1.00	3221.7	11900.00
4	2775.02	55.45	1.259	0.30( 0.30)	1.00	3226.4	11910.00
TOTAL AREA(ACRES) =						3226.4	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
PEAK FLOW RATE(CFS) = 2781.01 Tc(MIN.) = 55.180

EFFECTIVE AREA(ACRES) = 3221.69 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3226.4  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.50 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 399.00 DOWNSTREAM(FEET) = 384.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 986.26 CHANNEL SLOPE = 0.0152  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.89  
CHANNEL FLOW THRU SUBAREA(CFS) = 2781.01  
FLOW VELOCITY(FEET/SEC.) = 9.44 FLOW DEPTH(FEET) = 9.89  
TRAVEL TIME(MIN.) = 1.74 Tc(MIN.) = 56.92  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.50 = 28713.42 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 56.92  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.244  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 2.40 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 1.70 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 1.50 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.30 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.90 0.30 1.000 66  
NATURAL FAIR COVER  
"GRASS" B 0.60 0.30 1.000 69  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 8.40 SUBAREA RUNOFF(CFS) = 7.14  
EFFECTIVE AREA(ACRES) = 3230.09 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3234.8 PEAK FLOW RATE(CFS) = 2781.01  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 56.92  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.244  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.10 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 0.50 SUBAREA RUNOFF(CFS) = 0.43  
EFFECTIVE AREA(ACRES) = 3230.59 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3235.2 PEAK FLOW RATE(CFS) = 2781.01  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 56.92  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.244  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.70 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.20 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.10 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 2.00 SUBAREA RUNOFF(CFS) = 1.70  
EFFECTIVE AREA(ACRES) = 3232.59 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 3237.2 PEAK FLOW RATE(CFS) = 2781.01  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11928.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 384.00 DOWNSTREAM(FEET) = 359.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 647.19 CHANNEL SLOPE = 0.0386  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.05  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.237  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	78.01	0.30	0.984	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.984  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2814.06  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.40  
 AVERAGE FLOW DEPTH (FEET) = 8.05 TRAVEL TIME (MIN.) = 0.80  
 Tc (MIN.) = 57.73  
 SUBAREA AREA (ACRES) = 78.01 SUBAREA RUNOFF (CFS) = 66.09  
 EFFECTIVE AREA (ACRES) = 3310.60 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3315.3 PEAK FLOW RATE (CFS) = 2792.98  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 8.02 FLOW VELOCITY (FEET/SEC.) = 13.37  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29360.61 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11928.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 57.73  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.237  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND, GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.60	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 1.70 SUBAREA RUNOFF (CFS) = 1.43  
 EFFECTIVE AREA (ACRES) = 3312.30 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3317.0 PEAK FLOW RATE (CFS) = 2794.41

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 359.00 DOWNSTREAM (FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1322.66 CHANNEL SLOPE = 0.0131  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 10.25  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.213  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.18	0.30	0.890	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.890  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2797.90  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.95  
 AVERAGE FLOW DEPTH (FEET) = 10.25 TRAVEL TIME (MIN.) = 2.46  
 Tc (MIN.) = 60.19  
 SUBAREA AREA (ACRES) = 8.18 SUBAREA RUNOFF (CFS) = 6.96  
 EFFECTIVE AREA (ACRES) = 3320.48 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3325.1 PEAK FLOW RATE (CFS) = 2794.41  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 10.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 10.24 FLOW VELOCITY (FEET/SEC.) = 8.95  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 60.19  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.213  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	1.90	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.60	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 2.50 SUBAREA RUNOFF (CFS) = 2.05  
 EFFECTIVE AREA (ACRES) = 3322.98 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3327.6 PEAK FLOW RATE (CFS) = 2794.41  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<



PEAK FLOWRATE TABLE FILE NAME: S18X50.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18863.84	37.77	0.30 ( 0.30)	1.00	7696.5	11831.00
2	19171.93	40.18	0.30 ( 0.30)	1.00	8206.0	11801.00
3	20870.42	51.52	0.30 ( 0.30)	1.00	11178.6	11530.00
4	21741.74	56.15	0.30 ( 0.30)	1.00	12836.1	11701.00
5	22206.97	58.56	0.30 ( 0.30)	1.00	13761.0	11000.00
6	24578.79	68.37	0.30 ( 0.30)	1.00	18741.7	11330.00
7	24998.78	70.58	0.30 ( 0.30)	1.00	19900.2	10800.00
8	25620.24	74.96	0.30 ( 0.30)	1.00	22211.8	11130.00
9	25459.58	83.55	0.30 ( 0.30)	1.00	25307.4	11620.00
10	25389.29	85.79	0.30 ( 0.30)	1.00	26059.8	11600.00
11	25269.09	87.43	0.30 ( 0.30)	1.00	26526.1	10600.00
12	25052.94	92.79	0.30 ( 0.30)	1.00	28070.1	11201.00
13	24726.86	98.42	0.30 ( 0.30)	1.00	29254.4	10710.00
14	24565.08	100.41	0.30 ( 0.30)	1.00	29586.3	10410.00
15	24070.54	105.10	0.30 ( 0.30)	1.00	30247.3	10700.00
16	23353.04	112.10	0.30 ( 0.30)	1.00	31166.7	10400.00
17	23163.67	114.42	0.30 ( 0.30)	1.00	31437.3	10200.00
18	22543.84	120.36	0.30 ( 0.30)	1.00	32015.5	10300.00
19	21907.93	125.43	0.30 ( 0.30)	1.00	32220.3	10210.00
20	19363.37	152.55	0.30 ( 0.30)	1.00	32916.6	10100.00
TOTAL AREA (ACRES) =						32916.6

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FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	0.30 ( 0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	0.30 ( 0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	0.30 ( 0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	0.30 ( 0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	0.30 ( 0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.30 ( 0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.30 ( 0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.30 ( 0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.30 ( 0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.30 ( 0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.30 ( 0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.30 ( 0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.30 ( 0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =						13237.1

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FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM	Q	Tc	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(ACRES)	NODE	
1	6814.52	66.91	0.30 ( 0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	0.30 ( 0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	0.30 ( 0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	0.30 ( 0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	0.30 ( 0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.30 ( 0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.30 ( 0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.30 ( 0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.30 ( 0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.30 ( 0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.30 ( 0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.30 ( 0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.30 ( 0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =				13237.1		

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FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	1.167	0.30 ( 0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	1.074	0.30 ( 0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	1.065	0.30 ( 0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	1.047	0.30 ( 0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	1.018	0.30 ( 0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.995	0.30 ( 0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.977	0.30 ( 0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.958	0.30 ( 0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.947	0.30 ( 0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.935	0.30 ( 0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.931	0.30 ( 0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.881	0.30 ( 0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.863	0.30 ( 0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18863.84	37.77	1.535	0.30 ( 0.30)	1.00	7696.5	11831.00
2	19171.93	40.18	1.472	0.30 ( 0.30)	1.00	8206.0	11801.00
3	20870.42	51.52	1.298	0.30 ( 0.30)	1.00	11178.6	11530.00
4	21741.74	56.15	1.252	0.30 ( 0.30)	1.00	12836.1	11701.00
5	22206.97	58.56	1.228	0.30 ( 0.30)	1.00	13761.0	11000.00
6	24578.79	68.37	1.157	0.30 ( 0.30)	1.00	18741.7	11330.00
7	24998.78	70.58	1.142	0.30 ( 0.30)	1.00	19900.2	10800.00
8	25620.24	74.96	1.112	0.30 ( 0.30)	1.00	22211.8	11130.00
9	25459.58	83.55	1.054	0.30 ( 0.30)	1.00	25307.4	11620.00
10	25389.29	85.79	1.039	0.30 ( 0.30)	1.00	26059.8	11600.00
11	25269.09	87.43	1.027	0.30 ( 0.30)	1.00	26526.1	10600.00
12	25052.94	92.79	0.998	0.30 ( 0.30)	1.00	28070.1	11201.00
13	24726.86	98.42	0.974	0.30 ( 0.30)	1.00	29254.4	10710.00
14	24565.08	100.41	0.965	0.30 ( 0.30)	1.00	29586.3	10410.00
15	24070.54	105.10	0.945	0.30 ( 0.30)	1.00	30247.3	10700.00

16 23353.04 112.10 0.914 0.30( 0.30) 1.00 31166.7 10400.00  
 17 23163.67 114.42 0.904 0.30( 0.30) 1.00 31437.3 10200.00  
 18 22543.84 120.36 0.879 0.30( 0.30) 1.00 32015.5 10300.00  
 19 21907.93 125.43 0.869 0.30( 0.30) 1.00 32220.3 10210.00  
 20 19363.37 152.55 0.815 0.30( 0.30) 1.00 32916.6 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24335.68	37.77	1.535	0.30( 0.30)	0.99	11305.9	11831.00
2	24697.44	40.18	1.472	0.30( 0.30)	0.99	12045.5	11801.00
3	26906.53	51.52	1.298	0.30( 0.30)	0.99	16101.8	11530.00
4	28019.04	56.15	1.252	0.30( 0.30)	0.99	18201.1	11701.00
5	28590.34	58.56	1.228	0.30( 0.30)	0.99	19356.3	11000.00
6	31039.95	66.91	1.167	0.30( 0.30)	0.99	24392.9	12500.00
7	31468.57	68.37	1.157	0.30( 0.30)	0.99	25346.5	11330.00
8	32002.18	70.58	1.142	0.30( 0.30)	0.99	26824.3	10800.00
9	32849.10	74.96	1.112	0.30( 0.30)	0.99	29769.7	11130.00
10	33031.62	80.53	1.074	0.30( 0.30)	0.99	32580.5	12300.00
11	33114.20	81.91	1.065	0.30( 0.30)	0.99	33368.0	12330.00
12	33186.01	83.55	1.054	0.30( 0.30)	0.99	34276.0	11620.00
13	33217.38	84.57	1.047	0.30( 0.30)	0.99	34810.9	12410.00
14	33238.92	85.79	1.039	0.30( 0.30)	0.99	35437.1	11600.00
15	33199.04	87.43	1.027	0.30( 0.30)	0.99	36189.6	10600.00
16	33210.37	88.75	1.018	0.30( 0.30)	0.99	36799.1	12400.00
17	33179.69	92.79	0.998	0.30( 0.30)	0.99	38550.0	11201.00
18	33161.66	93.51	0.995	0.30( 0.30)	0.99	38804.9	12211.00
19	33011.46	97.70	0.977	0.30( 0.30)	0.99	40281.7	12201.00
20	32963.01	98.42	0.974	0.30( 0.30)	0.99	40515.8	10710.00
21	32783.54	100.41	0.965	0.30( 0.30)	0.99	41070.9	10410.00
22	32611.09	101.92	0.958	0.30( 0.30)	0.99	41453.0	12111.00
23	32307.60	104.56	0.947	0.30( 0.30)	0.99	42138.9	12231.00
24	32244.16	105.10	0.945	0.30( 0.30)	0.99	42271.8	10700.00
25	31982.44	107.37	0.935	0.30( 0.30)	0.99	42812.2	12101.10
26	31863.89	108.34	0.931	0.30( 0.30)	0.99	43030.2	12261.00
27	31330.23	112.10	0.914	0.30( 0.30)	0.99	43773.2	10400.00
28	31049.28	114.42	0.904	0.30( 0.30)	0.99	44197.6	10200.00
29	30284.07	119.74	0.881	0.30( 0.30)	0.99	45068.3	12010.00
30	30186.30	120.36	0.879	0.30( 0.30)	0.99	45137.4	10300.00
31	29278.79	125.43	0.869	0.30( 0.30)	0.99	45415.2	10210.00
32	28847.68	128.35	0.863	0.30( 0.30)	0.99	45532.4	12000.00
33	25964.49	152.55	0.815	0.30( 0.30)	0.99	46153.7	10100.00
TOTAL AREA (ACRES) =		46153.7					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 33238.92 Tc(MIN.) = 85.792  
 EFFECTIVE AREA(ACRES) = 35437.09 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 46153.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.035

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.30	0.987	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33243.70					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.02					
AVERAGE FLOW DEPTH(FEET) = 9.03 TRAVEL TIME(MIN.) = 0.59					
Tc(MIN.) = 86.38					
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 9.55					
EFFECTIVE AREA(ACRES) = 35451.46 AREA-AVERAGED Fm(INCH/HR) = 0.30					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 33238.92					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0					
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040					
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03					

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.03 FLOW VELOCITY(FEET/SEC.) = 15.01  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

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 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<  
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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24335.68	38.43	1.517	0.30( 0.30)	0.99	11320.3	11831.00
2	24697.44	40.83	1.461	0.30( 0.30)	0.99	12059.9	11801.00
3	26906.53	52.16	1.292	0.30( 0.30)	0.99	16116.2	11530.00
4	28019.04	56.77	1.246	0.30( 0.30)	0.99	18215.4	11701.00
5	28590.34	59.18	1.222	0.30( 0.30)	0.99	19370.6	11000.00
6	31039.95	67.51	1.163	0.30( 0.30)	0.99	24407.3	12500.00
7	31468.57	68.97	1.153	0.30( 0.30)	0.99	25360.9	11330.00
8	32002.18	71.18	1.138	0.30( 0.30)	0.99	26838.7	10800.00
9	32849.10	75.55	1.108	0.30( 0.30)	0.99	29784.1	11130.00
10	33031.62	81.12	1.070	0.30( 0.30)	0.99	32594.9	12300.00
11	33114.20	82.50	1.061	0.30( 0.30)	0.99	33382.4	12330.00
12	33186.01	84.14	1.050	0.30( 0.30)	0.99	34290.4	11620.00
13	33217.38	85.16	1.043	0.30( 0.30)	0.99	34825.3	12410.00
14	33238.92	86.38	1.035	0.30( 0.30)	0.99	35451.5	11600.00
15	33199.04	88.02	1.023	0.30( 0.30)	0.99	36204.0	10600.00
16	33210.37	89.34	1.014	0.30( 0.30)	0.99	36813.4	12400.00
17	33179.69	93.38	0.995	0.30( 0.30)	0.99	38564.4	11201.00
18	33161.66	94.10	0.992	0.30( 0.30)	0.99	38819.3	12211.00
19	33011.46	98.29	0.974	0.30( 0.30)	0.99	40296.1	12201.00
20	32963.01	99.01	0.971	0.30( 0.30)	0.99	40530.1	10710.00

21	32783.54	101.00	0.962	0.30 ( 0.30)	0.99	41085.2	10410.00
22	32611.09	102.51	0.956	0.30 ( 0.30)	0.99	41467.3	12111.00
23	32307.60	105.16	0.944	0.30 ( 0.30)	0.99	42153.2	12231.00
24	32244.16	105.69	0.942	0.30 ( 0.30)	0.99	42286.1	10700.00
25	31982.44	107.97	0.932	0.30 ( 0.30)	0.99	42826.5	12101.10
26	31863.89	108.94	0.928	0.30 ( 0.30)	0.99	43044.6	12261.00
27	31330.23	112.70	0.912	0.30 ( 0.30)	0.99	43787.5	10400.00
28	31049.28	115.02	0.902	0.30 ( 0.30)	0.99	44211.9	10200.00
29	30284.07	120.35	0.879	0.30 ( 0.30)	0.99	45082.6	12010.00
30	30186.30	120.97	0.878	0.30 ( 0.30)	0.99	45151.8	10300.00
31	29278.79	126.04	0.868	0.30 ( 0.30)	0.99	45429.6	10210.00
32	28847.68	128.97	0.862	0.30 ( 0.30)	0.99	45546.8	12000.00
33	25964.49	153.19	0.814	0.30 ( 0.30)	0.99	46168.0	10100.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2608.92	30.83	1.722	0.30 ( 0.30)	1.00	1923.9	40130.00
2	2644.22	32.64	1.673	0.30 ( 0.30)	1.00	2037.9	40100.00
3	2794.41	60.19	1.213	0.30 ( 0.30)	1.00	3323.0	11900.00
4	2790.44	60.46	1.211	0.30 ( 0.30)	1.00	3327.6	11910.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25406.30	30.83	1.722	0.30 ( 0.30)	0.99	11007.2	40130.00
2	25952.56	32.64	1.673	0.30 ( 0.30)	0.99	11652.1	40100.00
3	27011.47	38.43	1.517	0.30 ( 0.30)	0.99	13628.3	11831.00
4	27386.34	40.83	1.461	0.30 ( 0.30)	0.99	14480.1	11801.00
5	29657.15	52.16	1.292	0.30 ( 0.30)	0.99	19064.5	11530.00
6	30794.82	56.77	1.246	0.30 ( 0.30)	0.99	21379.0	11701.00
7	31379.23	59.18	1.222	0.30 ( 0.30)	0.99	22646.4	11000.00
8	31682.43	60.19	1.213	0.30 ( 0.30)	0.99	23305.7	11900.00
9	31757.19	60.46	1.211	0.30 ( 0.30)	0.99	23472.2	11910.00
10	33683.59	67.51	1.163	0.30 ( 0.30)	0.99	27734.9	12500.00
11	34081.84	68.97	1.153	0.30 ( 0.30)	0.99	28688.5	11330.00
12	34569.59	71.18	1.138	0.30 ( 0.30)	0.99	30166.4	10800.00
13	35325.47	75.55	1.108	0.30 ( 0.30)	0.99	33111.7	11130.00
14	35392.14	81.12	1.070	0.30 ( 0.30)	0.99	35922.5	12300.00
15	35445.93	82.50	1.061	0.30 ( 0.30)	0.99	36710.1	12330.00
16	35483.55	84.14	1.050	0.30 ( 0.30)	0.99	37618.1	11620.00
17	35493.85	85.16	1.043	0.30 ( 0.30)	0.99	38152.9	12410.00
18	35489.87	86.38	1.035	0.30 ( 0.30)	0.99	38779.1	11600.00
19	35415.85	88.02	1.023	0.30 ( 0.30)	0.99	39531.6	10600.00
20	35399.76	89.34	1.014	0.30 ( 0.30)	0.99	40141.1	12400.00
21	35310.54	93.38	0.995	0.30 ( 0.30)	0.99	41892.0	11201.00
22	35283.00	94.10	0.992	0.30 ( 0.30)	0.99	42146.9	12211.00
23	35077.23	98.29	0.974	0.30 ( 0.30)	0.99	43623.7	12201.00
24	35019.16	99.01	0.971	0.30 ( 0.30)	0.99	43857.8	10710.00
25	34813.35	101.00	0.962	0.30 ( 0.30)	0.99	44412.9	10410.00
26	34620.89	102.51	0.956	0.30 ( 0.30)	0.99	44795.0	12111.00
27	34282.30	105.16	0.944	0.30 ( 0.30)	0.99	45480.9	12231.00
28	34211.72	105.69	0.942	0.30 ( 0.30)	0.99	45613.8	10700.00
29	33919.79	107.97	0.932	0.30 ( 0.30)	0.99	46154.2	12101.10
30	33788.43	108.94	0.928	0.30 ( 0.30)	0.99	46372.2	12261.00
31	33204.87	112.70	0.912	0.30 ( 0.30)	0.99	47115.2	10400.00

32	32893.12	115.02	0.902	0.30 ( 0.30)	0.99	47539.6	10200.00
33	32059.78	120.35	0.879	0.30 ( 0.30)	0.99	48410.3	12010.00
34	31958.21	120.97	0.878	0.30 ( 0.30)	0.99	48479.4	10300.00
35	31019.66	126.04	0.868	0.30 ( 0.30)	0.99	48757.2	10210.00
36	30570.63	128.97	0.862	0.30 ( 0.30)	0.99	48874.4	12000.00
37	27539.19	153.19	0.814	0.30 ( 0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 35493.85 Tc(MIN.) = 85.157  
EFFECTIVE AREA(ACRES) = 38152.91 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49495.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 85.16  
EFFECTIVE AREA(ACRES) = 38152.91 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994  
PEAK FLOW RATE(CFS) = 35493.85

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25406.30	30.83	1.722	0.30 ( 0.30)	0.99	11007.2	40130.00
2	25952.56	32.64	1.673	0.30 ( 0.30)	0.99	11652.1	40100.00
3	27011.47	38.43	1.517	0.30 ( 0.30)	0.99	13628.3	11831.00
4	27386.34	40.83	1.461	0.30 ( 0.30)	0.99	14480.1	11801.00
5	29657.15	52.16	1.292	0.30 ( 0.30)	0.99	19064.5	11530.00
6	30794.82	56.77	1.246	0.30 ( 0.30)	0.99	21379.0	11701.00
7	31379.23	59.18	1.222	0.30 ( 0.30)	0.99	22646.4	11000.00
8	31682.43	60.19	1.213	0.30 ( 0.30)	0.99	23305.7	11900.00
9	31757.19	60.46	1.211	0.30 ( 0.30)	0.99	23472.2	11910.00
10	33683.59	67.51	1.163	0.30 ( 0.30)	0.99	27734.9	12500.00
11	34081.84	68.97	1.153	0.30 ( 0.30)	0.99	28688.5	11330.00
12	34569.59	71.18	1.138	0.30 ( 0.30)	0.99	30166.4	10800.00
13	35325.47	75.55	1.108	0.30 ( 0.30)	0.99	33111.7	11130.00
14	35392.14	81.12	1.070	0.30 ( 0.30)	0.99	35922.5	12300.00
15	35445.93	82.50	1.061	0.30 ( 0.30)	0.99	36710.1	12330.00
16	35483.55	84.14	1.050	0.30 ( 0.30)	0.99	37618.1	11620.00
17	35493.85	85.16	1.043	0.30 ( 0.30)	0.99	38152.9	12410.00
18	35489.87	86.38	1.035	0.30 ( 0.30)	0.99	38779.1	11600.00
19	35415.85	88.02	1.023	0.30 ( 0.30)	0.99	39531.6	10600.00
20	35399.76	89.34	1.014	0.30 ( 0.30)	0.99	40141.1	12400.00
21	35310.54	93.38	0.995	0.30 ( 0.30)	0.99	41892.0	11201.00
22	35283.00	94.10	0.992	0.30 ( 0.30)	0.99	42146.9	12211.00
23	35077.23	98.29	0.974	0.30 ( 0.30)	0.99	43623.7	12201.00
24	35019.16	99.01	0.971	0.30 ( 0.30)	0.99	43857.8	10710.00
25	34813.35	101.00	0.962	0.30 ( 0.30)	0.99	44412.9	10410.00
26	34620.89	102.51	0.956	0.30 ( 0.30)	0.99	44795.0	12111.00
27	34282.30	105.16	0.944	0.30 ( 0.30)	0.99	45480.9	12231.00
28	34211.72	105.69	0.942	0.30 ( 0.30)	0.99	45613.8	10700.00
29	33919.79	107.97	0.932	0.30 ( 0.30)	0.99	46154.2	12101.10
30	33788.43	108.94	0.928	0.30 ( 0.30)	0.99	46372.2	12261.00
31	33204.87	112.70	0.912	0.30 ( 0.30)	0.99	47115.2	10400.00
32	32893.12	115.02	0.902	0.30 ( 0.30)	0.99	47539.6	10200.00
33	32059.78	120.35	0.879	0.30 ( 0.30)	0.99	48410.3	12010.00
34	31958.21	120.97	0.878	0.30 ( 0.30)	0.99	48479.4	10300.00

35	31019.66	126.04	0.868	0.30	( 0.30)	0.99	48757.2	10210.00
36	30570.63	128.97	0.862	0.30	( 0.30)	0.99	48874.4	12000.00
37	27539.19	153.19	0.814	0.30	( 0.30)	0.99	49495.7	10100.00

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END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S26- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV26.DAT  
TIME/DATE OF STUDY: 11:49 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.516
- 2) 10.00; 3.520
- 3) 15.00; 2.687
- 4) 20.00; 2.242
- 5) 25.00; 1.935
- 6) 30.00; 1.742
- 7) 40.00; 1.473
- 8) 50.00; 1.311
- 9) 60.00; 1.211
- 10) 90.00; 1.008
- 11) 120.00; 0.877
- 12) 180.00; 0.757
- 13) 360.00; 0.563
- 14) 1200.00; 0.248

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU50EV19.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25952.56	32.64	0.30 ( 0.30)	0.99	11652.1	40100.00
2	27386.34	40.83	0.30 ( 0.30)	0.99	14480.1	11801.00
3	29657.15	52.16	0.30 ( 0.30)	0.99	19064.5	11530.00
4	30794.82	56.77	0.30 ( 0.30)	0.99	21379.0	11701.00
5	31757.19	60.46	0.30 ( 0.30)	0.99	23472.2	11910.00
6	34569.59	71.18	0.30 ( 0.30)	0.99	30166.4	10800.00
7	35325.47	75.55	0.30 ( 0.30)	0.99	33111.7	11130.00
8	35445.93	82.50	0.30 ( 0.30)	0.99	36710.1	12330.00
9	35493.85	85.16	0.30 ( 0.30)	0.99	38152.9	12410.00
10	35415.85	88.02	0.30 ( 0.30)	0.99	39531.6	10600.00
11	35310.54	93.38	0.30 ( 0.30)	0.99	41892.0	11201.00
12	35077.23	98.29	0.30 ( 0.30)	0.99	43623.7	12201.00
13	34813.35	101.00	0.30 ( 0.30)	0.99	44412.9	10410.00
14	34282.30	105.16	0.30 ( 0.30)	0.99	45480.9	12231.00
15	33919.79	107.97	0.30 ( 0.30)	0.99	46154.2	12101.10
16	33204.87	112.70	0.30 ( 0.30)	0.99	47115.2	10400.00
17	32059.78	120.35	0.30 ( 0.30)	0.99	48410.3	12010.00
18	31019.66	126.04	0.30 ( 0.30)	0.99	48757.2	10210.00
19	30570.63	128.97	0.30 ( 0.30)	0.99	48874.4	12000.00
20	27539.19	153.19	0.30 ( 0.30)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25952.56	32.64	0.30 ( 0.30)	0.99	11652.1	40100.00
2	27386.34	40.83	0.30 ( 0.30)	0.99	14480.1	11801.00
3	29657.15	52.16	0.30 ( 0.30)	0.99	19064.5	11530.00
4	30794.82	56.77	0.30 ( 0.30)	0.99	21379.0	11701.00
5	31757.19	60.46	0.30 ( 0.30)	0.99	23472.2	11910.00
6	34569.59	71.18	0.30 ( 0.30)	0.99	30166.4	10800.00
7	35325.47	75.55	0.30 ( 0.30)	0.99	33111.7	11130.00
8	35445.93	82.50	0.30 ( 0.30)	0.99	36710.1	12330.00
9	35493.85	85.16	0.30 ( 0.30)	0.99	38152.9	12410.00
10	35415.85	88.02	0.30 ( 0.30)	0.99	39531.6	10600.00
11	35310.54	93.38	0.30 ( 0.30)	0.99	41892.0	11201.00
12	35077.23	98.29	0.30 ( 0.30)	0.99	43623.7	12201.00
13	34813.35	101.00	0.30 ( 0.30)	0.99	44412.9	10410.00

14	34282.30	105.16	0.30	( 0.30)	0.99	45480.9	12231.00
15	33919.79	107.97	0.30	( 0.30)	0.99	46154.2	12101.10
16	33204.87	112.70	0.30	( 0.30)	0.99	47115.2	10400.00
17	32059.78	120.35	0.30	( 0.30)	0.99	48410.3	12010.00
18	31019.66	126.04	0.30	( 0.30)	0.99	48757.2	10210.00
19	30570.63	128.97	0.30	( 0.30)	0.99	48874.4	12000.00
20	27539.19	153.19	0.30	( 0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 341.63 DOWNSTREAM (FEET) = 325.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1467.93 CHANNEL SLOPE = 0.0113  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 7.89

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.032

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.11	0.30	0.700	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 35499.07

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 18.80

AVERAGE FLOW DEPTH (FEET) = 7.89 TRAVEL TIME (MIN.) = 1.30

Tc (MIN.) = 86.46

SUBAREA AREA (ACRES) = 14.11 SUBAREA RUNOFF (CFS) = 10.44

EFFECTIVE AREA (ACRES) = 38167.02 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 49509.8 PEAK FLOW RATE (CFS) = 35493.85

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 7.89

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 7.89 FLOW VELOCITY (FEET/SEC.) = 18.80

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3050EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	98.06	16.58	0.30 ( 0.30)	0.98	48.4	600.00

TOTAL AREA (ACRES) = 48.4

\*\*\*\*\*

FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25952.56	34.08	1.632	0.30 ( 0.30)	0.99	11666.2	40100.00
2	27386.34	42.25	1.436	0.30 ( 0.30)	0.99	14494.2	11801.00
3	29657.15	53.54	1.276	0.30 ( 0.30)	0.99	19078.6	11530.00
4	30794.82	58.14	1.230	0.30 ( 0.30)	0.99	21393.1	11701.00
5	31757.19	61.81	1.199	0.30 ( 0.30)	0.99	23486.3	11910.00
6	34569.59	72.49	1.126	0.30 ( 0.30)	0.99	30180.5	10800.00
7	35325.47	76.85	1.097	0.30 ( 0.30)	0.99	33125.8	11130.00
8	35445.93	83.80	1.050	0.30 ( 0.30)	0.99	36724.2	12330.00
9	35493.85	86.46	1.032	0.30 ( 0.30)	0.99	38167.0	12410.00
10	35415.85	89.33	1.013	0.30 ( 0.30)	0.99	39545.7	10600.00
11	35310.54	94.68	0.988	0.30 ( 0.30)	0.99	41906.1	11201.00
12	35077.23	99.59	0.966	0.30 ( 0.30)	0.99	43637.8	12201.00
13	34813.35	102.31	0.954	0.30 ( 0.30)	0.99	44427.0	10410.00
14	34282.30	106.47	0.936	0.30 ( 0.30)	0.99	45495.0	12231.00
15	33919.79	109.29	0.924	0.30 ( 0.30)	0.99	46168.3	12101.10
16	33204.87	114.03	0.903	0.30 ( 0.30)	0.99	47129.3	10400.00
17	32059.78	121.70	0.874	0.30 ( 0.30)	0.99	48424.4	12010.00
18	31019.66	127.40	0.862	0.30 ( 0.30)	0.99	48771.4	10210.00
19	30570.63	130.34	0.856	0.30 ( 0.30)	0.99	48888.6	12000.00
20	27539.19	154.61	0.808	0.30 ( 0.30)	0.99	49509.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	98.06	16.58	2.546	0.30 ( 0.30)	0.98	48.4	600.00

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21373.02	16.58	2.546	0.30 ( 0.30)	0.99	5723.8	600.00
2	26010.79	34.08	1.632	0.30 ( 0.30)	0.99	11714.6	40100.00
3	27436.06	42.25	1.436	0.30 ( 0.30)	0.99	14542.6	11801.00
4	29699.86	53.54	1.276	0.30 ( 0.30)	0.99	19127.0	11530.00
5	30835.52	58.14	1.230	0.30 ( 0.30)	0.99	21441.5	11701.00
6	31796.55	61.81	1.199	0.30 ( 0.30)	0.99	23534.7	11910.00
7	34605.80	72.49	1.126	0.30 ( 0.30)	0.99	30228.9	10800.00
8	35360.39	76.85	1.097	0.30 ( 0.30)	0.99	33174.2	11130.00
9	35478.81	83.80	1.050	0.30 ( 0.30)	0.99	36772.6	12330.00
10	35525.95	86.46	1.032	0.30 ( 0.30)	0.99	38215.4	12410.00
11	35447.10	89.33	1.013	0.30 ( 0.30)	0.99	39594.1	10600.00
12	35340.70	94.68	0.988	0.30 ( 0.30)	0.99	41954.5	11201.00
13	35106.46	99.59	0.966	0.30 ( 0.30)	0.99	43686.2	12201.00
14	34842.06	102.31	0.954	0.30 ( 0.30)	0.99	44475.4	10410.00
15	34310.21	106.47	0.936	0.30 ( 0.30)	0.99	45543.4	12231.00
16	33947.17	109.29	0.924	0.30 ( 0.30)	0.99	46216.7	12101.10
17	33231.35	114.03	0.903	0.30 ( 0.30)	0.99	47177.7	10400.00
18	32084.98	121.70	0.874	0.30 ( 0.30)	0.99	48472.8	12010.00
19	31044.36	127.40	0.862	0.30 ( 0.30)	0.99	48819.8	10210.00
20	30595.07	130.34	0.856	0.30 ( 0.30)	0.99	48937.0	12000.00

21 27561.52 154.61 0.808 0.30( 0.30) 0.99 49558.2 10100.00  
TOTAL AREA (ACRES) = 49558.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 35525.95 Tc(MIN.) = 86.458  
EFFECTIVE AREA(ACRES) = 38215.42 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49558.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 325.00 DOWNSTREAM(FEET) = 313.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1377.46 CHANNEL SLOPE = 0.0087  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.50  
CHANNEL FLOW THRU SUBAREA(CFS) = 35525.95  
FLOW VELOCITY(FEET/SEC.) = 17.23 FLOW DEPTH(FEET) = 8.50  
TRAVEL TIME(MIN.) = 1.33 Tc(MIN.) = 87.79  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12602.00 = 101245.91 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 313.00 DOWNSTREAM(FEET) = 310.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 312.40 CHANNEL SLOPE = 0.0096  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.27  
CHANNEL FLOW THRU SUBAREA(CFS) = 35525.95  
FLOW VELOCITY(FEET/SEC.) = 17.79 FLOW DEPTH(FEET) = 8.27  
TRAVEL TIME(MIN.) = 0.29 Tc(MIN.) = 88.08  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4E50EVRL.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	496.95	9.20	0.30( 0.16)	0.52	148.3	800.00

2 445.44 12.80 0.30( 0.17) 0.57 168.2 818.00  
3 420.20 13.91 0.30( 0.17) 0.58 171.0 810.00  
TOTAL AREA (ACRES) = 171.0

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<  
=====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21373.02	18.51	2.375	0.30( 0.30)	0.99	5723.8	600.00
2	26010.79	35.89	1.584	0.30( 0.30)	0.99	11714.6	40100.00
3	27436.06	44.03	1.408	0.30( 0.30)	0.99	14542.6	11801.00
4	29699.86	55.26	1.258	0.30( 0.30)	0.99	19127.0	11530.00
5	30835.52	59.84	1.213	0.30( 0.30)	0.99	21441.5	11701.00
6	31796.55	63.49	1.187	0.30( 0.30)	0.99	23534.7	11910.00
7	34605.80	74.13	1.115	0.30( 0.30)	0.99	30228.9	10800.00
8	35360.39	78.48	1.086	0.30( 0.30)	0.99	33174.2	11130.00
9	35478.81	85.43	1.039	0.30( 0.30)	0.99	36772.6	12330.00
10	35525.95	88.08	1.021	0.30( 0.30)	0.99	38215.4	12410.00
11	35447.10	90.95	1.004	0.30( 0.30)	0.99	39594.1	10600.00
12	35340.70	96.31	0.980	0.30( 0.30)	0.99	41954.5	11201.00
13	35106.46	101.23	0.959	0.30( 0.30)	0.99	43686.2	12201.00
14	34842.06	103.95	0.947	0.30( 0.30)	0.99	44475.4	10410.00
15	34310.21	108.12	0.929	0.30( 0.30)	0.99	45543.4	12231.00
16	33947.17	110.95	0.917	0.30( 0.30)	0.99	46216.7	12101.10
17	33231.35	115.69	0.896	0.30( 0.30)	0.99	47177.7	10400.00
18	32084.98	123.38	0.870	0.30( 0.30)	0.99	48472.8	12010.00
19	31044.36	129.10	0.859	0.30( 0.30)	0.99	48819.8	10210.00
20	30595.07	132.05	0.853	0.30( 0.30)	0.99	48937.0	12000.00
21	27561.52	156.38	0.804	0.30( 0.30)	0.99	49558.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	496.95	9.20	3.838	0.30( 0.16)	0.52	148.3	800.00
2	445.44	12.80	3.054	0.30( 0.17)	0.57	168.2	818.00
3	420.20	13.91	2.869	0.30( 0.17)	0.58	171.0	810.00

LONGEST FLOWPATH FROM NODE 810.00 TO NODE 12603.00 = 3814.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18612.06	9.20	3.838	0.30( 0.29)	0.97	2993.9	800.00
2	20055.10	12.80	3.054	0.30( 0.29)	0.98	4124.8	818.00
3	20301.84	13.91	2.869	0.30( 0.29)	0.98	4471.9	810.00
4	21716.15	18.51	2.375	0.30( 0.29)	0.98	5894.8	600.00
5	26230.59	35.89	1.584	0.30( 0.30)	0.99	11885.6	40100.00
6	27628.44	44.03	1.408	0.30( 0.30)	0.99	14713.6	11801.00
7	29868.94	55.26	1.258	0.30( 0.30)	0.99	19298.0	11530.00
8	30997.47	59.84	1.213	0.30( 0.30)	0.99	21612.5	11701.00
9	31954.55	63.49	1.187	0.30( 0.30)	0.99	23705.7	11910.00
10	34752.59	74.13	1.115	0.30( 0.30)	0.99	30399.9	10800.00
11	35502.59	78.48	1.086	0.30( 0.30)	0.99	33345.2	11130.00

12	35613.68	85.43	1.039	0.30	( 0.30)	0.99	36943.6	12330.00
13	35658.01	88.08	1.021	0.30	( 0.30)	0.99	38386.4	12410.00
14	35576.49	90.95	1.004	0.30	( 0.30)	0.99	39765.1	10600.00
15	35466.45	96.31	0.980	0.30	( 0.30)	0.99	42125.5	11201.00
16	35228.86	101.23	0.959	0.30	( 0.30)	0.99	43857.2	12201.00
17	34962.61	103.95	0.947	0.30	( 0.30)	0.99	44646.4	10410.00
18	34427.92	108.12	0.929	0.30	( 0.30)	0.99	45714.4	12231.00
19	34062.95	110.95	0.917	0.30	( 0.30)	0.99	46387.7	12101.10
20	33343.90	115.69	0.896	0.30	( 0.30)	0.99	47348.7	10400.00
21	32193.54	123.38	0.870	0.30	( 0.30)	0.99	48643.8	12010.00
22	31151.14	129.10	0.859	0.30	( 0.30)	0.99	48990.8	10210.00
23	30700.93	132.05	0.853	0.30	( 0.30)	0.99	49108.0	12000.00
24	27659.80	156.38	0.804	0.30	( 0.30)	0.99	49729.2	10100.00
TOTAL AREA (ACRES) =		49729.2						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 35658.01 Tc (MIN.) = 88.083  
EFFECTIVE AREA (ACRES) = 38386.42 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49729.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 88.08  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.021  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	12.00	0.30	1.000	66
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	1.40	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	26.90	0.30	1.000	65
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.60	0.30	0.900	56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.996					
SUBAREA AREA (ACRES) = 43.40 SUBAREA RUNOFF (CFS) = 28.20					
EFFECTIVE AREA (ACRES) = 38429.82 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49772.6 PEAK FLOW RATE (CFS) = 35658.01					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 88.08

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.021  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.850					
SUBAREA AREA (ACRES) = 0.90 SUBAREA RUNOFF (CFS) = 0.62					
EFFECTIVE AREA (ACRES) = 38430.72 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49773.5 PEAK FLOW RATE (CFS) = 35658.01					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 88.08  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.021  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.40	0.30	0.900	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	1.00	0.30	0.900	56
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	9.00	0.30	1.000	65
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.974					
SUBAREA AREA (ACRES) = 12.20 SUBAREA RUNOFF (CFS) = 8.00					
EFFECTIVE AREA (ACRES) = 38442.92 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49785.7 PEAK FLOW RATE (CFS) = 35658.01					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

\*\*\*\*\*  
MAINLINE Tc (MIN.) = 88.08  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.021  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	5.60	0.30	1.000	65
NATURAL FAIR COVER					



"CHAPARRAL,NARROWLEAF" B 0.10 0.30 1.000 72  
 NATURAL FAIR COVER  
 "CHAPARRAL,NARROWLEAF" B 2.90 0.30 1.000 72  
 NATURAL FAIR COVER  
 "CHAPARRAL,NARROWLEAF" B 0.70 0.30 1.000 72  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 7.01  
 EFFECTIVE AREA(ACRES) = 38453.72 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49796.5 PEAK FLOW RATE(CFS) = 35658.01  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 88.08  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.021  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.00 0.30 1.000 66  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.80 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.20 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 4.10 SUBAREA RUNOFF(CFS) = 2.66  
 EFFECTIVE AREA(ACRES) = 38457.82 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49800.6 PEAK FLOW RATE(CFS) = 35658.01  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12603.00 TO NODE 12604.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 310.00 DOWNSTREAM(FEET) = 307.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 459.69 CHANNEL SLOPE = 0.0065  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.25  
 CHANNEL FLOW THRU SUBAREA(CFS) = 35658.01  
 FLOW VELOCITY(FEET/SEC.) = 15.66 FLOW DEPTH(FEET) = 9.25  
 TRAVEL TIME(MIN.) = 0.49 Tc(MIN.) = 88.57  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12604.00 = 102017.99 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12604.00 TO NODE 12604.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 88.57  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.018  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.20 0.30 1.000 65  
 PUBLIC PARK B 0.10 0.30 0.850 56  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.90 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.40 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.991  
 SUBAREA AREA(ACRES) = 1.60 SUBAREA RUNOFF(CFS) = 1.04  
 EFFECTIVE AREA(ACRES) = 38459.42 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49802.2 PEAK FLOW RATE(CFS) = 35658.01  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12604.00 TO NODE 12605.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 307.00 DOWNSTREAM(FEET) = 305.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 427.54 CHANNEL SLOPE = 0.0047  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.16  
 CHANNEL FLOW THRU SUBAREA(CFS) = 35658.01  
 FLOW VELOCITY(FEET/SEC.) = 13.99 FLOW DEPTH(FEET) = 10.16  
 TRAVEL TIME(MIN.) = 0.51 Tc(MIN.) = 89.08  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12605.00 = 102445.53 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 89.08  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.014  
 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 0.10 0.30 0.900 56  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 1.30 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.90 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 0.50 0.30 1.000 79

PUBLIC PARK B 6.60 0.30 0.850 56  
PUBLIC PARK B 0.20 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891  
SUBAREA AREA(ACRES) = 10.60 SUBAREA RUNOFF(CFS) = 7.13  
EFFECTIVE AREA(ACRES) = 38470.02 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49812.8 PEAK FLOW RATE(CFS) = 35658.01  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
MAINLINE Tc(MIN.) = 89.08  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.014  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"WOODLAND,GRASS" B 3.10 0.30 1.000 65  
RESIDENTIAL  
"5-7 DWELLINGS/ACRE" B 0.30 0.30 0.500 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969  
SUBAREA AREA(ACRES) = 4.80 SUBAREA RUNOFF(CFS) = 3.13  
EFFECTIVE AREA(ACRES) = 38474.82 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49817.6 PEAK FLOW RATE(CFS) = 35658.01  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56  
-----

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

\*\*\*\*\*  
ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.50  
CHANNEL FLOW THRU SUBAREA(CFS) = 35658.01  
FLOW VELOCITY(FEET/SEC.) = 17.31 FLOW DEPTH(FEET) = 8.50  
TRAVEL TIME(MIN.) = 2.08 Tc(MIN.) = 91.16  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
PEAK FLOWRATE TABLE FILE NAME: 4F50EVRL.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:  
STREAM Q Tc Fp(Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(ACRES)	NODE
1	1127.75	9.96	0.30( 0.24) 0.79	379.9	940.00
2	1132.57	10.20	0.30( 0.24) 0.79	387.3	930.00
3	1160.94	12.96	0.30( 0.25) 0.82	463.7	910.00
4	1137.63	16.43	0.30( 0.25) 0.85	548.3	920.00
5	1114.54	17.20	0.30( 0.25) 0.85	553.8	950.00
6	1085.95	17.85	0.30( 0.25) 0.85	553.8	900.00
TOTAL AREA(ACRES) =				553.8	

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11  
-----

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

\*\*\*\*\*  
\*\* MAIN STREAM CONFLUENCE DATA \*\*  
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER  
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE  
1 18612.06 13.04 3.014 0.30( 0.29) 0.97 3082.3 800.00  
2 20055.10 16.53 2.551 0.30( 0.29) 0.98 4213.2 818.00  
3 20301.84 17.63 2.453 0.30( 0.29) 0.98 4560.3 810.00  
4 21716.15 22.15 2.110 0.30( 0.29) 0.98 5983.2 600.00  
5 26230.59 39.30 1.492 0.30( 0.30) 0.99 11974.0 40100.00  
6 27628.44 47.38 1.353 0.30( 0.30) 0.99 14802.0 11801.00  
7 29868.94 58.53 1.226 0.30( 0.30) 0.99 19386.4 11530.00  
8 30997.47 63.07 1.190 0.30( 0.30) 0.99 21700.9 11701.00  
9 31954.55 66.69 1.166 0.30( 0.30) 0.99 23794.1 11910.00  
10 34752.59 77.23 1.094 0.30( 0.30) 0.99 30488.3 10800.00  
11 35502.59 81.56 1.065 0.30( 0.30) 0.99 33433.6 11130.00  
12 35613.68 88.51 1.018 0.30( 0.30) 0.99 37032.0 12330.00  
13 35658.01 91.16 1.003 0.30( 0.30) 0.99 38474.8 12410.00  
14 35576.49 94.03 0.990 0.30( 0.30) 0.99 39853.5 10600.00  
15 35466.45 99.40 0.967 0.30( 0.30) 0.99 42213.9 11201.00  
16 35228.86 104.32 0.945 0.30( 0.30) 0.99 43945.6 12201.00  
17 34962.61 107.04 0.934 0.30( 0.30) 0.99 44734.8 10410.00  
18 34427.92 111.23 0.915 0.30( 0.30) 0.99 45802.8 12231.00  
19 34062.95 114.07 0.903 0.30( 0.30) 0.99 46476.1 12101.10  
20 33343.90 118.84 0.882 0.30( 0.30) 0.99 47437.1 10400.00  
21 32193.54 126.56 0.864 0.30( 0.30) 0.99 48732.2 12010.00  
22 31151.14 132.32 0.852 0.30( 0.30) 0.99 49079.2 10210.00  
23 30700.93 135.28 0.846 0.30( 0.30) 0.99 49196.4 12000.00  
24 27659.80 159.73 0.798 0.30( 0.30) 0.99 49817.6 10100.00  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*  
\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*  
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER  
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE  
1 1127.75 9.96 3.535 0.30( 0.24) 0.79 379.9 940.00  
2 1132.57 10.20 3.486 0.30( 0.24) 0.79 387.3 930.00  
3 1160.94 12.96 3.028 0.30( 0.25) 0.82 463.7 910.00  
4 1137.63 16.43 2.560 0.30( 0.25) 0.85 548.3 920.00  
5 1114.54 17.20 2.491 0.30( 0.25) 0.85 553.8 950.00  
6 1085.95 17.85 2.433 0.30( 0.25) 0.85 553.8 900.00  
LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 = 6933.00 FEET.

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

1	18071.70	9.96	3.535	0.30	( 0.28)	0.94	2735.7	940.00
2	18225.22	10.20	3.486	0.30	( 0.28)	0.94	2800.1	930.00
3	19749.50	12.96	3.028	0.30	( 0.28)	0.95	3527.3	910.00
4	19772.47	13.04	3.014	0.30	( 0.28)	0.95	3548.0	800.00
5	21151.39	16.43	2.560	0.30	( 0.29)	0.96	4729.1	920.00
6	21189.73	16.53	2.551	0.30	( 0.29)	0.96	4762.2	818.00
7	21320.41	17.20	2.491	0.30	( 0.29)	0.96	4979.0	950.00
8	21397.49	17.63	2.453	0.30	( 0.29)	0.96	5114.1	810.00
9	21456.48	17.85	2.433	0.30	( 0.29)	0.96	5183.2	900.00
10	22640.99	22.15	2.110	0.30	( 0.29)	0.97	6537.0	600.00
11	26847.23	39.30	1.492	0.30	( 0.29)	0.98	12527.8	40100.00
12	28176.10	47.38	1.353	0.30	( 0.29)	0.98	15355.8	11801.00
13	30352.91	58.53	1.226	0.30	( 0.30)	0.99	19940.2	11530.00
14	31463.76	63.07	1.190	0.30	( 0.30)	0.99	22254.7	11701.00
15	32408.64	66.69	1.166	0.30	( 0.30)	0.99	24347.9	11910.00
16	35171.10	77.23	1.094	0.30	( 0.30)	0.99	31042.1	10800.00
17	35906.50	81.56	1.065	0.30	( 0.30)	0.99	33987.4	11130.00
18	35994.17	88.51	1.018	0.30	( 0.30)	0.99	37585.8	12330.00
19	36030.94	91.16	1.003	0.30	( 0.30)	0.99	39028.6	12410.00
20	35943.17	94.03	0.990	0.30	( 0.30)	0.99	40407.3	10600.00
21	35821.45	99.40	0.967	0.30	( 0.30)	0.99	42767.7	11201.00
22	35573.15	104.32	0.945	0.30	( 0.30)	0.99	44499.4	12201.00
23	35300.96	107.04	0.934	0.30	( 0.30)	0.99	45288.6	10410.00
24	34757.17	111.23	0.915	0.30	( 0.30)	0.99	46356.6	12231.00
25	34386.02	114.07	0.903	0.30	( 0.30)	0.99	47029.9	12101.10
26	33656.59	118.84	0.882	0.30	( 0.30)	0.99	47990.9	10400.00
27	32497.16	126.56	0.864	0.30	( 0.30)	0.99	49286.0	12010.00
28	31449.01	132.32	0.852	0.30	( 0.30)	0.99	49633.0	10210.00
29	30995.86	135.28	0.846	0.30	( 0.30)	0.99	49750.2	12000.00
30	27930.36	159.73	0.798	0.30	( 0.30)	0.99	50371.4	10100.00
TOTAL AREA (ACRES) =			50371.4					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 36030.94 Tc (MIN.) = 91.161  
EFFECTIVE AREA (ACRES) = 39028.62 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 50371.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 91.16

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.003

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.30	0.30	1.000	63
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	11.90	0.30	1.000	66
PUBLIC PARK	B	0.80	0.30	0.850	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED" B 1.50 0.30 1.000 79  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.953  
SUBAREA AREA (ACRES) = 16.00 SUBAREA RUNOFF (CFS) = 10.32  
EFFECTIVE AREA (ACRES) = 39044.62 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 50387.4 PEAK FLOW RATE (CFS) = 36030.94  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 91.16

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.003

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.40	0.30	0.100	56
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	8.20	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	3.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.60	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.60	0.30	1.000	63
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978					
SUBAREA AREA (ACRES) =		16.60 SUBAREA RUNOFF (CFS) = 10.60			
EFFECTIVE AREA (ACRES) =		39061.23 AREA-AVERAGED Fm (INCH/HR) = 0.30			
AREA-AVERAGED Fp (INCH/HR) =		0.30 AREA-AVERAGED Ap = 0.99			
TOTAL AREA (ACRES) =		50404.0 PEAK FLOW RATE (CFS) = 36030.94			
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 91.16

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.003

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA (ACRES) =		1.80 SUBAREA RUNOFF (CFS) = 1.14			
EFFECTIVE AREA (ACRES) =		39063.03 AREA-AVERAGED Fm (INCH/HR) = 0.30			
AREA-AVERAGED Fp (INCH/HR) =		0.30 AREA-AVERAGED Ap = 0.99			
TOTAL AREA (ACRES) =		50405.8 PEAK FLOW RATE (CFS) = 36030.94			
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 50405.8 TC (MIN.) = 91.16  
 EFFECTIVE AREA (ACRES) = 39063.03 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.990  
 PEAK FLOW RATE (CFS) = 36030.94

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18071.70	9.96	3.535	0.30 ( 0.28)	0.94	2770.1	940.00
2	18225.22	10.20	3.486	0.30 ( 0.28)	0.95	2834.5	930.00
3	19749.50	12.96	3.028	0.30 ( 0.28)	0.95	3561.7	910.00
4	19772.47	13.04	3.014	0.30 ( 0.29)	0.95	3582.4	800.00
5	21151.39	16.43	2.560	0.30 ( 0.29)	0.96	4763.5	920.00
6	21189.73	16.53	2.551	0.30 ( 0.29)	0.96	4796.6	818.00
7	21320.41	17.20	2.491	0.30 ( 0.29)	0.96	5013.4	950.00
8	21397.49	17.63	2.453	0.30 ( 0.29)	0.96	5148.5	810.00
9	21456.48	17.85	2.433	0.30 ( 0.29)	0.96	5217.6	900.00
10	22640.99	22.15	2.110	0.30 ( 0.29)	0.97	6571.4	600.00
11	26847.23	39.30	1.492	0.30 ( 0.29)	0.98	12562.2	40100.00
12	28176.10	47.38	1.353	0.30 ( 0.29)	0.98	15390.2	11801.00
13	30352.91	58.53	1.226	0.30 ( 0.30)	0.99	19974.6	11530.00
14	31463.76	63.07	1.190	0.30 ( 0.30)	0.99	22289.1	11701.00
15	32408.64	66.69	1.166	0.30 ( 0.30)	0.99	24382.3	11910.00
16	35171.10	77.23	1.094	0.30 ( 0.30)	0.99	31076.5	10800.00
17	35906.50	81.56	1.065	0.30 ( 0.30)	0.99	34021.8	11130.00
18	35994.17	88.51	1.018	0.30 ( 0.30)	0.99	37620.2	12330.00
19	36030.94	91.16	1.003	0.30 ( 0.30)	0.99	39063.0	12410.00
20	35943.17	94.03	0.990	0.30 ( 0.30)	0.99	40441.7	10600.00
21	35821.45	99.40	0.967	0.30 ( 0.30)	0.99	42802.1	11201.00
22	35573.15	104.32	0.945	0.30 ( 0.30)	0.99	44533.8	12201.00
23	35300.96	107.04	0.934	0.30 ( 0.30)	0.99	45323.0	10410.00
24	34757.17	111.23	0.915	0.30 ( 0.30)	0.99	46391.0	12231.00
25	34386.02	114.07	0.903	0.30 ( 0.30)	0.99	47064.3	12101.10
26	33656.59	118.84	0.882	0.30 ( 0.30)	0.99	48025.3	10400.00
27	32497.16	126.56	0.864	0.30 ( 0.30)	0.99	49320.4	12010.00
28	31449.01	132.32	0.852	0.30 ( 0.30)	0.99	49667.4	10210.00
29	30995.86	135.28	0.846	0.30 ( 0.30)	0.99	49784.6	12000.00
30	27930.36	159.73	0.798	0.30 ( 0.30)	0.99	50405.8	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S27- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV27.DAT  
TIME/DATE OF STUDY: 11:49 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.470
- 2) 10.00; 3.498
- 3) 15.00; 2.675
- 4) 20.00; 2.233
- 5) 25.00; 1.929
- 6) 30.00; 1.735
- 7) 40.00; 1.468
- 8) 50.00; 1.307
- 9) 60.00; 1.205
- 10) 90.00; 1.001
- 11) 120.00; 0.871
- 12) 180.00; 0.750
- 13) 360.00; 0.557
- 14) 1200.00; 0.245

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU50EV26.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19772.47	13.04	0.30 ( 0.29)	0.95	3582.4	800.00
2	21456.48	17.85	0.30 ( 0.29)	0.96	5217.6	900.00
3	22640.99	22.15	0.30 ( 0.29)	0.97	6571.4	600.00
4	26847.23	39.30	0.30 ( 0.29)	0.98	12562.2	40100.00
5	28176.10	47.38	0.30 ( 0.29)	0.98	15390.2	11801.00
6	30352.91	58.53	0.30 ( 0.30)	0.99	19974.6	11530.00
7	31463.76	63.07	0.30 ( 0.30)	0.99	22289.1	11701.00
8	32408.64	66.69	0.30 ( 0.30)	0.99	24382.3	11910.00
9	35171.10	77.23	0.30 ( 0.30)	0.99	31076.5	10800.00
10	35906.50	81.56	0.30 ( 0.30)	0.99	34021.8	11130.00
11	36030.94	91.16	0.30 ( 0.30)	0.99	39063.0	12410.00
12	35821.45	99.40	0.30 ( 0.30)	0.99	42802.1	11201.00
13	35573.15	104.32	0.30 ( 0.30)	0.99	44533.8	12201.00
14	34757.17	111.23	0.30 ( 0.30)	0.99	46391.0	12231.00
15	34386.02	114.07	0.30 ( 0.30)	0.99	47064.3	12101.10
16	33656.59	118.84	0.30 ( 0.30)	0.99	48025.3	10400.00
17	32497.16	126.56	0.30 ( 0.30)	0.99	49320.4	12010.00
18	31449.01	132.32	0.30 ( 0.30)	0.99	49667.4	10210.00
19	30995.86	135.28	0.30 ( 0.30)	0.99	49784.6	12000.00
20	27930.36	159.73	0.30 ( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =						50405.8

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19772.47	13.04	0.30 ( 0.29)	0.95	3582.4	800.00
2	21456.48	17.85	0.30 ( 0.29)	0.96	5217.6	900.00
3	22640.99	22.15	0.30 ( 0.29)	0.97	6571.4	600.00
4	26847.23	39.30	0.30 ( 0.29)	0.98	12562.2	40100.00
5	28176.10	47.38	0.30 ( 0.29)	0.98	15390.2	11801.00
6	30352.91	58.53	0.30 ( 0.30)	0.99	19974.6	11530.00
7	31463.76	63.07	0.30 ( 0.30)	0.99	22289.1	11701.00
8	32408.64	66.69	0.30 ( 0.30)	0.99	24382.3	11910.00
9	35171.10	77.23	0.30 ( 0.30)	0.99	31076.5	10800.00
10	35906.50	81.56	0.30 ( 0.30)	0.99	34021.8	11130.00
11	36030.94	91.16	0.30 ( 0.30)	0.99	39063.0	12410.00
12	35821.45	99.40	0.30 ( 0.30)	0.99	42802.1	11201.00
13	35573.15	104.32	0.30 ( 0.30)	0.99	44533.8	12201.00

14	34757.17	111.23	0.30	( 0.30)	0.99	46391.0	12231.00
15	34386.02	114.07	0.30	( 0.30)	0.99	47064.3	12101.10
16	33656.59	118.84	0.30	( 0.30)	0.99	48025.3	10400.00
17	32497.16	126.56	0.30	( 0.30)	0.99	49320.4	12010.00
18	31449.01	132.32	0.30	( 0.30)	0.99	49667.4	10210.00
19	30995.86	135.28	0.30	( 0.30)	0.99	49784.6	12000.00
20	27930.36	159.73	0.30	( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =		50405.8					

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 286.00 DOWNSTREAM(FEET) = 276.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.19 CHANNEL SLOPE = 0.0079  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.80

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.991

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	7.55	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36034.20

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.78

AVERAGE FLOW DEPTH(FEET) = 8.80 TRAVEL TIME(MIN.) = 1.25

Tc(MIN.) = 92.41

SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 6.53

EFFECTIVE AREA(ACRES) = 39070.58 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50413.3 PEAK FLOW RATE(CFS) = 36030.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.80 FLOW VELOCITY(FEET/SEC.) = 16.78

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 105865.19 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 92.41

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.991

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56

NATURAL FAIR COVER

"WOODLAND,GRASS" B 3.40 0.30 1.000 65

RESIDENTIAL

"5-7 DWELLINGS/ACRE"	B	0.40	0.30	0.500	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	23.00	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.30	0.30	1.000	66
NATURAL FAIR COVER					
"GRASS"	B	0.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.989

SUBAREA AREA(ACRES) = 31.40 SUBAREA RUNOFF(CFS) = 19.61

EFFECTIVE AREA(ACRES) = 39101.98 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50444.7 PEAK FLOW RATE(CFS) = 36030.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 92.41

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.991

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 1.06

EFFECTIVE AREA(ACRES) = 39103.68 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50446.4 PEAK FLOW RATE(CFS) = 36030.94

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 276.00 DOWNSTREAM(FEET) = 275.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 147.65 CHANNEL SLOPE = 0.0068

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.21

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.990

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	1.49	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36031.43

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.91

AVERAGE FLOW DEPTH(FEET) = 9.21 TRAVEL TIME(MIN.) = 0.15

Tc(MIN.) = 92.57

SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 0.99

EFFECTIVE AREA(ACRES) = 39105.16 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50447.9 PEAK FLOW RATE(CFS) = 36030.94  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 9.21 FLOW VELOCITY(FEET/SEC.) = 15.91  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 1

-----  
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 -----

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 92.57  
 RAINFALL INTENSITY(INCH/HR) = 0.99  
 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99  
 EFFECTIVE STREAM AREA(ACRES) = 39105.16  
 TOTAL STREAM AREA(ACRES) = 50447.93  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 36030.94

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12710.00 TO NODE 12711.00 IS CODE = 21

-----  
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----

INITIAL SUBAREA FLOW-LENGTH(FEET) = 943.56  
 ELEVATION DATA: UPSTREAM(FEET) = 940.78 DOWNSTREAM(FEET) = 657.79

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.910  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.854  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"GRASS"	B	6.56	0.30	1.000	69	13.91
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30						
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000						
SUBAREA RUNOFF(CFS) = 15.08						
TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 15.08						

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12711.00 TO NODE 12712.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 657.79 DOWNSTREAM(FEET) = 585.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 766.00 CHANNEL SLOPE = 0.0942

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.72  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.563

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	26.94	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42.59					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.41					
AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 2.36					
Tc(MIN.) = 16.27					

SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 54.86  
 EFFECTIVE AREA(ACRES) = 33.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 33.5 PEAK FLOW RATE(CFS) = 68.22  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.91 FLOW VELOCITY(FEET/SEC.) = 6.34  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12712.00 = 1709.56 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12712.00 TO NODE 12713.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 585.63 DOWNSTREAM(FEET) = 463.75  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1025.79 CHANNEL SLOPE = 0.1188  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.95  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.357

SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL					
	B	14.73	0.30	0.100	56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 83.65					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.34					
AVERAGE FLOW DEPTH(FEET) = 0.96 TRAVEL TIME(MIN.) = 2.33					
Tc(MIN.) = 18.60					

SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 30.85  
 EFFECTIVE AREA(ACRES) = 48.23 AREA-AVERAGED Fm(INCH/HR) = 0.22  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA(ACRES) = 48.2 PEAK FLOW RATE(CFS) = 92.87  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.02 FLOW VELOCITY(FEET/SEC.) = 7.58  
LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12713.00 = 2735.35 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12713.00 TO NODE 12714.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 463.75 DOWNSTREAM(FEET) = 360.30  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1148.54 CHANNEL SLOPE = 0.0901  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.67

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.185

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	105.64	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 195.32

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.74

AVERAGE FLOW DEPTH(FEET) = 1.67 TRAVEL TIME(MIN.) = 2.19

Tc(MIN.) = 20.79

SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 204.90

EFFECTIVE AREA(ACRES) = 153.87 AREA-AVERAGED Fm(INCH/HR) = 0.09

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

TOTAL AREA(ACRES) = 153.9 PEAK FLOW RATE(CFS) = 290.31

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.08 FLOW VELOCITY(FEET/SEC.) = 9.86

LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12714.00 = 3883.89 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12714.00 TO NODE 12720.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 360.30 DOWNSTREAM(FEET) = 275.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1314.99 CHANNEL SLOPE = 0.0649  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.74

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.047

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	127.13	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 405.74

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.66

AVERAGE FLOW DEPTH(FEET) = 2.72 TRAVEL TIME(MIN.) = 2.27

Tc(MIN.) = 23.06

SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 230.80

EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.21

TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 502.00

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.04

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.04 FLOW VELOCITY(FEET/SEC.) = 10.26

LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 23.06

RAINFALL INTENSITY(INCH/HR) = 2.05

AREA-AVERAGED Fm(INCH/HR) = 0.06

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.21

EFFECTIVE STREAM AREA(ACRES) = 281.00

TOTAL STREAM AREA(ACRES) = 281.00

PEAK FLOW RATE(CFS) AT CONFLUENCE = 502.00

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19772.47	14.76	2.715	0.30( 0.28)	0.95	3624.5	800.00
1	21456.48	19.52	2.275	0.30( 0.29)	0.96	5259.7	900.00
1	22640.99	23.79	2.003	0.30( 0.29)	0.97	6613.5	600.00
1	26847.23	40.85	1.454	0.30( 0.29)	0.98	12604.4	40100.00
1	28176.10	48.90	1.325	0.30( 0.29)	0.98	15432.3	11801.00
1	30352.91	60.02	1.205	0.30( 0.30)	0.99	20016.7	11530.00
1	31463.76	64.54	1.174	0.30( 0.30)	0.99	22331.3	11701.00
1	32408.64	68.14	1.150	0.30( 0.30)	0.99	24424.5	11910.00
1	35171.10	78.65	1.078	0.30( 0.30)	0.99	31118.6	10800.00
1	35906.50	82.97	1.049	0.30( 0.30)	0.99	34064.0	11130.00
1	36030.94	92.57	0.990	0.30( 0.30)	0.99	39105.2	12410.00
1	35821.45	100.81	0.954	0.30( 0.30)	0.99	42844.3	11201.00
1	35573.15	105.73	0.933	0.30( 0.30)	0.99	44576.0	12201.00
1	34757.17	112.65	0.903	0.30( 0.30)	0.99	46433.1	12231.00
1	34386.02	115.50	0.891	0.30( 0.30)	0.99	47106.4	12101.10
1	33656.59	120.28	0.870	0.30( 0.30)	0.99	48067.4	10400.00
1	32497.16	128.02	0.855	0.30( 0.30)	0.99	49362.5	12010.00
1	31449.01	133.80	0.843	0.30( 0.30)	0.99	49709.5	10210.00
1	30995.86	136.76	0.837	0.30( 0.30)	0.99	49826.7	12000.00
1	27930.36	161.26	0.788	0.30( 0.30)	0.99	50447.9	10100.00
2	502.00	23.06	2.047	0.30( 0.06)	0.21	281.0	12710.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.



\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20201.87	14.76	2.715	0.30 ( 0.27)	0.91	3804.4	800.00
2	21930.37	19.52	2.275	0.30 ( 0.28)	0.93	5497.7	900.00
3	22939.53	23.06	2.047	0.30 ( 0.28)	0.94	6662.0	12710.00
4	23131.72	23.79	2.003	0.30 ( 0.28)	0.94	6894.5	600.00
5	27199.30	40.85	1.454	0.30 ( 0.29)	0.96	12885.4	40100.00
6	28495.38	48.90	1.325	0.30 ( 0.29)	0.97	15713.3	11801.00
7	30641.89	60.02	1.205	0.30 ( 0.29)	0.97	20297.7	11530.00
8	31744.98	64.54	1.174	0.30 ( 0.29)	0.98	22612.3	11701.00
9	32683.65	68.14	1.150	0.30 ( 0.29)	0.98	24705.5	11910.00
10	35428.04	78.65	1.078	0.30 ( 0.29)	0.98	31399.6	10800.00
11	36156.01	82.97	1.049	0.30 ( 0.29)	0.98	34345.0	11130.00
12	36265.55	92.57	0.990	0.30 ( 0.30)	0.98	39386.2	12410.00
13	36047.03	100.81	0.954	0.30 ( 0.30)	0.98	43125.3	11201.00
14	35793.34	105.73	0.933	0.30 ( 0.30)	0.98	44857.0	12201.00
15	34969.77	112.65	0.903	0.30 ( 0.30)	0.98	46714.1	12231.00
16	34595.50	115.50	0.891	0.30 ( 0.30)	0.98	47387.4	12101.10
17	33860.99	120.28	0.870	0.30 ( 0.30)	0.98	48348.4	10400.00
18	32697.62	128.02	0.855	0.30 ( 0.30)	0.98	49643.5	12010.00
19	31646.53	133.80	0.843	0.30 ( 0.30)	0.98	49990.5	10210.00
20	31191.86	136.76	0.837	0.30 ( 0.30)	0.98	50107.7	12000.00
21	28113.86	161.26	0.788	0.30 ( 0.30)	0.98	50728.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 36265.55 Tc(MIN.) = 92.57  
 EFFECTIVE AREA(ACRES) = 39386.16 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50728.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

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 FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 92.57  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.990  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.20	0.30	0.500	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.80	0.30	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.964  
 SUBAREA AREA(ACRES) = 4.50 SUBAREA RUNOFF(CFS) = 2.84  
 EFFECTIVE AREA(ACRES) = 39390.66 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50733.4 PEAK FLOW RATE(CFS) = 36265.55  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.40  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.978  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	62.15	0.30	0.100	56

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36292.05  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.62  
 AVERAGE FLOW DEPTH(FEET) = 9.40 TRAVEL TIME(MIN.) = 2.85  
 Tc(MIN.) = 95.42  
 SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 53.00  
 EFFECTIVE AREA(ACRES) = 39452.81 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50795.6 PEAK FLOW RATE(CFS) = 36265.55  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 9.40 FLOW VELOCITY(FEET/SEC.) = 15.62  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 95.42  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.978  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.10	0.30	0.100	56
NATURAL FAIR COVER					
"MEADOWS"	B	0.30	0.30	1.000	70
NATURAL FAIR COVER					
"OPEN BRUSH"	B	17.90	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
PUBLIC PARK	B	0.30	0.30	0.850	56
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.993  
 SUBAREA AREA(ACRES) = 19.50 SUBAREA RUNOFF(CFS) = 11.93  
 EFFECTIVE AREA(ACRES) = 39472.31 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 50815.1 PEAK FLOW RATE (CFS) = 36265.55  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 95.42

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.978

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
NATURAL FAIR COVER "WOODLAND, GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.90	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.30	0.30	0.900	56
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960

SUBAREA AREA (ACRES) = 3.50 SUBAREA RUNOFF (CFS) = 2.17

EFFECTIVE AREA (ACRES) = 39475.81 AREA-AVERAGED Fm (INCH/HR) = 0.29

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

TOTAL AREA (ACRES) = 50818.6 PEAK FLOW RATE (CFS) = 36265.55

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3D50EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	841.98	19.16	0.30 (0.14)	0.48	353.5	413.00
2	833.58	25.59	0.30 (0.14)	0.48	432.0	430.00
3	804.16	27.29	0.30 (0.14)	0.48	439.5	400.00
TOTAL AREA (ACRES) =						439.5

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	20201.87	18.22	2.390	0.30 (0.27)	0.90	3894.0	800.00

2	21930.37	22.89	2.057	0.30 (0.28)	0.92	5587.3	900.00
3	22939.53	26.37	1.876	0.30 (0.28)	0.93	6751.6	12710.00
4	23131.72	27.10	1.848	0.30 (0.28)	0.93	6984.2	600.00
5	27199.30	43.98	1.404	0.30 (0.29)	0.96	12975.0	40100.00
6	28495.38	51.99	1.287	0.30 (0.29)	0.97	15803.0	11801.00
7	30641.89	63.03	1.184	0.30 (0.29)	0.97	20387.4	11530.00
8	31744.98	67.51	1.154	0.30 (0.29)	0.97	22701.9	11701.00
9	32683.65	71.09	1.130	0.30 (0.29)	0.98	24795.1	11910.00
10	35428.04	81.52	1.059	0.30 (0.29)	0.98	31489.3	10800.00
11	36156.01	85.82	1.029	0.30 (0.29)	0.98	34434.6	11130.00
12	36265.55	95.42	0.978	0.30 (0.29)	0.98	39475.8	12410.00
13	36047.03	103.66	0.942	0.30 (0.29)	0.98	43214.9	11201.00
14	35793.34	108.59	0.920	0.30 (0.29)	0.98	44946.6	12201.00
15	34969.77	115.54	0.890	0.30 (0.29)	0.98	46803.8	12231.00
16	34595.50	118.39	0.878	0.30 (0.29)	0.98	47477.1	12101.10
17	33860.99	123.19	0.865	0.30 (0.29)	0.98	48438.1	10400.00
18	32697.62	130.96	0.849	0.30 (0.29)	0.98	49733.2	12010.00
19	31646.53	136.77	0.837	0.30 (0.30)	0.98	50080.1	10210.00
20	31191.86	139.75	0.831	0.30 (0.30)	0.98	50197.3	12000.00
21	28113.86	164.36	0.782	0.30 (0.30)	0.98	50818.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	841.98	19.16	2.307	0.30 (0.14)	0.48	353.5	413.00
2	833.58	25.59	1.906	0.30 (0.14)	0.48	432.0	430.00
3	804.16	27.29	1.840	0.30 (0.14)	0.48	439.5	400.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 12720.50 = 11352.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (INCH/HR)	Ae (ACRES)	HEADWATER NODE
1	21033.28	18.22	2.390	0.30 (0.26)	0.87	4230.2	800.00
2	21391.52	19.16	2.307	0.30 (0.26)	0.87	4588.1	413.00
3	22767.48	22.89	2.057	0.30 (0.27)	0.89	5986.3	900.00
4	23546.46	25.59	1.906	0.30 (0.27)	0.90	6922.2	430.00
5	23759.54	26.37	1.876	0.30 (0.27)	0.90	7187.1	12710.00
6	23939.16	27.10	1.848	0.30 (0.27)	0.90	7422.9	600.00
7	23981.54	27.29	1.840	0.30 (0.27)	0.90	7491.0	400.00
8	27796.64	43.98	1.404	0.30 (0.28)	0.94	13414.5	40100.00
9	29037.19	51.99	1.287	0.30 (0.29)	0.95	16242.5	11801.00
10	31135.21	63.03	1.184	0.30 (0.29)	0.96	20826.9	11530.00
11	32223.84	67.51	1.154	0.30 (0.29)	0.96	23141.4	11701.00
12	33150.98	71.09	1.130	0.30 (0.29)	0.97	25234.6	11910.00
13	35861.76	81.52	1.059	0.30 (0.29)	0.97	31928.8	10800.00
14	36575.86	85.82	1.029	0.30 (0.29)	0.98	34874.1	11130.00
15	36660.82	95.42	0.978	0.30 (0.29)	0.98	39915.3	12410.00
16	36425.37	103.66	0.942	0.30 (0.29)	0.98	43654.4	11201.00
17	36161.54	108.59	0.920	0.30 (0.29)	0.98	45386.1	12201.00
18	35323.71	115.54	0.890	0.30 (0.29)	0.98	47243.3	12231.00
19	34943.57	118.39	0.878	0.30 (0.29)	0.98	47916.6	12101.10
20	34202.72	123.19	0.865	0.30 (0.29)	0.98	48877.6	10400.00
21	33031.92	130.96	0.849	0.30 (0.29)	0.98	50172.7	12010.00
22	31975.27	136.77	0.837	0.30 (0.29)	0.98	50519.6	10210.00
23	31517.76	139.75	0.831	0.30 (0.29)	0.98	50636.8	12000.00
24	28416.25	164.36	0.782	0.30 (0.29)	0.98	51258.1	10100.00

TOTAL AREA (ACRES) = 51258.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 36660.82 Tc(MIN.) = 95.415
EFFECTIVE AREA(ACRES) = 39915.31 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 51258.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 2 <<<<<

\*\*\*\*\*
FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 258.00 DOWNSTREAM(FEET) = 256.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 438.77 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.40
CHANNEL FLOW THRU SUBAREA(CFS) = 36660.82
FLOW VELOCITY(FEET/SEC.) = 13.99 FLOW DEPTH(FEET) = 10.40
TRAVEL TIME(MIN.) = 0.52 Tc(MIN.) = 95.94
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 FEET.

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FLOW PROCESS FROM NODE 12721.00 TO NODE 12722.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 256.00 DOWNSTREAM(FEET) = 255.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 830.42 CHANNEL SLOPE = 0.0012
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 15.03
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 11.24 0.30 0.100 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36665.57
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.86
AVERAGE FLOW DEPTH(FEET) = 15.03 TRAVEL TIME(MIN.) = 1.56
Tc(MIN.) = 97.50
SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 9.49
EFFECTIVE AREA(ACRES) = 39926.55 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51269.3 PEAK FLOW RATE(CFS) = 36660.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 15.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 15.03 FLOW VELOCITY(FEET/SEC.) = 8.86
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 FEET.

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FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 97.50
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN" B 2.10 0.30 1.000 86
NATURAL FAIR COVER
"GRASS" B 0.10 0.30 1.000 69
NATURAL FAIR COVER
"MEADOWS" B 3.60 0.30 1.000 70
NATURAL FAIR COVER
"OPEN BRUSH" B 4.10 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 5.96
EFFECTIVE AREA(ACRES) = 39936.45 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51279.2 PEAK FLOW RATE(CFS) = 36660.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*
FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 97.50
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 0.60 0.30 0.900 56
NATURAL FAIR COVER
"WOODLAND,GRASS" B 1.90 0.30 1.000 65
NATURAL FAIR COVER
"WOODLAND,GRASS" B 0.10 0.30 1.000 65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977
SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 1.58
EFFECTIVE AREA(ACRES) = 39939.05 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51281.8 PEAK FLOW RATE(CFS) = 36660.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10
CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.34
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.965

Table with 6 columns: DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include COMMERCIAL, NATURAL FAIR COVER "GRASS", and "WOODLAND, GRASS".

SUBAREA LOSS RATE DATA(AMC II):
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.925
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36666.36
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.09
AVERAGE FLOW DEPTH(FEET) = 10.34 TRAVEL TIME (MIN.) = 0.74
Tc (MIN.) = 98.24
SUBAREA AREA (ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 11.08
EFFECTIVE AREA(ACRES) = 39956.95 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA (ACRES) = 51299.7 PEAK FLOW RATE(CFS) = 36660.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 10.34 FLOW VELOCITY(FEET/SEC.) = 14.09
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 98.24
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.965
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN. Rows include NATURAL FAIR COVER "OPEN BRUSH".

NATURAL FAIR COVER
"OPEN BRUSH" B 12.00 0.30 1.000 66
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.80 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 20.20 0.30 1.000 63
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 44.40 SUBAREA RUNOFF(CFS) = 26.59
EFFECTIVE AREA(ACRES) = 40001.35 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA (ACRES) = 51344.1 PEAK FLOW RATE(CFS) = 36660.82
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION (MIN.) = 98.24
RAINFALL INTENSITY (INCH/HR) = 0.97
AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98
EFFECTIVE STREAM AREA (ACRES) = 40001.35
TOTAL STREAM AREA (ACRES) = 51344.12
PEAK FLOW RATE (CFS) AT CONFLUENCE = 36660.82

\*\*\*\*\*
FLOW PROCESS FROM NODE 12730.00 TO NODE 12731.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

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

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.823
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.869

SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN, Tc (MIN.). Rows include NATURAL FAIR COVER "CHAPARRAL, BROADLEAF".

\*\*\*\*\*
FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.91  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.493

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 34.62 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 53.06  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.01  
AVERAGE FLOW DEPTH(FEET) = 0.90 TRAVEL TIME(MIN.) = 3.23  
Tc(MIN.) = 17.05  
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 76.75  
EFFECTIVE AREA(ACRES) = 40.95 AREA-AVERAGED Fm(INCH/HR) = 0.07  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.24  
TOTAL AREA(ACRES) = 40.9 PEAK FLOW RATE(CFS) = 89.25  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.21  
  
END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.21 FLOW VELOCITY(FEET/SEC.) = 5.94  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.68  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.242

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 59.52 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 148.57  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.77  
AVERAGE FLOW DEPTH(FEET) = 1.65 TRAVEL TIME(MIN.) = 2.85  
Tc(MIN.) = 19.90  
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 118.47  
EFFECTIVE AREA(ACRES) = 100.47 AREA-AVERAGED Fm(INCH/HR) = 0.05  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.16  
TOTAL AREA(ACRES) = 100.5 PEAK FLOW RATE(CFS) = 198.44  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.94 FLOW VELOCITY(FEET/SEC.) = 7.39  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12733.00 = 2689.86 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12733.00 TO NODE 12734.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 431.00 DOWNSTREAM(FEET) = 367.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1654.48 CHANNEL SLOPE = 0.0386  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.47  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.001

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 64.05 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 255.27  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.04  
AVERAGE FLOW DEPTH(FEET) = 2.44 TRAVEL TIME(MIN.) = 3.92  
Tc(MIN.) = 23.82  
SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 113.60  
EFFECTIVE AREA(ACRES) = 164.52 AREA-AVERAGED Fm(INCH/HR) = 0.04  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
TOTAL AREA(ACRES) = 164.5 PEAK FLOW RATE(CFS) = 290.25  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 2.61 FLOW VELOCITY(FEET/SEC.) = 7.29  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12734.00 = 4344.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12734.00 TO NODE 12740.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 367.11 DOWNSTREAM(FEET) = 252.10  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1880.98 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.41  
\* 50 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  
COMMERCIAL B 26.02 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 311.40  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.76

AVERAGE FLOW DEPTH (FEET) = 2.40 TRAVEL TIME (MIN.) = 3.58  
 Tc (MIN.) = 27.40  
 SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 42.29  
 EFFECTIVE AREA (ACRES) = 190.54 AREA-AVERAGED Fm (INCH/HR) = 0.04  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
 TOTAL AREA (ACRES) = 190.5 PEAK FLOW RATE (CFS) = 308.15  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.39 FLOW VELOCITY (FEET/SEC.) = 8.75  
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 27.40  
 RAINFALL INTENSITY (INCH/HR) = 1.84  
 AREA-AVERAGED Fm (INCH/HR) = 0.04  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.13  
 EFFECTIVE STREAM AREA (ACRES) = 190.54  
 TOTAL STREAM AREA (ACRES) = 190.54  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 308.15

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21033.28	21.59	2.136	0.30 ( 0.26)	0.87	4316.2	800.00
1	21391.52	22.51	2.080	0.30 ( 0.26)	0.87	4674.1	413.00
1	22767.48	26.17	1.883	0.30 ( 0.27)	0.89	6072.4	900.00
1	23546.46	28.84	1.780	0.30 ( 0.27)	0.90	7008.2	430.00
1	23759.54	29.61	1.750	0.30 ( 0.27)	0.90	7273.1	12710.00
1	23939.16	30.33	1.726	0.30 ( 0.27)	0.90	7508.9	600.00
1	23981.54	30.52	1.721	0.30 ( 0.27)	0.90	7577.0	400.00
1	27796.64	47.06	1.354	0.30 ( 0.28)	0.94	13500.6	40100.00
1	29037.19	55.02	1.256	0.30 ( 0.29)	0.95	16328.5	11801.00
1	31135.21	66.00	1.164	0.30 ( 0.29)	0.96	20912.9	11530.00
1	32223.84	70.45	1.134	0.30 ( 0.29)	0.96	23227.5	11701.00
1	33150.98	74.00	1.110	0.30 ( 0.29)	0.97	25320.6	11910.00
1	35861.76	84.36	1.039	0.30 ( 0.29)	0.97	32014.8	10800.00
1	36575.86	88.65	1.010	0.30 ( 0.29)	0.97	34960.1	11130.00
1	36660.82	98.24	0.965	0.30 ( 0.29)	0.98	40001.3	12410.00
1	36425.37	106.49	0.930	0.30 ( 0.29)	0.98	43740.5	11201.00
1	36161.54	111.43	0.908	0.30 ( 0.29)	0.98	45472.2	12201.00
1	35323.71	118.39	0.878	0.30 ( 0.29)	0.98	47329.3	12231.00
1	34943.57	121.26	0.868	0.30 ( 0.29)	0.98	48002.6	12101.10
1	34202.72	126.08	0.859	0.30 ( 0.29)	0.98	48963.6	10400.00
1	33031.92	133.88	0.843	0.30 ( 0.29)	0.98	50258.7	12010.00
1	31975.27	139.72	0.831	0.30 ( 0.29)	0.98	50605.7	10210.00
1	31517.76	142.71	0.825	0.30 ( 0.29)	0.98	50722.9	12000.00
1	28416.25	167.42	0.775	0.30 ( 0.29)	0.98	51344.1	10100.00

2	308.15	27.40	1.836	0.30 ( 0.04)	0.13	190.5	12730.00
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RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21316.69	21.59	2.136	0.30 ( 0.25)	0.84	4466.3	800.00
2	21679.13	22.51	2.080	0.30 ( 0.25)	0.85	4830.7	413.00
3	23069.63	26.17	1.883	0.30 ( 0.26)	0.87	6254.4	900.00
4	23433.88	27.40	1.836	0.30 ( 0.26)	0.87	6693.3	12730.00
5	23845.03	28.84	1.780	0.30 ( 0.26)	0.88	7198.7	430.00
6	24052.96	29.61	1.750	0.30 ( 0.26)	0.88	7463.7	12710.00
7	24228.50	30.33	1.726	0.30 ( 0.27)	0.88	7699.4	600.00
8	24270.03	30.52	1.721	0.30 ( 0.27)	0.88	7767.5	400.00
9	28022.20	47.06	1.354	0.30 ( 0.28)	0.93	13691.1	40100.00
10	29245.85	55.02	1.256	0.30 ( 0.28)	0.94	16519.1	11801.00
11	31328.17	66.00	1.164	0.30 ( 0.29)	0.95	21103.5	11530.00
12	32411.61	70.45	1.134	0.30 ( 0.29)	0.96	23418.0	11701.00
13	33334.61	74.00	1.110	0.30 ( 0.29)	0.96	25511.2	11910.00
14	36033.30	84.36	1.039	0.30 ( 0.29)	0.97	32205.3	10800.00
15	36742.42	88.65	1.010	0.30 ( 0.29)	0.97	35150.7	11130.00
16	36819.67	98.24	0.965	0.30 ( 0.29)	0.97	40191.9	12410.00
17	36578.09	106.49	0.930	0.30 ( 0.29)	0.97	43931.0	11201.00
18	36310.60	111.43	0.908	0.30 ( 0.29)	0.97	45662.7	12201.00
19	35467.59	118.39	0.878	0.30 ( 0.29)	0.97	47519.9	12231.00
20	35085.82	121.26	0.868	0.30 ( 0.29)	0.97	48193.1	12101.10
21	34343.30	126.08	0.859	0.30 ( 0.29)	0.98	49154.1	10400.00
22	33169.80	133.88	0.843	0.30 ( 0.29)	0.98	50449.2	12010.00
23	32111.13	139.72	0.831	0.30 ( 0.29)	0.98	50796.2	10210.00
24	31652.59	142.71	0.825	0.30 ( 0.29)	0.98	50913.4	12000.00
25	28542.53	167.42	0.775	0.30 ( 0.29)	0.98	51534.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE (CFS) = 36819.67 Tc (MIN.) = 98.24  
 EFFECTIVE AREA (ACRES) = 40191.89 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 51534.7  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12741.00 IS CODE = 56

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

=====  
 ELEVATION DATA: UPSTREAM (FEET) = 252.10 DOWNSTREAM (FEET) = 247.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 401.47 CHANNEL SLOPE = 0.0127  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 7.79  
 CHANNEL FLOW THRU SUBAREA (CFS) = 36819.67  
 FLOW VELOCITY (FEET/SEC.) = 19.77 FLOW DEPTH (FEET) = 7.79  
 TRAVEL TIME (MIN.) = 0.34 Tc (MIN.) = 98.58  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

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FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 98.58

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.964

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.10	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	7.50	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.90	0.30	1.000	66
PUBLIC PARK	B	1.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.40	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	0.50	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.833

SUBAREA AREA(ACRES) = 13.30 SUBAREA RUNOFF(CFS) = 8.54

EFFECTIVE AREA(ACRES) = 40205.19 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 51548.0 PEAK FLOW RATE(CFS) = 36819.67

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 98.58

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.964

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.90	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 0.54

EFFECTIVE AREA(ACRES) = 40206.09 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA(ACRES) = 51548.9 PEAK FLOW RATE(CFS) = 36819.67

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: 3C50EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1377.43	17.60	0.30( 0.14)	0.47	637.4	300.00
2	1392.59	22.76	0.30( 0.14)	0.47	776.8	327.00

3	1369.30	23.86	0.30( 0.14)	0.48	790.9	350.00
4	1337.55	25.07	0.30( 0.14)	0.48	803.6	320.00
5	1252.01	29.12	0.30( 0.15)	0.49	831.6	306.00
6	1143.64	36.22	0.30( 0.15)	0.50	870.6	390.00
TOTAL AREA(ACRES) =					870.6	

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21316.69	22.00	2.112	0.30( 0.25)	0.84	4480.5	800.00
2	21679.13	22.92	2.056	0.30( 0.25)	0.85	4844.9	413.00
3	23069.63	26.57	1.868	0.30( 0.26)	0.87	6268.6	900.00
4	23433.88	27.79	1.821	0.30( 0.26)	0.87	6707.5	12730.00
5	23845.03	29.23	1.765	0.30( 0.26)	0.88	7212.9	430.00
6	24052.96	30.00	1.735	0.30( 0.26)	0.88	7477.9	12710.00
7	24228.50	30.72	1.716	0.30( 0.27)	0.88	7713.6	600.00
8	24270.03	30.91	1.711	0.30( 0.27)	0.88	7781.7	400.00
9	28022.20	47.43	1.348	0.30( 0.28)	0.93	13705.3	40100.00
10	29245.85	55.39	1.252	0.30( 0.28)	0.94	16533.3	11801.00
11	31328.17	66.36	1.162	0.30( 0.29)	0.95	21117.7	11530.00
12	32411.61	70.80	1.132	0.30( 0.29)	0.96	23432.2	11701.00
13	33334.61	74.35	1.107	0.30( 0.29)	0.96	25525.4	11910.00
14	36033.30	84.70	1.037	0.30( 0.29)	0.97	32219.5	10800.00
15	36742.42	88.99	1.008	0.30( 0.29)	0.97	35164.9	11130.00
16	36819.67	98.58	0.964	0.30( 0.29)	0.97	40206.1	12410.00
17	36578.09	106.83	0.928	0.30( 0.29)	0.97	43945.2	11201.00
18	36310.60	111.77	0.907	0.30( 0.29)	0.97	45676.9	12201.00
19	35467.59	118.73	0.876	0.30( 0.29)	0.97	47534.1	12231.00
20	35085.82	121.60	0.868	0.30( 0.29)	0.97	48207.3	12101.10
21	34343.30	126.42	0.858	0.30( 0.29)	0.97	49168.3	10400.00
22	33169.80	134.23	0.842	0.30( 0.29)	0.98	50463.4	12010.00
23	32111.13	140.08	0.831	0.30( 0.29)	0.98	50810.4	10210.00
24	31652.59	143.07	0.824	0.30( 0.29)	0.98	50927.6	12000.00
25	28542.53	167.78	0.775	0.30( 0.29)	0.98	51548.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1377.43	17.60	2.445	0.30( 0.14)	0.47	637.4	300.00
2	1392.59	22.76	2.065	0.30( 0.14)	0.47	776.8	327.00
3	1369.30	23.86	1.998	0.30( 0.14)	0.48	790.9	350.00
4	1337.55	25.07	1.926	0.30( 0.14)	0.48	803.6	320.00
5	1252.01	29.12	1.769	0.30( 0.15)	0.49	831.6	306.00
6	1143.64	36.22	1.569	0.30( 0.15)	0.50	870.6	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12741.00 = 15238.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21492.57	17.60	2.445	0.30( 0.24)	0.79	4221.5	300.00
2	22707.05	22.00	2.112	0.30( 0.24)	0.79	5236.9	800.00

3	23009.28	22.76	2.065	0.30	( 0.24)	0.79	5558.9	327.00
4	23068.40	22.92	2.056	0.30	( 0.24)	0.80	5623.7	413.00
5	23409.69	23.86	1.998	0.30	( 0.24)	0.80	6005.7	350.00
6	23838.18	25.07	1.926	0.30	( 0.24)	0.81	6489.6	320.00
7	24375.56	26.57	1.868	0.30	( 0.25)	0.82	7082.5	900.00
8	24713.94	27.79	1.821	0.30	( 0.25)	0.83	7529.9	12730.00
9	25065.46	29.12	1.769	0.30	( 0.25)	0.84	8005.8	306.00
10	25095.36	29.23	1.765	0.30	( 0.25)	0.84	8045.2	430.00
11	25291.49	30.00	1.735	0.30	( 0.25)	0.84	8314.4	12710.00
12	25456.10	30.72	1.716	0.30	( 0.25)	0.85	8554.1	600.00
13	25494.76	30.91	1.711	0.30	( 0.25)	0.85	8623.2	400.00
14	26618.99	36.22	1.569	0.30	( 0.26)	0.87	10555.2	390.00
15	28987.88	47.43	1.348	0.30	( 0.27)	0.91	14575.9	40100.00
16	30133.88	55.39	1.252	0.30	( 0.28)	0.92	17403.9	11801.00
17	32143.44	66.36	1.162	0.30	( 0.28)	0.94	21988.3	11530.00
18	33202.50	70.80	1.132	0.30	( 0.28)	0.94	24302.8	11701.00
19	34106.04	74.35	1.107	0.30	( 0.28)	0.95	26396.0	11910.00
20	36748.00	84.70	1.037	0.30	( 0.29)	0.96	33090.1	10800.00
21	37433.63	88.99	1.008	0.30	( 0.29)	0.96	36035.5	11130.00
22	37475.36	98.58	0.964	0.30	( 0.29)	0.96	41076.7	12410.00
23	37204.96	106.83	0.928	0.30	( 0.29)	0.96	44815.8	11201.00
24	36920.21	111.77	0.907	0.30	( 0.29)	0.97	46547.5	12201.00
25	36052.86	118.73	0.876	0.30	( 0.29)	0.97	48404.7	12231.00
26	35664.06	121.60	0.868	0.30	( 0.29)	0.97	49077.9	12101.10
27	34913.70	126.42	0.858	0.30	( 0.29)	0.97	50038.9	10400.00
28	33727.50	134.23	0.842	0.30	( 0.29)	0.97	51334.1	12010.00
29	32659.33	140.08	0.831	0.30	( 0.29)	0.97	51681.0	10210.00
30	32195.92	143.07	0.824	0.30	( 0.29)	0.97	51798.2	12000.00
31	29045.68	167.78	0.775	0.30	( 0.29)	0.97	52419.5	10100.00

TOTAL AREA (ACRES) = 52419.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 37475.36 Tc(MIN.) = 98.576  
EFFECTIVE AREA(ACRES) = 41076.69 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 52419.5  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 12  
-----

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 247.00 DOWNSTREAM(FEET) = 240.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 819.00 CHANNEL SLOPE = 0.0085  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.81  
CHANNEL FLOW THRU SUBAREA(CFS) = 37475.36  
FLOW VELOCITY(FEET/SEC.) = 17.42 FLOW DEPTH(FEET) = 8.81  
TRAVEL TIME(MIN.) = 0.78 Tc(MIN.) = 99.36

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

-----  
MAINLINE Tc(MIN.) = 99.36  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.960  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"GRASS" B 17.31 0.30 1.000 69  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 17.31 SUBAREA RUNOFF(CFS) = 10.29  
EFFECTIVE AREA(ACRES) = 41094.00 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA(ACRES) = 52436.8 PEAK FLOW RATE(CFS) = 37475.36  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
-----

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52436.8 TC(MIN.) = 99.36  
EFFECTIVE AREA(ACRES) = 41094.00 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.963  
PEAK FLOW RATE(CFS) = 37475.36

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21492.57	18.54	2.362	0.30( 0.24)	0.79	4238.8	300.00
2	22707.05	22.93	2.055	0.30( 0.24)	0.79	5254.2	800.00
3	23009.28	23.68	2.009	0.30( 0.24)	0.80	5576.3	327.00
4	23068.40	23.84	2.000	0.30( 0.24)	0.80	5641.0	413.00
5	23409.69	24.78	1.942	0.30( 0.24)	0.80	6023.0	350.00
6	23838.18	25.99	1.891	0.30( 0.24)	0.81	6506.9	320.00
7	24375.56	27.47	1.833	0.30( 0.25)	0.82	7099.9	900.00
8	24713.94	28.69	1.786	0.30( 0.25)	0.83	7547.2	12730.00
9	25065.46	30.02	1.735	0.30( 0.25)	0.84	8023.1	306.00
10	25095.36	30.13	1.732	0.30( 0.25)	0.84	8062.5	430.00
11	25291.49	30.90	1.711	0.30( 0.25)	0.84	8331.7	12710.00
12	25456.10	31.61	1.692	0.30( 0.25)	0.85	8571.4	600.00
13	25494.76	31.80	1.687	0.30( 0.25)	0.85	8640.5	400.00
14	26618.99	37.09	1.546	0.30( 0.26)	0.87	10572.5	390.00
15	28987.88	48.29	1.335	0.30( 0.27)	0.91	14593.2	40100.00
16	30133.88	56.23	1.243	0.30( 0.28)	0.92	17421.2	11801.00
17	32143.44	67.18	1.156	0.30( 0.28)	0.94	22005.6	11530.00
18	33202.50	71.62	1.126	0.30( 0.28)	0.94	24320.1	11701.00
19	34106.04	75.16	1.102	0.30( 0.28)	0.95	26413.3	11910.00
20	36748.00	85.49	1.032	0.30( 0.29)	0.96	33107.4	10800.00
21	37433.63	89.77	1.003	0.30( 0.29)	0.96	36052.8	11130.00
22	37475.36	99.36	0.960	0.30( 0.29)	0.96	41094.0	12410.00
23	37204.96	107.61	0.925	0.30( 0.29)	0.96	44833.1	11201.00
24	36920.21	112.55	0.903	0.30( 0.29)	0.97	46564.8	12201.00
25	36052.86	119.53	0.873	0.30( 0.29)	0.97	48422.0	12231.00
26	35664.06	122.40	0.866	0.30( 0.29)	0.97	49095.2	12101.10
27	34913.70	127.22	0.856	0.30( 0.29)	0.97	50056.3	10400.00



28	33727.50	135.04	0.841	0.30 ( 0.29)	0.97	51351.4	12010.00
29	32659.33	140.90	0.829	0.30 ( 0.29)	0.97	51698.3	10210.00
30	32195.92	143.89	0.823	0.30 ( 0.29)	0.97	51815.5	12000.00
31	29045.68	168.64	0.773	0.30 ( 0.29)	0.97	52436.8	10100.00

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=====  
END OF RATIONAL METHOD ANALYSIS

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S28- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV28.DAT  
TIME/DATE OF STUDY: 11:49 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.470
- 2) 10.00; 3.498
- 3) 15.00; 2.675
- 4) 20.00; 2.233
- 5) 25.00; 1.929
- 6) 30.00; 1.735
- 7) 40.00; 1.468
- 8) 50.00; 1.307
- 9) 60.00; 1.205
- 10) 90.00; 1.001
- 11) 120.00; 0.871
- 12) 180.00; 0.750
- 13) 360.00; 0.557
- 14) 1200.00; 0.245

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU50EV27.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21492.57	18.54	0.30 ( 0.24)	0.79	4238.8	300.00
2	24713.94	28.69	0.30 ( 0.25)	0.83	7547.2	12730.00
3	25494.76	31.80	0.30 ( 0.25)	0.85	8640.5	400.00
4	26618.99	37.09	0.30 ( 0.26)	0.87	10572.5	390.00
5	28987.88	48.29	0.30 ( 0.27)	0.91	14593.2	40100.00
6	30133.88	56.23	0.30 ( 0.28)	0.92	17421.2	11801.00
7	32143.44	67.18	0.30 ( 0.28)	0.94	22005.6	11530.00
8	33202.50	71.62	0.30 ( 0.28)	0.94	24320.1	11701.00
9	34106.04	75.16	0.30 ( 0.28)	0.95	26413.3	11910.00
10	36748.00	85.49	0.30 ( 0.29)	0.96	33107.4	10800.00
11	37433.63	89.77	0.30 ( 0.29)	0.96	36052.8	11130.00
12	37475.36	99.36	0.30 ( 0.29)	0.96	41094.0	12410.00
13	37204.96	107.61	0.30 ( 0.29)	0.96	44833.1	11201.00
14	36920.21	112.55	0.30 ( 0.29)	0.97	46564.8	12201.00
15	36052.86	119.53	0.30 ( 0.29)	0.97	48422.0	12231.00
16	34913.70	127.22	0.30 ( 0.29)	0.97	50056.3	10400.00
17	33727.50	135.04	0.30 ( 0.29)	0.97	51351.4	12010.00
18	32659.33	140.90	0.30 ( 0.29)	0.97	51698.3	10210.00
19	32195.92	143.89	0.30 ( 0.29)	0.97	51815.5	12000.00
20	29045.68	168.64	0.30 ( 0.29)	0.97	52436.8	10100.00
TOTAL AREA (ACRES) =						52436.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: P501XX50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	374.01	13.28	0.30 ( 0.25)	0.84	174.4	50110.00
2	396.68	17.73	0.30 ( 0.26)	0.85	223.2	50100.00
TOTAL AREA (ACRES) =						223.2

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

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

1 374.01 13.28 0.30( 0.25) 0.84 174.4 50110.00  
 2 396.68 17.73 0.30( 0.26) 0.85 223.2 50100.00  
 TOTAL AREA (ACRES) = 223.2

\*\*\*\*\*

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	374.01	13.28	2.958	0.30( 0.25)	0.84	174.4	50110.00
2	396.68	17.73	2.434	0.30( 0.26)	0.85	223.2	50100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21492.57	18.54	2.362	0.30( 0.24)	0.79	4238.8	300.00
2	24713.94	28.69	1.786	0.30( 0.25)	0.83	7547.2	12730.00
3	25494.76	31.80	1.687	0.30( 0.25)	0.85	8640.5	400.00
4	26618.99	37.09	1.546	0.30( 0.26)	0.87	10572.5	390.00
5	28987.88	48.29	1.335	0.30( 0.27)	0.91	14593.2	40100.00
6	30133.88	56.23	1.243	0.30( 0.28)	0.92	17421.2	11801.00
7	32143.44	67.18	1.156	0.30( 0.28)	0.94	22005.6	11530.00
8	33202.50	71.62	1.126	0.30( 0.28)	0.94	24320.1	11701.00
9	34106.04	75.16	1.102	0.30( 0.28)	0.95	26413.3	11910.00
10	36748.00	85.49	1.032	0.30( 0.29)	0.96	33107.4	10800.00
11	37433.63	89.77	1.003	0.30( 0.29)	0.96	36052.8	11130.00
12	37475.36	99.36	0.960	0.30( 0.29)	0.96	41094.0	12410.00
13	37204.96	107.61	0.925	0.30( 0.29)	0.96	44833.1	11201.00
14	36920.21	112.55	0.903	0.30( 0.29)	0.97	46564.8	12201.00
15	36052.86	119.53	0.873	0.30( 0.29)	0.97	48422.0	12231.00
16	34913.70	127.22	0.856	0.30( 0.29)	0.97	50056.3	10400.00
17	33727.50	135.04	0.841	0.30( 0.29)	0.97	51351.4	12010.00
18	32659.33	140.90	0.829	0.30( 0.29)	0.97	51698.3	10210.00
19	32195.92	143.89	0.823	0.30( 0.29)	0.97	51815.5	12000.00
20	29045.68	168.64	0.773	0.30( 0.29)	0.97	52436.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20084.31	13.28	2.958	0.30( 0.24)	0.79	3210.4	50110.00
2	21641.48	17.73	2.434	0.30( 0.24)	0.79	4276.1	50100.00
3	21876.16	18.54	2.362	0.30( 0.24)	0.79	4462.0	300.00
4	24992.61	28.69	1.786	0.30( 0.25)	0.83	7770.4	12730.00
5	25755.47	31.80	1.687	0.30( 0.25)	0.85	8863.7	400.00
6	26853.95	37.09	1.546	0.30( 0.26)	0.87	10795.7	390.00
7	29184.43	48.29	1.335	0.30( 0.27)	0.91	14816.4	40100.00
8	30313.83	56.23	1.243	0.30( 0.28)	0.92	17644.4	11801.00
9	32307.50	67.18	1.156	0.30( 0.28)	0.93	22228.8	11530.00
10	33361.06	71.62	1.126	0.30( 0.28)	0.94	24543.3	11701.00
11	34260.21	75.16	1.102	0.30( 0.28)	0.94	26636.5	11910.00
12	36889.38	85.49	1.032	0.30( 0.29)	0.96	33330.6	10800.00
13	37569.73	89.77	1.003	0.30( 0.29)	0.96	36276.0	11130.00

14	37603.79	99.36	0.960	0.30( 0.29)	0.96	41317.2	12410.00
15	37326.87	107.61	0.925	0.30( 0.29)	0.96	45056.3	11201.00
16	37038.22	112.55	0.903	0.30( 0.29)	0.96	46788.0	12201.00
17	36165.37	119.53	0.873	0.30( 0.29)	0.97	48645.2	12231.00
18	35023.19	127.22	0.856	0.30( 0.29)	0.97	50279.5	10400.00
19	33834.12	135.04	0.841	0.30( 0.29)	0.97	51574.6	12010.00
20	32763.80	140.90	0.829	0.30( 0.29)	0.97	51921.5	10210.00
21	32299.29	143.89	0.823	0.30( 0.29)	0.97	52038.7	12000.00
22	29139.96	168.64	0.773	0.30( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 37603.79 Tc (MIN.) = 99.360  
 EFFECTIVE AREA (ACRES) = 41317.20 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52660.0  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52660.0 TC (MIN.) = 99.36  
 EFFECTIVE AREA (ACRES) = 41317.20 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.962  
 PEAK FLOW RATE (CFS) = 37603.79

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20084.31	13.28	2.958	0.30( 0.24)	0.79	3210.4	50110.00
2	21641.48	17.73	2.434	0.30( 0.24)	0.79	4276.1	50100.00
3	21876.16	18.54	2.362	0.30( 0.24)	0.79	4462.0	300.00
4	24992.61	28.69	1.786	0.30( 0.25)	0.83	7770.4	12730.00
5	25755.47	31.80	1.687	0.30( 0.25)	0.85	8863.7	400.00
6	26853.95	37.09	1.546	0.30( 0.26)	0.87	10795.7	390.00
7	29184.43	48.29	1.335	0.30( 0.27)	0.91	14816.4	40100.00
8	30313.83	56.23	1.243	0.30( 0.28)	0.92	17644.4	11801.00
9	32307.50	67.18	1.156	0.30( 0.28)	0.93	22228.8	11530.00
10	33361.06	71.62	1.126	0.30( 0.28)	0.94	24543.3	11701.00
11	34260.21	75.16	1.102	0.30( 0.28)	0.94	26636.5	11910.00
12	36889.38	85.49	1.032	0.30( 0.29)	0.96	33330.6	10800.00
13	37569.73	89.77	1.003	0.30( 0.29)	0.96	36276.0	11130.00
14	37603.79	99.36	0.960	0.30( 0.29)	0.96	41317.2	12410.00
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16	37038.22	112.55	0.903	0.30( 0.29)	0.96	46788.0	12201.00
17	36165.37	119.53	0.873	0.30( 0.29)	0.97	48645.2	12231.00
18	35023.19	127.22	0.856	0.30( 0.29)	0.97	50279.5	10400.00
19	33834.12	135.04	0.841	0.30( 0.29)	0.97	51574.6	12010.00
20	32763.80	140.90	0.829	0.30( 0.29)	0.97	51921.5	10210.00
21	32299.29	143.89	0.823	0.30( 0.29)	0.97	52038.7	12000.00
22	29139.96	168.64	0.773	0.30( 0.29)	0.97	52660.0	10100.00

END OF RATIONAL METHOD ANALYSIS



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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
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Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S29- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV29.DAT  
TIME/DATE OF STUDY: 11:49 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.436
- 2) 10.00; 3.482
- 3) 15.00; 2.666
- 4) 20.00; 2.226
- 5) 25.00; 1.924
- 6) 30.00; 1.731
- 7) 40.00; 1.465
- 8) 50.00; 1.303
- 9) 60.00; 1.200
- 10) 90.00; 0.997
- 11) 120.00; 0.867
- 12) 180.00; 0.745
- 13) 360.00; 0.552
- 14) 1200.00; 0.242

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES LIP (FT)	MANNING HIKE FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167 0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU50EV28.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20084.31	13.28	0.30 ( 0.24)	0.79	3210.4	50110.00
2	21876.16	18.54	0.30 ( 0.24)	0.79	4462.0	300.00
3	24992.61	28.69	0.30 ( 0.25)	0.83	7770.4	12730.00
4	25755.47	31.80	0.30 ( 0.25)	0.85	8863.7	400.00
5	26853.95	37.09	0.30 ( 0.26)	0.87	10795.7	390.00
6	29184.43	48.29	0.30 ( 0.27)	0.91	14816.4	40100.00
7	30313.83	56.23	0.30 ( 0.28)	0.92	17644.4	11801.00
8	32307.50	67.18	0.30 ( 0.28)	0.93	22228.8	11530.00
9	33361.06	71.62	0.30 ( 0.28)	0.94	24543.3	11701.00
10	34260.21	75.16	0.30 ( 0.28)	0.94	26636.5	11910.00
11	36889.38	85.49	0.30 ( 0.29)	0.96	33330.6	10800.00
12	37569.73	89.77	0.30 ( 0.29)	0.96	36276.0	11130.00
13	37603.79	99.36	0.30 ( 0.29)	0.96	41317.2	12410.00
14	37326.87	107.61	0.30 ( 0.29)	0.96	45056.3	11201.00
15	37038.22	112.55	0.30 ( 0.29)	0.96	46788.0	12201.00
16	36165.37	119.53	0.30 ( 0.29)	0.97	48645.2	12231.00
17	35023.19	127.22	0.30 ( 0.29)	0.97	50279.5	10400.00
18	33834.12	135.04	0.30 ( 0.29)	0.97	51574.6	12010.00
19	32763.80	140.90	0.30 ( 0.29)	0.97	51921.5	10210.00
20	29139.96	168.64	0.30 ( 0.29)	0.97	52660.0	10100.00
TOTAL AREA (ACRES) =						52660.0

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20084.31	13.28	0.30 ( 0.24)	0.79	3210.4	50110.00
2	21876.16	18.54	0.30 ( 0.24)	0.79	4462.0	300.00
3	24992.61	28.69	0.30 ( 0.25)	0.83	7770.4	12730.00
4	25755.47	31.80	0.30 ( 0.25)	0.85	8863.7	400.00
5	26853.95	37.09	0.30 ( 0.26)	0.87	10795.7	390.00
6	29184.43	48.29	0.30 ( 0.27)	0.91	14816.4	40100.00
7	30313.83	56.23	0.30 ( 0.28)	0.92	17644.4	11801.00
8	32307.50	67.18	0.30 ( 0.28)	0.93	22228.8	11530.00
9	33361.06	71.62	0.30 ( 0.28)	0.94	24543.3	11701.00
10	34260.21	75.16	0.30 ( 0.28)	0.94	26636.5	11910.00
11	36889.38	85.49	0.30 ( 0.29)	0.96	33330.6	10800.00
12	37569.73	89.77	0.30 ( 0.29)	0.96	36276.0	11130.00
13	37603.79	99.36	0.30 ( 0.29)	0.96	41317.2	12410.00

14	37326.87	107.61	0.30	( 0.29)	0.96	45056.3	11201.00
15	37038.22	112.55	0.30	( 0.29)	0.96	46788.0	12201.00
16	36165.37	119.53	0.30	( 0.29)	0.97	48645.2	12231.00
17	35023.19	127.22	0.30	( 0.29)	0.97	50279.5	10400.00
18	33834.12	135.04	0.30	( 0.29)	0.97	51574.6	12010.00
19	32763.80	140.90	0.30	( 0.29)	0.97	51921.5	10210.00
20	29139.96	168.64	0.30	( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

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FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 240.00 DOWNSTREAM (FEET) = 216.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3120.28 CHANNEL SLOPE = 0.0077  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 9.10  
 CHANNEL FLOW THRU SUBAREA (CFS) = 37603.79  
 FLOW VELOCITY (FEET/SEC.) = 16.83 FLOW DEPTH (FEET) = 9.10  
 TRAVEL TIME (MIN.) = 3.09 Tc (MIN.) = 102.45  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 102.45  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.943  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.60	0.30	0.100	56
COMMERCIAL	B	3.20	0.30	0.100	56
PUBLIC PARK	B	1.50	0.30	0.850	56
COMMERCIAL	B	5.60	0.30	0.100	56
PUBLIC PARK	B	6.50	0.30	0.850	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.409  
 SUBAREA AREA (ACRES) = 19.40 SUBAREA RUNOFF (CFS) = 14.32  
 EFFECTIVE AREA (ACRES) = 41336.59 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52679.4 PEAK FLOW RATE (CFS) = 37603.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 102.45  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.943  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.50	0.30	0.100	56
PUBLIC PARK	B	4.10	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	1.60	0.30	0.900	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	1.00	0.30	0.900	56

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.823  
 SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 4.95  
 EFFECTIVE AREA (ACRES) = 41344.49 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52687.3 PEAK FLOW RATE (CFS) = 37603.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 102.45  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.943  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"4 DWELLING/ACRE"	B	3.60	0.30	0.900	56
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.30	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	12.00	0.30	1.000	86
PUBLIC PARK	B	36.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	15.90	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	1.50	0.30	1.000	69

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA (ACRES) = 69.40 SUBAREA RUNOFF (CFS) = 41.72  
 EFFECTIVE AREA (ACRES) = 41413.89 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52756.7 PEAK FLOW RATE (CFS) = 37603.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 102.45

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.943  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 4.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.40 0.30 1.000 65  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 1.00 0.30 1.000 65  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 4.10 0.30 0.500 56  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 3.70 0.30 0.500 56  
 RESIDENTIAL  
 "5-7 DWELLINGS/ACRE" B 0.40 0.30 0.500 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.703  
 SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 9.09  
 EFFECTIVE AREA (ACRES) = 41427.69 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52770.5 PEAK FLOW RATE (CFS) = 37603.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 102.45  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.943  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 6.70 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.90 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 10.80 SUBAREA RUNOFF (CFS) = 6.25  
 EFFECTIVE AREA (ACRES) = 41438.49 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52781.3 PEAK FLOW RATE (CFS) = 37603.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12902.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 216.00 DOWNSTREAM (FEET) = 215.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 122.04 CHANNEL SLOPE = 0.0082  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.94  
 CHANNEL FLOW THRU SUBAREA (CFS) = 37603.79  
 FLOW VELOCITY (FEET/SEC.) = 17.20 FLOW DEPTH (FEET) = 8.94  
 TRAVEL TIME (MIN.) = 0.12 Tc (MIN.) = 102.57  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: P503XX50.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1768.30	18.70	0.30 ( 0.22)	0.74	1033.3	50320.00
2	1770.28	19.45	0.30 ( 0.22)	0.74	1064.8	50240.00
3	1774.79	20.47	0.30 ( 0.22)	0.74	1104.7	50330.00
4	1782.58	23.35	0.30 ( 0.22)	0.74	1202.5	50280.00
5	1764.12	24.56	0.30 ( 0.22)	0.74	1233.6	50300.00
6	1740.24	25.78	0.30 ( 0.22)	0.74	1255.7	50220.00
7	1627.11	29.66	0.30 ( 0.22)	0.74	1291.5	50260.00
8	1541.67	32.85	0.30 ( 0.22)	0.74	1298.6	50200.00
TOTAL AREA (ACRES) =						1298.6

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11  
 -----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20084.31	17.24	2.469	0.30 ( 0.24)	0.79	3331.7	50110.00
2	21876.16	22.39	2.082	0.30 ( 0.24)	0.79	4583.3	300.00
3	24992.61	32.37	1.668	0.30 ( 0.25)	0.83	7891.7	12730.00
4	25755.47	35.44	1.586	0.30 ( 0.25)	0.85	8985.0	400.00
5	26853.95	40.68	1.454	0.30 ( 0.26)	0.87	10917.0	390.00
6	29184.43	51.77	1.285	0.30 ( 0.27)	0.90	14937.7	40100.00
7	30313.83	59.68	1.203	0.30 ( 0.28)	0.92	17765.7	11801.00
8	32307.50	70.55	1.129	0.30 ( 0.28)	0.93	22350.1	11530.00
9	33361.06	74.96	1.099	0.30 ( 0.28)	0.94	24664.6	11701.00
10	34260.21	78.47	1.075	0.30 ( 0.28)	0.94	26757.8	11910.00
11	36889.38	88.72	1.006	0.30 ( 0.29)	0.95	33451.9	10800.00
12	37569.73	92.98	0.984	0.30 ( 0.29)	0.96	36397.3	11130.00
13	37603.79	102.57	0.943	0.30 ( 0.29)	0.96	41438.5	12410.00
14	37326.87	110.83	0.907	0.30 ( 0.29)	0.96	45177.6	11201.00
15	37038.22	115.78	0.885	0.30 ( 0.29)	0.96	46909.3	12201.00
16	36165.37	122.78	0.861	0.30 ( 0.29)	0.97	48766.5	12231.00
17	35023.19	130.51	0.846	0.30 ( 0.29)	0.97	50400.8	10400.00
18	33834.12	138.36	0.830	0.30 ( 0.29)	0.97	51695.9	12010.00
19	32763.80	144.25	0.818	0.30 ( 0.29)	0.97	52042.8	10210.00
20	29139.96	172.13	0.761	0.30 ( 0.29)	0.97	52781.3	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 =						115038.03 FEET.	

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
--------	---	----	-----------	---------	----	----	-----------

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	1768.30	18.70	2.340	0.30 ( 0.22)	0.74	1033.3 50320.00
2	1770.28	19.45	2.274	0.30 ( 0.22)	0.74	1064.8 50240.00
3	1774.79	20.47	2.197	0.30 ( 0.22)	0.74	1104.7 50330.00
4	1782.58	23.35	2.024	0.30 ( 0.22)	0.74	1202.5 50280.00
5	1764.12	24.56	1.950	0.30 ( 0.22)	0.74	1233.6 50300.00
6	1740.24	25.78	1.894	0.30 ( 0.22)	0.74	1255.7 50220.00
7	1627.11	29.66	1.744	0.30 ( 0.22)	0.74	1291.5 50260.00
8	1541.67	32.85	1.655	0.30 ( 0.22)	0.74	1298.6 50200.00

LONGEST FLOWPATH FROM NODE 50220.00 TO NODE 12902.00 = 17597.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21813.34	17.24	2.469	0.30 ( 0.23)	0.78	4284.1	50110.00
2	22361.95	18.70	2.340	0.30 ( 0.23)	0.78	4720.8	50320.00
3	22626.03	19.45	2.274	0.30 ( 0.23)	0.78	4935.4	50240.00
4	22985.43	20.47	2.197	0.30 ( 0.23)	0.78	5223.2	50330.00
5	23656.13	22.39	2.082	0.30 ( 0.23)	0.78	5753.1	300.00
6	23958.81	23.35	2.024	0.30 ( 0.24)	0.78	6104.3	50280.00
7	24319.66	24.56	1.950	0.30 ( 0.24)	0.79	6538.2	50300.00
8	24674.56	25.78	1.894	0.30 ( 0.24)	0.79	6962.4	50220.00
9	25774.63	29.66	1.744	0.30 ( 0.24)	0.81	8286.1	50260.00
10	26547.19	32.37	1.668	0.30 ( 0.25)	0.82	9189.3	12730.00
11	26654.12	32.85	1.655	0.30 ( 0.25)	0.82	9362.1	50200.00
12	27223.15	35.44	1.586	0.30 ( 0.25)	0.83	10283.6	400.00
13	28179.12	40.68	1.454	0.30 ( 0.26)	0.85	12215.6	390.00
14	30327.48	51.77	1.285	0.30 ( 0.27)	0.89	16236.3	40100.00
15	31369.31	59.68	1.203	0.30 ( 0.27)	0.91	19064.3	11801.00
16	33282.55	70.55	1.129	0.30 ( 0.28)	0.92	23648.7	11530.00
17	34304.03	74.96	1.099	0.30 ( 0.28)	0.93	25963.2	11701.00
18	35177.61	78.47	1.075	0.30 ( 0.28)	0.93	28056.4	11910.00
19	37732.14	88.72	1.006	0.30 ( 0.28)	0.95	34750.5	10800.00
20	38389.29	92.98	0.984	0.30 ( 0.29)	0.95	37695.9	11130.00
21	38378.62	102.57	0.943	0.30 ( 0.29)	0.96	42737.1	12410.00
22	38063.19	110.83	0.907	0.30 ( 0.29)	0.96	46476.2	11201.00
23	37751.47	115.78	0.885	0.30 ( 0.29)	0.96	48207.9	12201.00
24	36852.85	122.78	0.861	0.30 ( 0.29)	0.96	50065.1	12231.00
25	35693.75	130.51	0.846	0.30 ( 0.29)	0.96	51699.4	10400.00
26	34487.48	138.36	0.830	0.30 ( 0.29)	0.96	52994.5	12010.00
27	33404.28	144.25	0.818	0.30 ( 0.29)	0.96	53341.4	10210.00
28	29719.45	172.13	0.761	0.30 ( 0.29)	0.96	54079.9	10100.00

TOTAL AREA (ACRES) = 54079.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38389.29 Tc(MIN.) = 92.976  
EFFECTIVE AREA(ACRES) = 37695.89 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 54079.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 215.00 DOWNSTREAM(FEET) = 214.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.53 CHANNEL SLOPE = 0.0011  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 15.73  
CHANNEL FLOW THRU SUBAREA(CFS) = 38389.29  
FLOW VELOCITY(FEET/SEC.) = 8.76 FLOW DEPTH(FEET) = 15.73  
TRAVEL TIME(MIN.) = 1.70 Tc(MIN.) = 94.68  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P504XX50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	145.17	13.27	0.30 ( 0.28)	0.94	70.7	50400.00

TOTAL AREA(ACRES) = 70.7

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21813.34	19.27	2.290	0.30 ( 0.23)	0.78	4284.1	50110.00
2	22361.95	20.72	2.183	0.30 ( 0.23)	0.78	4720.8	50320.00
3	22626.03	21.46	2.138	0.30 ( 0.23)	0.78	4935.4	50240.00
4	22985.43	22.47	2.077	0.30 ( 0.23)	0.78	5223.2	50330.00
5	23656.13	24.37	1.962	0.30 ( 0.23)	0.78	5753.1	300.00
6	23958.81	25.32	1.912	0.30 ( 0.24)	0.78	6104.3	50280.00
7	24319.66	26.52	1.865	0.30 ( 0.24)	0.79	6538.2	50300.00
8	24674.56	27.73	1.819	0.30 ( 0.24)	0.79	6962.4	50220.00
9	25774.63	31.59	1.689	0.30 ( 0.24)	0.81	8286.1	50260.00
10	26547.19	34.28	1.617	0.30 ( 0.25)	0.82	9189.3	12730.00
11	26654.12	34.76	1.604	0.30 ( 0.25)	0.82	9362.1	50200.00
12	27223.15	37.33	1.536	0.30 ( 0.25)	0.83	10283.6	400.00
13	28179.12	42.56	1.424	0.30 ( 0.26)	0.85	12215.6	390.00
14	30327.48	53.61	1.266	0.30 ( 0.27)	0.89	16236.3	40100.00
15	31369.31	61.49	1.190	0.30 ( 0.27)	0.91	19064.3	11801.00
16	33282.55	72.33	1.117	0.30 ( 0.28)	0.92	23648.7	11530.00
17	34304.03	76.72	1.087	0.30 ( 0.28)	0.93	25963.2	11701.00
18	35177.61	80.22	1.063	0.30 ( 0.28)	0.93	28056.4	11910.00
19	37732.14	90.43	0.995	0.30 ( 0.28)	0.95	34750.5	10800.00
20	38389.29	94.68	0.977	0.30 ( 0.29)	0.95	37695.9	11130.00
21	38378.62	104.27	0.935	0.30 ( 0.29)	0.96	42737.1	12410.00
22	38063.19	112.54	0.899	0.30 ( 0.29)	0.96	46476.2	11201.00



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23 37751.47 117.49 0.878 0.30( 0.29) 0.96 48207.9 12201.00
24 36852.85 124.50 0.858 0.30( 0.29) 0.96 50065.1 12231.00
25 35693.75 132.25 0.842 0.30( 0.29) 0.96 51699.4 10400.00
26 34487.48 140.13 0.826 0.30( 0.29) 0.96 52994.5 12010.00
27 33404.28 146.03 0.814 0.30( 0.29) 0.96 53341.4 10210.00
28 29719.45 173.97 0.757 0.30( 0.29) 0.96 54079.9 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

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\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

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STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      145.17  13.27  2.948  0.30( 0.28) 0.94    70.7  50400.00
LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

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\*\* PEAK FLOW RATE TABLE \*\*

```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      19974.24 13.27  2.948  0.30( 0.23) 0.78    3021.5 50400.00
2      21922.71 19.27  2.290  0.30( 0.23) 0.78    4354.8 50110.00
3      22465.46 20.72  2.183  0.30( 0.23) 0.78    4791.5 50320.00
4      22727.09 21.46  2.138  0.30( 0.23) 0.78    5006.1 50240.00
5      23083.17 22.47  2.077  0.30( 0.23) 0.78    5293.9 50330.00
6      23747.65 24.37  1.962  0.30( 0.23) 0.78    5823.8   300.00
7      24047.57 25.32  1.912  0.30( 0.24) 0.79    6175.0 50280.00
8      24405.88 26.52  1.865  0.30( 0.24) 0.79    6608.9 50300.00
9      24758.26 27.73  1.819  0.30( 0.24) 0.79    7033.1 50220.00
10     25851.25 31.59  1.689  0.30( 0.24) 0.81    8356.8 50260.00
11     26619.91 34.28  1.617  0.30( 0.25) 0.82    9260.0 12730.00
12     26726.15 34.76  1.604  0.30( 0.25) 0.82    9432.8 50200.00
13     27291.45 37.33  1.536  0.30( 0.25) 0.83   10354.3 400.00
14     28241.31 42.56  1.424  0.30( 0.26) 0.85   12286.3 390.00
15     30381.08 53.61  1.266  0.30( 0.27) 0.89   16307.0 40100.00
16     31418.78 61.49  1.190  0.30( 0.27) 0.91   19135.0 11801.00
17     33328.03 72.33  1.117  0.30( 0.28) 0.92   23719.4 11530.00
18     34347.88 76.72  1.087  0.30( 0.28) 0.93   26033.9 11701.00
19     35220.17 80.22  1.063  0.30( 0.28) 0.93   28127.1 11910.00
20     37771.01 90.43  0.995  0.30( 0.28) 0.95   34821.2 10800.00
21     38427.15 94.68  0.977  0.30( 0.29) 0.95   37766.6 11130.00
22     38414.22 104.27 0.935  0.30( 0.29) 0.96   42807.8 12410.00
23     38096.84 112.54 0.899  0.30( 0.29) 0.96   46546.9 11201.00
24     37783.95 117.49 0.878  0.30( 0.29) 0.96   48278.6 12201.00
25     36884.24 124.50 0.858  0.30( 0.29) 0.96   50135.8 12231.00
26     35724.28 132.25 0.842  0.30( 0.29) 0.96   51770.1 10400.00
27     34517.14 140.13 0.826  0.30( 0.29) 0.96   53065.2 12010.00
28     33433.29 146.03 0.814  0.30( 0.29) 0.96   53412.1 10210.00
29     29745.36 173.97 0.757  0.30( 0.29) 0.96   54150.6 10100.00
TOTAL AREA(ACRES) = 54150.6

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

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PEAK FLOW RATE(CFS) = 38427.15 Tc(MIN.) = 94.681
EFFECTIVE AREA(ACRES) = 37766.59 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 54150.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

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*****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 2 <<<<<
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*****
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56
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```
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
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>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 15.10
CHANNEL FLOW THRU SUBAREA(CFS) = 38427.15
FLOW VELOCITY(FEET/SEC.) = 9.24 FLOW DEPTH(FEET) = 15.10
TRAVEL TIME(MIN.) = 1.38 Tc(MIN.) = 96.07
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

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*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1
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```
>>>>DEFINE MEMORY BANK # 3 <<<<<
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PEAK FLOWRATE TABLE FILE NAME: 3B50EVRL.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      449.13  14.68  0.30( 0.13) 0.42    192.8  200.00
2      447.82  17.52  0.30( 0.13) 0.42    214.7  210.00
TOTAL AREA(ACRES) = 214.7

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*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11
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```
>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
```

\*\* MAIN STREAM CONFLUENCE DATA \*\*

```

STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER      (CFS)  (MIN.) (INCH/HR) (INCH/HR) (ACRES)  NODE
1      19974.24 14.97  2.671  0.30( 0.23) 0.78    3021.5 50400.00
2      21922.71 20.92  2.171  0.30( 0.23) 0.78    4354.8 50110.00
3      22465.46 22.35  2.084  0.30( 0.23) 0.78    4791.5 50320.00
4      22727.09 23.09  2.039  0.30( 0.23) 0.78    5006.1 50240.00
5      23083.17 24.09  1.979  0.30( 0.23) 0.78    5293.9 50330.00
6      23747.65 25.97  1.886  0.30( 0.23) 0.78    5823.8   300.00
7      24047.57 26.92  1.850  0.30( 0.24) 0.79    6175.0 50280.00
8      24405.88 28.12  1.804  0.30( 0.24) 0.79    6608.9 50300.00
9      24758.26 29.32  1.757  0.30( 0.24) 0.79    7033.1 50220.00
10     25851.25 33.16  1.647  0.30( 0.24) 0.81    8356.8 50260.00
11     26619.91 35.83  1.576  0.30( 0.25) 0.82    9260.0 12730.00
12     26726.15 36.31  1.563  0.30( 0.25) 0.82    9432.8 50200.00
13     27291.45 38.87  1.495  0.30( 0.25) 0.83   10354.3 400.00
14     28241.31 44.08  1.399  0.30( 0.26) 0.85   12286.3 390.00
15     30381.08 55.09  1.251  0.30( 0.27) 0.89   16307.0 40100.00
16     31418.78 62.96  1.180  0.30( 0.27) 0.91   19135.0 11801.00
17     33328.03 73.78  1.107  0.30( 0.28) 0.92   23719.4 11530.00

```

18	34347.88	78.15	1.077	0.30 ( 0.28)	0.93	26033.9	11701.00
19	35220.17	81.64	1.054	0.30 ( 0.28)	0.93	28127.1	11910.00
20	37771.01	91.83	0.989	0.30 ( 0.28)	0.95	34821.2	10800.00
21	38427.15	96.07	0.971	0.30 ( 0.29)	0.95	37766.6	11130.00
22	38414.22	105.66	0.929	0.30 ( 0.29)	0.96	42807.8	12410.00
23	38096.84	113.92	0.893	0.30 ( 0.29)	0.96	46546.9	11201.00
24	37783.95	118.88	0.872	0.30 ( 0.29)	0.96	48278.6	12201.00
25	36884.24	125.90	0.855	0.30 ( 0.29)	0.96	50135.8	12231.00
26	35724.28	133.67	0.839	0.30 ( 0.29)	0.96	51770.1	10400.00
27	34517.14	141.56	0.823	0.30 ( 0.29)	0.96	53065.2	12010.00
28	33433.29	147.47	0.811	0.30 ( 0.29)	0.96	53412.1	10210.00
29	29745.36	175.47	0.754	0.30 ( 0.29)	0.96	54150.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	449.13	14.68	2.718	0.30 ( 0.13)	0.42	192.8	200.00
2	447.82	17.52	2.444	0.30 ( 0.13)	0.42	214.7	210.00

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 5961.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20416.98	14.68	2.718	0.30 ( 0.23)	0.76	3155.3	200.00
2	20423.24	14.97	2.671	0.30 ( 0.23)	0.76	3216.5	50400.00
3	21258.02	17.52	2.444	0.30 ( 0.23)	0.76	3808.3	210.00
4	22317.69	20.92	2.171	0.30 ( 0.23)	0.76	4569.5	50110.00
5	22843.70	22.35	2.084	0.30 ( 0.23)	0.77	5006.2	50320.00
6	23096.71	23.09	2.039	0.30 ( 0.23)	0.77	5220.8	50240.00
7	23441.09	24.09	1.979	0.30 ( 0.23)	0.77	5508.6	50330.00
8	24087.73	25.97	1.886	0.30 ( 0.23)	0.77	6038.5	300.00
9	24380.60	26.92	1.850	0.30 ( 0.23)	0.77	6389.7	50280.00
10	24729.97	28.12	1.804	0.30 ( 0.23)	0.78	6823.6	50300.00
11	25073.42	29.32	1.757	0.30 ( 0.23)	0.78	7247.8	50220.00
12	26145.09	33.16	1.647	0.30 ( 0.24)	0.80	8571.5	50260.00
13	26900.00	35.83	1.576	0.30 ( 0.24)	0.81	9474.7	12730.00
14	27003.78	36.31	1.563	0.30 ( 0.24)	0.81	9647.5	50200.00
15	27555.92	38.87	1.495	0.30 ( 0.25)	0.83	10569.0	400.00
16	28487.21	44.08	1.399	0.30 ( 0.25)	0.85	12501.0	390.00
17	30598.30	55.09	1.251	0.30 ( 0.27)	0.89	16521.7	40100.00
18	31622.36	62.96	1.180	0.30 ( 0.27)	0.90	19349.7	11801.00
19	33517.46	73.78	1.107	0.30 ( 0.28)	0.92	23934.1	11530.00
20	34531.60	78.15	1.077	0.30 ( 0.28)	0.93	26248.6	11701.00
21	35399.33	81.64	1.054	0.30 ( 0.28)	0.93	28341.8	11910.00
22	37937.71	91.83	0.989	0.30 ( 0.28)	0.94	35035.9	10800.00
23	38590.30	96.07	0.971	0.30 ( 0.28)	0.95	37981.3	11130.00
24	38569.34	105.66	0.929	0.30 ( 0.29)	0.95	43022.5	12410.00
25	38245.04	113.92	0.893	0.30 ( 0.29)	0.96	46761.6	11201.00
26	37927.99	118.88	0.872	0.30 ( 0.29)	0.96	48493.3	12201.00
27	37025.03	125.90	0.855	0.30 ( 0.29)	0.96	50350.5	12231.00
28	35862.02	133.67	0.839	0.30 ( 0.29)	0.96	51984.8	10400.00
29	34651.78	141.56	0.823	0.30 ( 0.29)	0.96	53279.9	12010.00
30	33565.60	147.47	0.811	0.30 ( 0.29)	0.96	53626.8	10210.00
31	29866.68	175.47	0.754	0.30 ( 0.29)	0.96	54365.3	10100.00

TOTAL AREA (ACRES) = 54365.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38590.30 Tc(MIN.) = 96.065  
EFFECTIVE AREA(ACRES) = 37981.29 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 54365.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 96.07  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.971  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	20.00	0.30	1.000	69
NATURAL FAIR COVER "MEADOWS"	B	0.10	0.30	1.000	70
PUBLIC PARK	B	14.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.920  
SUBAREA AREA(ACRES) = 39.10 SUBAREA RUNOFF(CFS) = 24.45  
EFFECTIVE AREA(ACRES) = 38020.39 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 54404.4 PEAK FLOW RATE(CFS) = 38590.30  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 96.07  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.971  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.10	0.30	1.000	66
AGRICULTURAL FAIR COVER "ORCHARDS"	B	0.10	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.70	0.30	0.900	56
NATURAL FAIR COVER "GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.912  
SUBAREA AREA(ACRES) = 5.00 SUBAREA RUNOFF(CFS) = 3.14

EFFECTIVE AREA(ACRES) = 38025.39 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA(ACRES) = 54409.4 PEAK FLOW RATE(CFS) = 38590.30  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 96.07

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.971

SUBAREA LOSS RATE DATA(AMC II):

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

"ORCHARDS"	B	0.10	0.30	1.000	65
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RESIDENTIAL

".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
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NATURAL FAIR COVER

"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
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NATURAL FAIR COVER

"GRASS"	B	3.00	0.30	1.000	69
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.956

SUBAREA AREA(ACRES) = 5.90 SUBAREA RUNOFF(CFS) = 3.63

EFFECTIVE AREA(ACRES) = 38031.29 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 54415.3 PEAK FLOW RATE(CFS) = 38590.30

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 54415.3 TC(MIN.) = 96.07

EFFECTIVE AREA(ACRES) = 38031.29 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.947

PEAK FLOW RATE(CFS) = 38590.30

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20416.98	14.68	2.718	0.30( 0.23)	0.76	3205.3	200.00
2	20423.24	14.97	2.671	0.30( 0.23)	0.76	3266.5	50400.00
3	21258.02	17.52	2.444	0.30( 0.23)	0.76	3858.3	210.00
4	22317.69	20.92	2.171	0.30( 0.23)	0.77	4619.5	50110.00
5	22843.70	22.35	2.084	0.30( 0.23)	0.77	5056.2	50320.00
6	23096.71	23.09	2.039	0.30( 0.23)	0.77	5270.8	50240.00
7	23441.09	24.09	1.979	0.30( 0.23)	0.77	5558.6	50330.00
8	24087.73	25.97	1.886	0.30( 0.23)	0.77	6088.5	300.00
9	24380.60	26.92	1.850	0.30( 0.23)	0.77	6439.7	50280.00
10	24729.97	28.12	1.804	0.30( 0.23)	0.78	6873.6	50300.00
11	25073.42	29.32	1.757	0.30( 0.24)	0.78	7297.8	50220.00
12	26145.09	33.16	1.647	0.30( 0.24)	0.80	8621.5	50260.00
13	26900.00	35.83	1.576	0.30( 0.24)	0.81	9524.7	12730.00
14	27003.78	36.31	1.563	0.30( 0.24)	0.81	9697.5	50200.00
15	27555.92	38.87	1.495	0.30( 0.25)	0.83	10619.0	400.00
16	28487.21	44.08	1.399	0.30( 0.25)	0.85	12551.0	390.00
17	30598.30	55.09	1.251	0.30( 0.27)	0.89	16571.7	40100.00
18	31622.36	62.96	1.180	0.30( 0.27)	0.90	19399.7	11801.00

19	33517.46	73.78	1.107	0.30( 0.28)	0.92	23984.1	11530.00
20	34531.60	78.15	1.077	0.30( 0.28)	0.93	26298.6	11701.00
21	35399.33	81.64	1.054	0.30( 0.28)	0.93	28391.8	11910.00
22	37937.71	91.83	0.989	0.30( 0.28)	0.94	35085.9	10800.00
23	38590.30	96.07	0.971	0.30( 0.28)	0.95	38031.3	11130.00
24	38569.34	105.66	0.929	0.30( 0.29)	0.95	43072.5	12410.00
25	38245.04	113.92	0.893	0.30( 0.29)	0.96	46811.6	11201.00
26	37927.99	118.88	0.872	0.30( 0.29)	0.96	48543.3	12201.00
27	37025.03	125.90	0.855	0.30( 0.29)	0.96	50400.5	12231.00
28	35862.02	133.67	0.839	0.30( 0.29)	0.96	52034.8	10400.00
29	34651.78	141.56	0.823	0.30( 0.29)	0.96	53329.9	12010.00
30	33565.60	147.47	0.811	0.30( 0.29)	0.96	53676.8	10210.00
31	29866.68	175.47	0.754	0.30( 0.29)	0.96	54415.3	10100.00

END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S33 - FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV33.DAT  
TIME/DATE OF STUDY: 11:49 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.328
- 2) 10.00; 3.431
- 3) 15.00; 2.636
- 4) 20.00; 2.205
- 5) 25.00; 1.909
- 6) 30.00; 1.717
- 7) 40.00; 1.454
- 8) 50.00; 1.293
- 9) 60.00; 1.185
- 10) 90.00; 0.982
- 11) 120.00; 0.852
- 12) 180.00; 0.728
- 13) 360.00; 0.537
- 14) 1200.00; 0.235

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

- 1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: S31X50.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2838.09	34.69	0.30 ( 0.24)	0.81	2526.1	13100.00
2	2813.56	59.31	0.30 ( 0.24)	0.81	3777.1	13000.00
3	2759.78	61.54	0.30 ( 0.24)	0.81	3796.8	13010.00
TOTAL AREA (ACRES) =						3796.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S32X50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1294.02	32.85	0.30 ( 0.25)	0.83	1118.5	13210.00
2	1295.27	33.25	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1294.02	32.85	0.30 ( 0.25)	0.83	1118.5	13210.00
2	1295.27	33.25	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 11  
-----

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

=====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1294.02	32.85	1.642	0.30 ( 0.25)	0.83	1118.5	13210.00
2	1295.27	33.25	1.631	0.30 ( 0.25)	0.83	1127.6	13200.00

LONGEST FLOWPATH FROM NODE 13200.00 TO NODE 13222.00 = 16821.05 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2838.09	34.69	1.594	0.30 ( 0.24)	0.81	2526.1	13100.00
2	2813.56	59.31	1.192	0.30 ( 0.24)	0.81	3777.1	13000.00
3	2759.78	61.54	1.175	0.30 ( 0.24)	0.81	3796.8	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4078.05	32.85	1.642	0.30 ( 0.24)	0.82	3511.0	13210.00
2	4091.97	33.25	1.631	0.30 ( 0.24)	0.82	3549.2	13200.00
3	4098.01	34.69	1.594	0.30 ( 0.24)	0.82	3653.7	13100.00
4	3697.73	59.31	1.192	0.30 ( 0.24)	0.81	4904.7	13000.00
5	3627.24	61.54	1.175	0.30 ( 0.24)	0.81	4924.4	13010.00

TOTAL AREA (ACRES) = 4924.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 4098.01 Tc(MIN.) = 34.689  
 EFFECTIVE AREA(ACRES) = 3653.73 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 4924.4  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.04  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.505

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.60	0.30	1.000	66
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.10	0.30	0.600	56
AGRICULTURAL POOR COVER					

"ROW CROPS,CONTOURED"	B	5.30	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
COMMERCIAL	B	22.60	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.521  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4125.45  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.57  
 AVERAGE FLOW DEPTH(FEET) = 5.04 TRAVEL TIME(MIN.) = 3.36  
 Tc(MIN.) = 38.05  
 SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 54.88  
 EFFECTIVE AREA(ACRES) = 3698.93 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
 TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 4200.85  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.09 FLOW VELOCITY(FEET/SEC.) = 12.64  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4192.43	36.22	1.553	0.30 ( 0.24)	0.81	3556.2	13210.00
2	4203.97	36.62	1.543	0.30 ( 0.24)	0.81	3594.4	13200.00
3	4200.85	38.05	1.505	0.30 ( 0.24)	0.81	3698.9	13100.00
4	4113.28	62.78	1.166	0.30 ( 0.24)	0.81	4949.9	13000.00
5	4061.85	65.03	1.151	0.30 ( 0.24)	0.81	4969.6	13010.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 4203.97 Tc(MIN.) = 36.62  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.81 EFFECTIVE AREA(ACRES) = 3594.44

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 36.62  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.543

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.00	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	7.40	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	4.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.596					
SUBAREA AREA(ACRES) = 16.50 SUBAREA RUNOFF(CFS) = 20.26					
EFFECTIVE AREA(ACRES) = 3610.94 AREA-AVERAGED Fm(INCH/HR) = 0.24					

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 4986.1 PEAK FLOW RATE (CFS) = 4224.23

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 36.62  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.543  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	1.30	0.30	1.000	86
COMMERCIAL	B	0.20	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	5.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.20	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.60	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.977  
SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 8.89  
EFFECTIVE AREA (ACRES) = 3618.84 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 4994.0 PEAK FLOW RATE (CFS) = 4233.12

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 36.62  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.543  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	4.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	1.10	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	6.90	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	7.90	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.00	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 22.00 SUBAREA RUNOFF (CFS) = 24.61  
EFFECTIVE AREA (ACRES) = 3640.84 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81

TOTAL AREA (ACRES) = 5016.0 PEAK FLOW RATE (CFS) = 4257.73

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 36.62  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.543  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	14.60	0.30	1.000	79

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 16.78  
EFFECTIVE AREA (ACRES) = 3655.84 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 5031.0 PEAK FLOW RATE (CFS) = 4274.51

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

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

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00  
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

Tc = K \* [(LENGTH \*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.947  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL, BROADLEAF"	B	0.50	0.30	1.000	63	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF (CFS) = 3.61  
TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 3.61

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FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 685.00 DOWNSTREAM(FEET) = 655.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 135.00 CHANNEL SLOPE = 0.2222
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.823
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.50 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 0.70 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.90
AVERAGE FLOW DEPTH(FEET) = 0.52 TRAVEL TIME(MIN.) = 0.33
Tc(MIN.) = 8.97
SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = 4.12
EFFECTIVE AREA(ACRES) = 2.40 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 7.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.58 FLOW VELOCITY(FEET/SEC.) = 7.42
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

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FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.665
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.30 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 1.90 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.13
AVERAGE FLOW DEPTH(FEET) = 0.67 TRAVEL TIME(MIN.) = 0.42
Tc(MIN.) = 9.38

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SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 6.97
EFFECTIVE AREA(ACRES) = 4.70 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 14.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 8.60
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

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FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.395
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 1.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.50 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 19.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.36
AVERAGE FLOW DEPTH(FEET) = 1.00 TRAVEL TIME(MIN.) = 0.84
Tc(MIN.) = 10.22
SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 10.03
EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 23.12

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.08 FLOW VELOCITY(FEET/SEC.) = 6.63
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

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FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.284
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.70 0.30 1.000 63

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NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 3.00 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 31.72  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.87  
 AVERAGE FLOW DEPTH(FEET) = 1.24 TRAVEL TIME(MIN.) = 0.70  
 Tc(MIN.) = 10.92  
 SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 17.19  
 EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 39.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.35 FLOW VELOCITY(FEET/SEC.) = 7.27  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.170

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	2.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	4.10	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 53.43  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.00  
 AVERAGE FLOW DEPTH(FEET) = 1.49 TRAVEL TIME(MIN.) = 0.72  
 Tc(MIN.) = 11.64  
 SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 27.90  
 EFFECTIVE AREA(ACRES) = 25.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 25.5 PEAK FLOW RATE(CFS) = 65.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.62 FLOW VELOCITY(FEET/SEC.) = 8.36  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTREAM(FEET) = 530.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 619.00 CHANNEL SLOPE = 0.0485  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.956

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	8.20	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.70	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 83.92  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.67  
 AVERAGE FLOW DEPTH(FEET) = 1.91 TRAVEL TIME(MIN.) = 1.35  
 Tc(MIN.) = 12.99  
 SUBAREA AREA(ACRES) = 15.10 SUBAREA RUNOFF(CFS) = 36.10  
 EFFECTIVE AREA(ACRES) = 40.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 40.6 PEAK FLOW RATE(CFS) = 97.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.02 FLOW VELOCITY(FEET/SEC.) = 7.94  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 530.00 DOWNSTREAM(FEET) = 515.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 377.00 CHANNEL SLOPE = 0.0398  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.827

SUBAREA LOSS RATE DATA(AMC II):

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

"CHAPARRAL,BROADLEAF" B 0.50 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 6.50 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 1.30 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.10 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 5.50 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 3.40 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 117.88  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.74  
 AVERAGE FLOW DEPTH(FEET) = 2.25 TRAVEL TIME(MIN.) = 0.81  
 Tc(MIN.) = 13.80  
 SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 41.62  
 EFFECTIVE AREA(ACRES) = 58.90 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 58.9 PEAK FLOW RATE(CFS) = 133.97  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.36 FLOW VELOCITY(FEET/SEC.) = 8.00  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
 -----

ELEVATION DATA: UPSTREAM(FEET) = 515.00 DOWNSTREAM(FEET) = 490.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0481  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.671  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.70	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	2.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.10	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	7.40	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 149.55  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.82  
 AVERAGE FLOW DEPTH(FEET) = 2.38 TRAVEL TIME(MIN.) = 0.98  
 Tc(MIN.) = 14.78

SUBAREA AREA(ACRES) = 14.60 SUBAREA RUNOFF(CFS) = 31.15  
 EFFECTIVE AREA(ACRES) = 73.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 73.5 PEAK FLOW RATE(CFS) = 156.84  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.42 FLOW VELOCITY(FEET/SEC.) = 8.92  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31109.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
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MAINLINE Tc(MIN.) = 14.78  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.671  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	11.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	8.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.40	0.30	1.000	65

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 32.80 SUBAREA RUNOFF(CFS) = 69.99  
 EFFECTIVE AREA(ACRES) = 106.30 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 106.3 PEAK FLOW RATE(CFS) = 226.83

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31110.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
 -----

ELEVATION DATA: UPSTREAM(FEET) = 490.00 DOWNSTREAM(FEET) = 432.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1420.00 CHANNEL SLOPE = 0.0408  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.435  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.60	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.30	0.30	1.000	79

NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 4.00 0.30 1.000 65  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 1.50 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 234.81  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.29  
 AVERAGE FLOW DEPTH(FEET) = 2.90 TRAVEL TIME(MIN.) = 2.55  
 Tc(MIN.) = 17.33  
 SUBAREA AREA(ACRES) = 8.30 SUBAREA RUNOFF(CFS) = 15.95  
 EFFECTIVE AREA(ACRES) = 114.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 114.6 PEAK FLOW RATE(CFS) = 226.83  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.87 FLOW VELOCITY(FEET/SEC.) = 9.21  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31110.00 = 4544.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 31110.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 17.33  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.435  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 9.60 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.40 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 6.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 3.90 0.30 1.000 65  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.40 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.998  
 SUBAREA AREA(ACRES) = 21.80 SUBAREA RUNOFF(CFS) = 41.91  
 EFFECTIVE AREA(ACRES) = 136.40 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 136.4 PEAK FLOW RATE(CFS) = 262.16

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 13301.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 432.00 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1847.00 CHANNEL SLOPE = 0.0271  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.144  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 4.90 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.50 0.30 1.000 79  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.50 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 5.30 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 3.30 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.997  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 277.19  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.30  
 AVERAGE FLOW DEPTH(FEET) = 3.34 TRAVEL TIME(MIN.) = 3.71  
 Tc(MIN.) = 21.04  
 SUBAREA AREA(ACRES) = 18.10 SUBAREA RUNOFF(CFS) = 30.05  
 EFFECTIVE AREA(ACRES) = 154.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 154.5 PEAK FLOW RATE(CFS) = 262.16  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 3.27 FLOW VELOCITY(FEET/SEC.) = 8.18  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	262.16	21.04	2.144	0.30( 0.30)	1.00	154.5	31100.00

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

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4263.54	36.22	1.553	0.30( 0.24)	0.81	3617.6	13210.00
2	4274.51	36.62	1.543	0.30( 0.24)	0.81	3655.8	13200.00
3	4269.30	38.05	1.505	0.30( 0.24)	0.81	3760.3	13100.00
4	4162.99	62.78	1.166	0.30( 0.24)	0.81	5011.3	13000.00
5	4110.72	65.03	1.151	0.30( 0.24)	0.81	5031.0	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1	3854.45	21.04	2.144	0.30	( 0.25)	0.83	2255.5	31100.00
2	4441.77	36.22	1.553	0.30	( 0.25)	0.82	3772.1	13210.00
3	4451.27	36.62	1.543	0.30	( 0.25)	0.82	3810.3	13200.00
4	4440.71	38.05	1.505	0.30	( 0.25)	0.82	3914.8	13100.00
5	4286.17	62.78	1.166	0.30	( 0.24)	0.82	5165.8	13000.00
6	4231.74	65.03	1.151	0.30	( 0.24)	0.82	5185.5	13010.00
TOTAL AREA (ACRES) =		5185.5						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 4451.27 Tc(MIN.) = 36.616  
EFFECTIVE AREA(ACRES) = 3810.34 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5185.5  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<<  
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\*\*\*\*\*  
FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.07  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.487  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	9.40	0.30	1.000	69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4456.29					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.86					
AVERAGE FLOW DEPTH(FEET) = 7.07 TRAVEL TIME(MIN.) = 2.15					
Tc(MIN.) = 38.76					
SUBAREA AREA(ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 10.04					
EFFECTIVE AREA(ACRES) = 3819.74 AREA-AVERAGED Fm(INCH/HR) = 0.25					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82					
TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 4451.27					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0					
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040					
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.06					

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 7.06 FLOW VELOCITY(FEET/SEC.) = 8.86  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3854.45	23.28	2.011	0.30( 0.25)	0.83	2264.9	31100.00
2	4441.77	38.37	1.497	0.30( 0.25)	0.82	3781.5	13210.00
3	4451.27	38.76	1.487	0.30( 0.25)	0.82	3819.7	13200.00
4	4440.71	40.20	1.451	0.30( 0.25)	0.82	3924.2	13100.00
5	4286.17	64.96	1.151	0.30( 0.24)	0.82	5175.2	13000.00
6	4231.74	67.21	1.136	0.30( 0.24)	0.82	5194.9	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 4451.27 Tc(MIN.) = 38.76  
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.82 EFFECTIVE AREA(ACRES) = 3819.74

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
=====

MAINLINE Tc(MIN.) = 38.76  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.487  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	13.80	0.30	1.000	86
NATURAL POOR COVER					
"BARREN"	B	2.60	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952					
SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 30.37					
EFFECTIVE AREA(ACRES) = 3847.84 AREA-AVERAGED Fm(INCH/HR) = 0.25					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82					
TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 4451.27					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
=====

MAINLINE Tc(MIN.) = 38.76  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.487  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	0.10	0.30	1.000	79
COMMERCIAL	B	0.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.40	0.30	0.900	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED" B 0.50 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894  
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 3.40  
 EFFECTIVE AREA (ACRES) = 3850.94 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 4451.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 38.76  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.487  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.10	0.30	1.000	86
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.20	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	13.80	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 21.57  
 EFFECTIVE AREA (ACRES) = 3871.14 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 4451.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 38.76  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.487  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	34.60	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.40	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	22.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	11.60	0.30	1.000	79
APARTMENTS	B	0.40	0.30	0.200	56

NATURAL FAIR COVER  
 "CHAPARRAL, BROADLEAF" B 4.80 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 81.67  
 EFFECTIVE AREA (ACRES) = 3947.54 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 4451.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 38.76  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.487  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	1.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	46.40	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	60.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	5.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 122.40  
 EFFECTIVE AREA (ACRES) = 4062.14 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 4523.12

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.40  
 CHANNEL FLOW THRU SUBAREA (CFS) = 4523.12  
 FLOW VELOCITY (FEET/SEC.) = 10.22 FLOW DEPTH (FEET) = 6.40  
 TRAVEL TIME (MIN.) = 3.58 Tc (MIN.) = 42.34  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3967.75	27.00	1.832	0.30 ( 0.25)	0.84	2507.3	31100.00
2	4517.95	41.95	1.423	0.30 ( 0.25)	0.83	4023.9	13210.00

3 4523.12 42.34 1.416 0.30( 0.25) 0.83 4062.1 13200.00  
 4 4506.32 43.78 1.393 0.30( 0.25) 0.83 4166.6 13100.00  
 5 4408.65 68.56 1.127 0.30( 0.25) 0.82 5417.6 13000.00  
 6 4350.33 70.83 1.112 0.30( 0.25) 0.82 5437.3 13010.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 4523.12 Tc(MIN.) = 42.34  
 AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA(ACRES) = 4062.14

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 42.34  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.416  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834  
 SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 7.98  
 EFFECTIVE AREA(ACRES) = 4069.74 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.34  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.416  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.40	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.20	0.30	1.000	63
COMMERCIAL	B	3.60	0.30	0.100	56
NATURAL FAIR COVER					

"GRASS" B 4.00 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781  
 SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 15.74  
 EFFECTIVE AREA(ACRES) = 4084.54 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.34  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.416  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	14.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	6.30	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 24.72  
 EFFECTIVE AREA(ACRES) = 4109.14 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.34  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.416  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.80	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	1.60	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	31.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990  
 SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 35.56  
 EFFECTIVE AREA(ACRES) = 4144.44 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5519.6 PEAK FLOW RATE (CFS) = 4523.12  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 42.34  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.416  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 1.70 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
RESIDENTIAL  
".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 5.50 0.30 1.000 79  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.20 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830  
SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 11.03  
EFFECTIVE AREA (ACRES) = 4154.94 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 4523.12  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 42.34  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.416  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
RESIDENTIAL  
".4 DWELLING/ACRE" B 1.30 0.30 0.900 56  
NATURAL POOR COVER  
"BARREN" B 0.30 0.30 1.000 86  
COMMERCIAL B 0.20 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
RESIDENTIAL  
".4 DWELLING/ACRE" B 6.50 0.30 0.900 56  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 3.00 0.30 1.000 79  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 11.91  
EFFECTIVE AREA (ACRES) = 4166.54 AREA-AVERAGED Fm (INCH/HR) = 0.25

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 4523.12  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 7.37  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.387  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
PUBLIC PARK B 13.80 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 4530.16  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.52  
AVERAGE FLOW DEPTH (FEET) = 7.37 TRAVEL TIME (MIN.) = 1.81  
Tc (MIN.) = 44.15  
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 14.06  
EFFECTIVE AREA (ACRES) = 4180.34 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 4523.12  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 7.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 7.37 FLOW VELOCITY (FEET/SEC.) = 8.51  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13304.00 = 38920.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3967.75	28.88	1.760	0.30 ( 0.25)	0.85	2625.5	31100.00
2	4517.95	43.76	1.393	0.30 ( 0.25)	0.83	4142.1	13210.00
3	4523.12	44.15	1.387	0.30 ( 0.25)	0.83	4180.3	13200.00
4	4506.32	45.59	1.364	0.30 ( 0.25)	0.83	4284.8	13100.00
5	4408.65	70.39	1.115	0.30 ( 0.25)	0.83	5535.8	13000.00
6	4350.33	72.66	1.099	0.30 ( 0.25)	0.83	5555.5	13010.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 4523.12 Tc (MIN.) = 44.15  
AREA-AVERAGED Fm (INCH/HR) = 0.25 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA (ACRES) = 4180.34

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 44.15  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	7.80	0.30	1.000	86
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	1.70	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	9.40	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	1.20	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	2.60	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 22.80 SUBAREA RUNOFF(CFS) = 22.31  
 EFFECTIVE AREA(ACRES) = 4203.14 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5578.3 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 44.15  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.20	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	2.70	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994  
 SUBAREA AREA(ACRES) = 3.40 SUBAREA RUNOFF(CFS) = 3.33  
 EFFECTIVE AREA(ACRES) = 4206.54 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5581.7 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.97  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.316  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	27.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4535.65  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.19  
 AVERAGE FLOW DEPTH(FEET) = 5.97 TRAVEL TIME(MIN.) = 4.42  
 Tc(MIN.) = 48.57  
 SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 25.06  
 EFFECTIVE AREA(ACRES) = 4233.94 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.96 FLOW VELOCITY(FEET/SEC.) = 11.18  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap (ACRES)	Ae (ACRES)	HEADWATER NODE
1	3967.75	33.48	1.625	0.30( 0.25)	0.85	2679.1	31100.00
2	4517.95	48.18	1.322	0.30( 0.25)	0.84	4195.7	13210.00
3	4523.12	48.57	1.316	0.30( 0.25)	0.84	4233.9	13200.00
4	4506.32	50.01	1.293	0.30( 0.25)	0.84	4338.4	13100.00
5	4408.65	74.84	1.085	0.30( 0.25)	0.83	5589.4	13000.00
6	4350.33	77.13	1.069	0.30( 0.25)	0.83	5609.1	13010.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 4523.12 Tc(MIN.) = 48.57  
 AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 4233.94

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

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 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 48.57  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.316  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	18.40	0.30	1.000	86
NATURAL FAIR COVER "MEADOWS"	B	1.20	0.30	1.000	70
NATURAL FAIR COVER					



"WOODLAND,GRASS" B 0.10 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 26.60 0.30 1.000 86  
 COMMERCIAL B 3.90 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.00 0.30 1.000 86  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934  
 SUBAREA AREA (ACRES) = 53.20 SUBAREA RUNOFF (CFS) = 49.59  
 EFFECTIVE AREA (ACRES) = 4287.14 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5662.3 PEAK FLOW RATE (CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.57  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.316  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 1.10 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.20 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 14.00 0.30 1.000 86  
 COMMERCIAL B 4.30 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 5.30 0.30 1.000 86  
 NATURAL FAIR COVER  
 "GRASS" B 2.70 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860  
 SUBAREA AREA (ACRES) = 27.60 SUBAREA RUNOFF (CFS) = 26.28  
 EFFECTIVE AREA (ACRES) = 4314.74 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5689.9 PEAK FLOW RATE (CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.57  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.316  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "MEADOWS" B 3.20 0.30 1.000 70  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 6.10 0.30 1.000 66  
 RESIDENTIAL

".4 DWELLING/ACRE" B 7.50 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 5.40 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 1.60 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 1.90 0.30 1.000 86  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971  
 SUBAREA AREA (ACRES) = 25.70 SUBAREA RUNOFF (CFS) = 23.70  
 EFFECTIVE AREA (ACRES) = 4340.44 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5715.6 PEAK FLOW RATE (CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.57  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.316  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 2.00 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.70 0.30 1.000 86  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 0.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.10 0.30 1.000 65  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807  
 SUBAREA AREA (ACRES) = 10.70 SUBAREA RUNOFF (CFS) = 10.34  
 EFFECTIVE AREA (ACRES) = 4351.14 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5726.3 PEAK FLOW RATE (CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 48.57  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.316  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 8.20 0.30 0.900 56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 8.18  
 EFFECTIVE AREA(ACRES) = 4359.84 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA(ACRES) = 5735.0 PEAK FLOW RATE(CFS) = 4523.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 3A50EVRL.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1087.20	13.49	0.30( 0.13)	0.43	436.1	120.00
2	1086.73	13.53	0.30( 0.13)	0.43	436.7	110.00
3	930.63	20.54	0.30( 0.13)	0.43	504.3	100.00
4	870.49	23.19	0.30( 0.13)	0.43	510.2	150.00
TOTAL AREA(ACRES) =						510.2

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3967.75	33.48	1.625	0.30( 0.26)	0.85	2805.0	31100.00
2	4517.95	48.18	1.322	0.30( 0.25)	0.84	4321.6	13210.00
3	4523.12	48.57	1.316	0.30( 0.25)	0.84	4359.8	13200.00
4	4506.32	50.01	1.293	0.30( 0.25)	0.84	4464.3	13100.00
5	4408.65	74.84	1.085	0.30( 0.25)	0.83	5715.3	13000.00
6	4350.33	77.13	1.069	0.30( 0.25)	0.83	5735.0	13010.00
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 =							41886.54 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1087.20	13.49	2.876	0.30( 0.13)	0.43	436.1	120.00
2	1086.73	13.53	2.870	0.30( 0.13)	0.43	436.7	110.00
3	930.63	20.54	2.173	0.30( 0.13)	0.43	504.3	100.00
4	870.49	23.19	2.016	0.30( 0.13)	0.43	510.2	150.00
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 13305.00 =							9867.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4145.43	13.49	2.876	0.30( 0.22)	0.73	1566.5	120.00
2	4146.46	13.53	2.870	0.30( 0.22)	0.74	1570.2	110.00
3	4337.89	20.54	2.173	0.30( 0.23)	0.76	2225.4	100.00
4	4402.44	23.19	2.016	0.30( 0.23)	0.76	2453.0	150.00
5	4657.91	33.48	1.625	0.30( 0.24)	0.79	3315.2	31100.00
6	5068.23	48.18	1.322	0.30( 0.24)	0.80	4831.8	13210.00

7	5070.48	48.57	1.316	0.30( 0.24)	0.80	4870.0	13200.00
8	5042.99	50.01	1.293	0.30( 0.24)	0.80	4974.5	13100.00
9	4849.18	74.84	1.085	0.30( 0.24)	0.80	6225.5	13000.00
10	4783.70	77.13	1.069	0.30( 0.24)	0.80	6245.2	13010.00
TOTAL AREA(ACRES) =						6245.2	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5070.48 Tc(MIN.) = 48.570  
 EFFECTIVE AREA(ACRES) = 4870.04 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA(ACRES) = 6245.2  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.88  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.247

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	68.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5101.18

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.83

AVERAGE FLOW DEPTH(FEET) = 5.88 TRAVEL TIME(MIN.) = 5.73

Tc(MIN.) = 54.30

SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 61.40

EFFECTIVE AREA(ACRES) = 4938.84 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 5070.48

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.86 FLOW VELOCITY(FEET/SEC.) = 12.81

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13306.00 = 46294.95 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4145.43	19.57	2.242	0.30( 0.22)	0.74	1635.3	120.00

2	4146.46	19.61	2.239	0.30	( 0.22)	0.74	1639.0	110.00
3	4337.89	26.54	1.850	0.30	( 0.23)	0.76	2294.2	100.00
4	4402.44	29.16	1.749	0.30	( 0.23)	0.77	2521.8	150.00
5	4657.91	39.36	1.471	0.30	( 0.24)	0.79	3384.0	31100.00
6	5068.23	53.90	1.251	0.30	( 0.24)	0.80	4900.6	13210.00
7	5070.48	54.30	1.247	0.30	( 0.24)	0.80	4938.8	13200.00
8	5042.99	55.75	1.231	0.30	( 0.24)	0.80	5043.3	13100.00
9	4849.18	80.65	1.045	0.30	( 0.24)	0.80	6294.3	13000.00
10	4783.70	82.97	1.030	0.30	( 0.24)	0.80	6314.0	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5070.48 Tc(MIN.) = 54.30  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 4938.84

\*\*\*\*\*

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 54.30  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.247  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	21.50	0.30	1.000	86
COMMERCIAL	B	15.30	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.60	0.30	1.000	65
RESIDENTIAL					
".4 DWELLING/ACRE"	B	8.00	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.685  
 SUBAREA AREA(ACRES) = 46.30 SUBAREA RUNOFF(CFS) = 43.38  
 EFFECTIVE AREA(ACRES) = 4985.14 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6360.3 PEAK FLOW RATE(CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 54.30  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.247  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	43.30	0.30	1.000	86
COMMERCIAL	B	4.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	5.70	0.30	1.000	69

AGRICULTURAL FAIR COVER

"ORCHARDS"	B	0.50	0.30	1.000	65
PUBLIC PARK	B	1.10	0.30	0.850	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.10	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA(ACRES) = 58.60 SUBAREA RUNOFF(CFS) = 51.24  
 EFFECTIVE AREA(ACRES) = 5043.74 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6418.9 PEAK FLOW RATE(CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 54.30  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.247  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	6.80	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.50	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.10	0.30	1.000	65
PUBLIC PARK	B	0.50	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
 SUBAREA AREA(ACRES) = 9.70 SUBAREA RUNOFF(CFS) = 8.55  
 EFFECTIVE AREA(ACRES) = 5053.44 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6428.6 PEAK FLOW RATE(CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 54.30  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.247  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.20	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
 SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 2.02

EFFECTIVE AREA (ACRES) = 5055.74 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA (ACRES) = 6430.9 PEAK FLOW RATE (CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 245.50 DOWNSTREAM (FEET) = 220.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1543.21 CHANNEL SLOPE = 0.0165  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.79  
 CHANNEL FLOW THRU SUBAREA (CFS) = 5070.48  
 FLOW VELOCITY (FEET/SEC.) = 13.01 FLOW DEPTH (FEET) = 5.79  
 TRAVEL TIME (MIN.) = 1.98 Tc (MIN.) = 56.27  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13307.00 = 47838.16 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4145.43	21.67	2.106	0.30 ( 0.22)	0.75	1752.2	120.00
2	4146.46	21.71	2.104	0.30 ( 0.22)	0.75	1755.9	110.00
3	4337.89	28.61	1.770	0.30 ( 0.23)	0.76	2411.1	100.00
4	4402.44	31.23	1.685	0.30 ( 0.23)	0.77	2638.7	150.00
5	4657.91	41.39	1.432	0.30 ( 0.24)	0.79	3500.9	31100.00
6	5068.23	55.88	1.230	0.30 ( 0.24)	0.80	5017.5	13210.00
7	5070.48	56.27	1.225	0.30 ( 0.24)	0.80	5055.7	13200.00
8	5042.99	57.73	1.210	0.30 ( 0.24)	0.80	5160.2	13100.00
9	4849.18	82.65	1.032	0.30 ( 0.24)	0.80	6411.2	13000.00
10	4783.70	84.98	1.016	0.30 ( 0.24)	0.80	6430.9	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 5070.48 Tc (MIN.) = 56.27  
 AREA-AVERAGED Fm (INCH/HR) = 0.24 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA (ACRES) = 5055.74

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 56.27  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.225

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.20	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	3.70	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					

"GRASS" B 3.20 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.942  
 SUBAREA AREA (ACRES) = 7.70 SUBAREA RUNOFF (CFS) = 6.53  
 EFFECTIVE AREA (ACRES) = 5063.44 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA (ACRES) = 6438.6 PEAK FLOW RATE (CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc (MIN.) = 56.27  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.225  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ LAND USE SCS SOIL GROUP AREA (ACRES) Fp (INCH/HR) Ap (DECIMAL) SCS CN

NATURAL FAIR COVER						
"WOODLAND, GRASS"	B	3.60	0.30	1.000	65	
NATURAL FAIR COVER						
"GRASS"	B	1.90	0.30	1.000	69	
NATURAL FAIR COVER						
"WOODLAND, GRASS"	B	0.60	0.30	1.000	65	
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30						
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000						
SUBAREA AREA (ACRES) = 6.10						
SUBAREA RUNOFF (CFS) = 5.08						
EFFECTIVE AREA (ACRES) = 5069.54						
AREA-AVERAGED Fm (INCH/HR) = 0.24						
AREA-AVERAGED Fp (INCH/HR) = 0.30						
AREA-AVERAGED Ap = 0.80						
TOTAL AREA (ACRES) = 6444.7						
PEAK FLOW RATE (CFS) = 5070.48						
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE						

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 220.00 DOWNSTREAM (FEET) = 212.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 925.62 CHANNEL SLOPE = 0.0086  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.91  
 CHANNEL FLOW THRU SUBAREA (CFS) = 5070.48  
 FLOW VELOCITY (FEET/SEC.) = 10.38 FLOW DEPTH (FEET) = 6.91  
 TRAVEL TIME (MIN.) = 1.49 Tc (MIN.) = 57.76  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4145.43	23.25	2.012	0.30 ( 0.22)	0.75	1766.0	120.00
2	4146.46	23.29	2.010	0.30 ( 0.22)	0.75	1769.7	110.00
3	4337.89	30.17	1.713	0.30 ( 0.23)	0.76	2424.9	100.00
4	4402.44	32.78	1.644	0.30 ( 0.23)	0.77	2652.5	150.00
5	4657.91	42.91	1.407	0.30 ( 0.24)	0.79	3514.7	31100.00
6	5068.23	57.36	1.213	0.30 ( 0.24)	0.80	5031.3	13210.00

7	5070.48	57.76	1.209	0.30	( 0.24)	0.80	5069.5	13200.00
8	5042.99	59.22	1.193	0.30	( 0.24)	0.80	5174.0	13100.00
9	4849.18	84.16	1.022	0.30	( 0.24)	0.80	6425.0	13000.00
10	4783.70	86.49	1.006	0.30	( 0.24)	0.80	6444.7	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5070.48 Tc(MIN.) = 57.76  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 5069.54

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.76  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.209  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	5.00	0.30	1.000	65
COMMERCIAL	B	3.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697  
 SUBAREA AREA(ACRES) = 9.50 SUBAREA RUNOFF(CFS) = 8.55  
 EFFECTIVE AREA(ACRES) = 5079.04 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6454.2 PEAK FLOW RATE(CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.76  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.209  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	B	0.30	0.30	0.200	56
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	1.00	0.30	1.000	63
COMMERCIAL	B	41.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	7.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	25.00	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498  
 SUBAREA AREA(ACRES) = 75.60 SUBAREA RUNOFF(CFS) = 72.11  
 EFFECTIVE AREA(ACRES) = 5154.64 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6529.8 PEAK FLOW RATE(CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.76  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.209  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	0.90	0.30	1.000	79
SCHOOL	B	0.30	0.30	0.600	56
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	13.20	0.30	1.000	65
APARTMENTS	B	0.50	0.30	0.200	56
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.60	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966  
 SUBAREA AREA(ACRES) = 15.60 SUBAREA RUNOFF(CFS) = 12.91  
 EFFECTIVE AREA(ACRES) = 5170.24 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6545.4 PEAK FLOW RATE(CFS) = 5070.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 57.76  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.209  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	33.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	17.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	16.80	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.60	0.30	0.200	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	1.50	0.30	0.400	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	10.00	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603

SUBAREA AREA (ACRES) = 80.40 SUBAREA RUNOFF (CFS) = 74.40  
EFFECTIVE AREA (ACRES) = 5250.64 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 6625.8 PEAK FLOW RATE (CFS) = 5070.48  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 57.76  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.209  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
SCHOOL	B	0.30	0.30	0.600	56
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
SUBAREA AREA (ACRES) = 1.00 SUBAREA RUNOFF (CFS) = 0.85  
EFFECTIVE AREA (ACRES) = 5251.64 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 6626.8 PEAK FLOW RATE (CFS) = 5070.48  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 57.76  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.209  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER					
"GRASS"	B	0.50	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 2.10 SUBAREA RUNOFF (CFS) = 1.72  
EFFECTIVE AREA (ACRES) = 5253.74 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 6628.9 PEAK FLOW RATE (CFS) = 5070.48  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 57.76  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.209  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	1.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.50	0.30	1.000	66
PUBLIC PARK	B	1.70	0.30	0.850	56
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	7.20	0.30	1.000	65
NATURAL FAIR COVER					
"GRASS"	B	1.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978  
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 9.56  
EFFECTIVE AREA (ACRES) = 5265.34 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
TOTAL AREA (ACRES) = 6640.5 PEAK FLOW RATE (CFS) = 5070.48  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10  
-----

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RU50EV29.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	23441.09	24.09	0.30 ( 0.23)	0.77	5558.6	50330.00
2	25073.42	29.32	0.30 ( 0.24)	0.78	7297.8	50220.00
3	26145.09	33.16	0.30 ( 0.24)	0.80	8621.5	50260.00
4	27555.92	38.87	0.30 ( 0.25)	0.83	10619.0	400.00
5	28487.21	44.08	0.30 ( 0.25)	0.85	12551.0	390.00
6	30598.30	55.09	0.30 ( 0.27)	0.89	16571.7	40100.00
7	31622.36	62.96	0.30 ( 0.27)	0.90	19399.7	11801.00
8	33517.46	73.78	0.30 ( 0.28)	0.92	23984.1	11530.00
9	34531.60	78.15	0.30 ( 0.28)	0.93	26298.6	11701.00
10	35399.33	81.64	0.30 ( 0.28)	0.93	28391.8	11910.00
11	37937.71	91.83	0.30 ( 0.28)	0.94	35085.9	10800.00
12	38590.30	96.07	0.30 ( 0.28)	0.95	38031.3	11130.00
13	38569.34	105.66	0.30 ( 0.29)	0.95	43072.5	12410.00
14	38245.04	113.92	0.30 ( 0.29)	0.96	46811.6	11201.00
15	37927.99	118.88	0.30 ( 0.29)	0.96	48543.3	12201.00
16	37025.03	125.90	0.30 ( 0.29)	0.96	50400.5	12231.00
17	35862.02	133.67	0.30 ( 0.29)	0.96	52034.8	10400.00
18	34651.78	141.56	0.30 ( 0.29)	0.96	53329.9	12010.00
19	33565.60	147.47	0.30 ( 0.29)	0.96	53676.8	10210.00

20 29866.68 175.47 0.30( 0.29) 0.96 54415.3 10100.00  
TOTAL AREA(ACRES) = 54415.3

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

=====  
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<<  
=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23441.09	24.09	0.30( 0.23)	0.77	5558.6	50330.00
2	25073.42	29.32	0.30( 0.24)	0.78	7297.8	50220.00
3	26145.09	33.16	0.30( 0.24)	0.80	8621.5	50260.00
4	27555.92	38.87	0.30( 0.25)	0.83	10619.0	400.00
5	28487.21	44.08	0.30( 0.25)	0.85	12551.0	390.00
6	30598.30	55.09	0.30( 0.27)	0.89	16571.7	40100.00
7	31622.36	62.96	0.30( 0.27)	0.90	19399.7	11801.00
8	33517.46	73.78	0.30( 0.28)	0.92	23984.1	11530.00
9	34531.60	81.34	0.30( 0.28)	0.93	26298.6	11701.00
10	35399.33	81.64	0.30( 0.28)	0.93	28391.8	11910.00
11	37937.71	91.83	0.30( 0.28)	0.94	35085.9	10800.00
12	38590.30	96.07	0.30( 0.28)	0.95	38031.3	11130.00
13	38569.34	105.66	0.30( 0.29)	0.95	43072.5	12410.00
14	38245.04	113.92	0.30( 0.29)	0.96	46811.6	11201.00
15	37927.99	118.88	0.30( 0.29)	0.96	48543.3	12201.00
16	37025.03	125.90	0.30( 0.29)	0.96	50400.5	12231.00
17	35862.02	133.67	0.30( 0.29)	0.96	52034.8	10400.00
18	34651.78	141.56	0.30( 0.29)	0.96	53329.9	12010.00
19	33565.60	147.47	0.30( 0.29)	0.96	53676.8	10210.00
20	29866.68	175.47	0.30( 0.29)	0.96	54415.3	10100.00

TOTAL AREA(ACRES) = 54415.3

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 17.77  
CHANNEL FLOW THRU SUBAREA(CFS) = 38590.30  
FLOW VELOCITY(FEET/SEC.) = 7.52 FLOW DEPTH(FEET) = 17.77  
TRAVEL TIME(MIN.) = 3.08 Tc(MIN.) = 99.14  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23441.09	27.68	1.806	0.30( 0.23)	0.77	5558.6	50330.00
2	25073.42	32.83	1.643	0.30( 0.24)	0.78	7297.8	50220.00
3	26145.09	36.62	1.543	0.30( 0.24)	0.80	8621.5	50260.00
4	27555.92	42.28	1.417	0.30( 0.25)	0.83	10619.0	400.00
5	28487.21	47.45	1.334	0.30( 0.25)	0.85	12551.0	390.00

6	30598.30	58.40	1.202	0.30( 0.27)	0.89	16571.7	40100.00
7	31622.36	66.23	1.143	0.30( 0.27)	0.90	19399.7	11801.00
8	33517.46	76.99	1.070	0.30( 0.28)	0.92	23984.1	11530.00
9	34531.60	81.34	1.041	0.30( 0.28)	0.93	26298.6	11701.00
10	35399.33	84.80	1.017	0.30( 0.28)	0.93	28391.8	11910.00
11	37937.71	94.92	0.961	0.30( 0.28)	0.94	35085.9	10800.00
12	38590.30	99.14	0.942	0.30( 0.28)	0.95	38031.3	11130.00
13	38569.34	108.74	0.901	0.30( 0.29)	0.95	43072.5	12410.00
14	38245.04	117.01	0.865	0.30( 0.29)	0.96	46811.6	11201.00
15	37927.99	121.98	0.848	0.30( 0.29)	0.96	48543.3	12201.00
16	37025.03	129.02	0.833	0.30( 0.29)	0.96	50400.5	12231.00
17	35862.02	136.81	0.817	0.30( 0.29)	0.96	52034.8	10400.00
18	34651.78	144.74	0.801	0.30( 0.29)	0.96	53329.9	12010.00
19	33565.60	150.69	0.789	0.30( 0.29)	0.96	53676.8	10210.00
20	29866.68	178.80	0.730	0.30( 0.29)	0.96	54415.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 38590.30 Tc(MIN.) = 99.14  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 38031.29

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23441.09	27.68	1.806	0.30( 0.23)	0.77	5558.6	50330.00
2	25073.42	32.83	1.643	0.30( 0.24)	0.78	7297.8	50220.00
3	26145.09	36.62	1.543	0.30( 0.24)	0.80	8621.5	50260.00
4	27555.92	42.28	1.417	0.30( 0.25)	0.83	10619.0	400.00
5	28487.21	47.45	1.334	0.30( 0.25)	0.85	12551.0	390.00
6	30598.30	58.40	1.202	0.30( 0.27)	0.89	16571.7	40100.00
7	31622.36	66.23	1.143	0.30( 0.27)	0.90	19399.7	11801.00
8	33517.46	76.99	1.070	0.30( 0.28)	0.92	23984.1	11530.00
9	34531.60	81.34	1.041	0.30( 0.28)	0.93	26298.6	11701.00
10	35399.33	84.80	1.017	0.30( 0.28)	0.93	28391.8	11910.00
11	37937.71	94.92	0.961	0.30( 0.28)	0.94	35085.9	10800.00
12	38590.30	99.14	0.942	0.30( 0.28)	0.95	38031.3	11130.00
13	38569.34	108.74	0.901	0.30( 0.29)	0.95	43072.5	12410.00
14	38245.04	117.01	0.865	0.30( 0.29)	0.96	46811.6	11201.00
15	37927.99	121.98	0.848	0.30( 0.29)	0.96	48543.3	12201.00
16	37025.03	129.02	0.833	0.30( 0.29)	0.96	50400.5	12231.00
17	35862.02	136.81	0.817	0.30( 0.29)	0.96	52034.8	10400.00
18	34651.78	144.74	0.801	0.30( 0.29)	0.96	53329.9	12010.00
19	33565.60	150.69	0.789	0.30( 0.29)	0.96	53676.8	10210.00
20	29866.68	178.80	0.730	0.30( 0.29)	0.96	54415.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4145.43	23.25	2.012	0.30( 0.22)	0.73	1961.8	120.00
2	4146.46	23.29	2.010	0.30( 0.22)	0.73	1965.5	110.00
3	4337.89	30.17	1.713	0.30( 0.23)	0.75	2620.7	100.00
4	4402.44	32.78	1.644	0.30( 0.23)	0.76	2848.3	150.00

5	4657.91	42.91	1.407	0.30 ( 0.23)	0.78	3710.5	31100.00
6	5068.23	57.36	1.213	0.30 ( 0.24)	0.79	5227.1	13210.00
7	5070.48	57.76	1.209	0.30 ( 0.24)	0.79	5265.3	13200.00
8	5042.99	59.22	1.193	0.30 ( 0.24)	0.79	5369.8	13100.00
9	4849.18	84.16	1.022	0.30 ( 0.24)	0.79	6620.8	13000.00
10	4783.70	86.49	1.006	0.30 ( 0.24)	0.79	6640.5	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26417.10	23.25	2.012	0.30 ( 0.23)	0.76	6631.6	120.00
2	26426.03	23.29	2.010	0.30 ( 0.23)	0.76	6642.6	110.00
3	27709.67	27.68	1.806	0.30 ( 0.23)	0.76	7942.0	50330.00
4	28568.88	30.17	1.713	0.30 ( 0.23)	0.77	9020.9	100.00
5	29460.92	32.78	1.644	0.30 ( 0.23)	0.78	10130.2	150.00
6	29477.05	32.83	1.643	0.30 ( 0.23)	0.78	10150.1	50220.00
7	30644.38	36.62	1.543	0.30 ( 0.24)	0.79	11796.7	50260.00
8	32197.91	42.28	1.417	0.30 ( 0.24)	0.81	14275.8	400.00
9	32327.49	42.91	1.407	0.30 ( 0.24)	0.82	14565.3	31100.00
10	33274.04	47.45	1.334	0.30 ( 0.25)	0.83	16738.0	390.00
11	35467.49	57.36	1.213	0.30 ( 0.26)	0.86	21419.8	13210.00
12	35546.15	57.76	1.209	0.30 ( 0.26)	0.86	21603.5	13200.00
13	35656.77	58.40	1.202	0.30 ( 0.26)	0.86	21882.7	40100.00
14	35748.48	59.22	1.193	0.30 ( 0.26)	0.86	22237.6	13100.00
15	36610.85	66.23	1.143	0.30 ( 0.26)	0.88	25121.3	11801.00
16	38422.34	76.99	1.070	0.30 ( 0.27)	0.89	30245.4	11530.00
17	39402.69	81.34	1.041	0.30 ( 0.27)	0.90	32778.0	11701.00
18	40087.21	84.16	1.022	0.30 ( 0.27)	0.90	34623.5	13000.00
19	40230.43	84.80	1.017	0.30 ( 0.27)	0.90	35018.0	11910.00
20	40606.37	86.49	1.006	0.30 ( 0.27)	0.91	36148.8	13010.00
21	42440.51	94.92	0.961	0.30 ( 0.28)	0.92	41726.5	10800.00
22	42979.04	99.14	0.942	0.30 ( 0.28)	0.92	44671.8	11130.00
23	42699.12	108.74	0.901	0.30 ( 0.28)	0.93	49713.0	12410.00
24	42151.35	117.01	0.865	0.30 ( 0.28)	0.94	53452.1	11201.00
25	41728.16	121.98	0.848	0.30 ( 0.28)	0.94	55183.8	12201.00
26	40734.49	129.02	0.833	0.30 ( 0.28)	0.94	57041.0	12231.00
27	39471.13	136.81	0.817	0.30 ( 0.28)	0.94	58675.3	10400.00
28	38158.86	144.74	0.801	0.30 ( 0.28)	0.94	59970.4	12010.00
29	36996.07	150.69	0.789	0.30 ( 0.28)	0.94	60317.4	10210.00
30	32935.17	178.80	0.730	0.30 ( 0.28)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 42979.04 Tc (MIN.) = 99.145  
EFFECTIVE AREA (ACRES) = 44671.82 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 61055.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 61055.8 TC (MIN.) = 99.14  
EFFECTIVE AREA (ACRES) = 44671.82 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.924  
PEAK FLOW RATE (CFS) = 42979.04

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	26417.10	23.25	2.012	0.30 ( 0.23)	0.76	6631.6 120.00
2	26426.03	23.29	2.010	0.30 ( 0.23)	0.76	6642.6 110.00
3	27709.67	27.68	1.806	0.30 ( 0.23)	0.76	7942.0 50330.00
4	28568.88	30.17	1.713	0.30 ( 0.23)	0.77	9020.9 100.00
5	29460.92	32.78	1.644	0.30 ( 0.23)	0.78	10130.2 150.00
6	29477.05	32.83	1.643	0.30 ( 0.23)	0.78	10150.1 50220.00
7	30644.38	36.62	1.543	0.30 ( 0.24)	0.79	11796.7 50260.00
8	32197.91	42.28	1.417	0.30 ( 0.24)	0.81	14275.8 400.00
9	32327.49	42.91	1.407	0.30 ( 0.24)	0.82	14565.3 31100.00
10	33274.04	47.45	1.334	0.30 ( 0.25)	0.83	16738.0 390.00
11	35467.49	57.36	1.213	0.30 ( 0.26)	0.86	21419.8 13210.00
12	35546.15	57.76	1.209	0.30 ( 0.26)	0.86	21603.5 13200.00
13	35656.77	58.40	1.202	0.30 ( 0.26)	0.86	21882.7 40100.00
14	35748.48	59.22	1.193	0.30 ( 0.26)	0.86	22237.6 13100.00
15	36610.85	66.23	1.143	0.30 ( 0.26)	0.88	25121.3 11801.00
16	38422.34	76.99	1.070	0.30 ( 0.27)	0.89	30245.4 11530.00
17	39402.69	81.34	1.041	0.30 ( 0.27)	0.90	32778.0 11701.00
18	40087.21	84.16	1.022	0.30 ( 0.27)	0.90	34623.5 13000.00
19	40230.43	84.80	1.017	0.30 ( 0.27)	0.90	35018.0 11910.00
20	40606.37	86.49	1.006	0.30 ( 0.27)	0.91	36148.8 13010.00
21	42440.51	94.92	0.961	0.30 ( 0.28)	0.92	41726.5 10800.00
22	42979.04	99.14	0.942	0.30 ( 0.28)	0.92	44671.8 11130.00
23	42699.12	108.74	0.901	0.30 ( 0.28)	0.93	49713.0 12410.00
24	42151.35	117.01	0.865	0.30 ( 0.28)	0.94	53452.1 11201.00
25	41728.16	121.98	0.848	0.30 ( 0.28)	0.94	55183.8 12201.00
26	40734.49	129.02	0.833	0.30 ( 0.28)	0.94	57041.0 12231.00
27	39471.13	136.81	0.817	0.30 ( 0.28)	0.94	58675.3 10400.00
28	38158.86	144.74	0.801	0.30 ( 0.28)	0.94	59970.4 12010.00
29	36996.07	150.69	0.789	0.30 ( 0.28)	0.94	60317.4 10210.00
30	32935.17	178.80	0.730	0.30 ( 0.28)	0.94	61055.8 10100.00

=====  
END OF RATIONAL METHOD ANALYSIS





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

Analysis prepared by:

Michael Baker International  
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Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S34- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV34.DAT  
TIME/DATE OF STUDY: 11:50 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.304
- 2) 10.00; 3.420
- 3) 15.00; 2.629
- 4) 20.00; 2.200
- 5) 25.00; 1.906
- 6) 30.00; 1.714
- 7) 40.00; 1.452
- 8) 50.00; 1.290
- 9) 60.00; 1.181
- 10) 90.00; 0.979
- 11) 120.00; 0.849
- 12) 180.00; 0.725
- 13) 360.00; 0.534
- 14) 1200.00; 0.233

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU50EV33.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26426.03	23.29	0.30 ( 0.23)	0.76	6642.6	110.00
2	29477.05	32.83	0.30 ( 0.23)	0.78	10150.1	50220.00
3	30644.38	36.62	0.30 ( 0.24)	0.79	11796.7	50260.00
4	32327.49	42.91	0.30 ( 0.24)	0.82	14565.3	31100.00
5	33274.04	47.45	0.30 ( 0.25)	0.83	16738.0	390.00
6	35748.48	59.22	0.30 ( 0.26)	0.86	22237.6	13100.00
7	36610.85	66.23	0.30 ( 0.26)	0.88	25121.3	11801.00
8	38422.34	76.99	0.30 ( 0.27)	0.89	30245.4	11530.00
9	39402.69	81.34	0.30 ( 0.27)	0.90	32778.0	11701.00
10	40606.37	86.49	0.30 ( 0.27)	0.91	36148.8	13010.00
11	42440.51	94.92	0.30 ( 0.28)	0.92	41726.5	10800.00
12	42979.04	99.14	0.30 ( 0.28)	0.92	44671.8	11130.00
13	42699.12	108.74	0.30 ( 0.28)	0.93	49713.0	12410.00
14	42151.35	117.01	0.30 ( 0.28)	0.94	53452.1	11201.00
15	41728.16	121.98	0.30 ( 0.28)	0.94	55183.8	12201.00
16	40734.49	129.02	0.30 ( 0.28)	0.94	57041.0	12231.00
17	39471.13	136.81	0.30 ( 0.28)	0.94	58675.3	10400.00
18	38158.86	144.74	0.30 ( 0.28)	0.94	59970.4	12010.00
19	36996.07	150.69	0.30 ( 0.28)	0.94	60317.4	10210.00
20	32935.17	178.80	0.30 ( 0.28)	0.94	61055.8	10100.00
TOTAL AREA(ACRES) =						61055.8

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26426.03	23.29	0.30 ( 0.23)	0.76	6642.6	110.00
2	29477.05	32.83	0.30 ( 0.23)	0.78	10150.1	50220.00
3	30644.38	36.62	0.30 ( 0.24)	0.79	11796.7	50260.00
4	32327.49	42.91	0.30 ( 0.24)	0.82	14565.3	31100.00
5	33274.04	47.45	0.30 ( 0.25)	0.83	16738.0	390.00
6	35748.48	59.22	0.30 ( 0.26)	0.86	22237.6	13100.00
7	36610.85	66.23	0.30 ( 0.26)	0.88	25121.3	11801.00
8	38422.34	76.99	0.30 ( 0.27)	0.89	30245.4	11530.00
9	39402.69	81.34	0.30 ( 0.27)	0.90	32778.0	11701.00
10	40606.37	86.49	0.30 ( 0.27)	0.91	36148.8	13010.00
11	42440.51	94.92	0.30 ( 0.28)	0.92	41726.5	10800.00
12	42979.04	99.14	0.30 ( 0.28)	0.92	44671.8	11130.00
13	42699.12	108.74	0.30 ( 0.28)	0.93	49713.0	12410.00

14	42151.35	117.01	0.30	( 0.28)	0.94	53452.1	11201.00
15	41728.16	121.98	0.30	( 0.28)	0.94	55183.8	12201.00
16	40734.49	129.02	0.30	( 0.28)	0.94	57041.0	12231.00
17	39471.13	136.81	0.30	( 0.28)	0.94	58675.3	10400.00
18	38158.86	144.74	0.30	( 0.28)	0.94	59970.4	12010.00
19	36996.07	150.69	0.30	( 0.28)	0.94	60317.4	10210.00
20	32935.17	178.80	0.30	( 0.28)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 212.00 DOWNSTREAM (FEET) = 209.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 623.02 CHANNEL SLOPE = 0.0048  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 11.19  
CHANNEL FLOW THRU SUBAREA (CFS) = 42979.04  
FLOW VELOCITY (FEET/SEC.) = 15.01 FLOW DEPTH (FEET) = 11.19  
TRAVEL TIME (MIN.) = 0.69 Tc (MIN.) = 99.84  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26426.03	24.10	1.959	0.30 ( 0.23)	0.76	6642.6	110.00
2	29477.05	33.61	1.619	0.30 ( 0.23)	0.78	10150.1	50220.00
3	30644.38	37.39	1.520	0.30 ( 0.24)	0.79	11796.7	50260.00
4	32327.49	43.67	1.393	0.30 ( 0.24)	0.82	14565.3	31100.00
5	33274.04	48.20	1.319	0.30 ( 0.25)	0.83	16738.0	390.00
6	35748.48	59.95	1.182	0.30 ( 0.26)	0.86	22237.6	13100.00
7	36610.85	66.96	1.134	0.30 ( 0.26)	0.88	25121.3	11801.00
8	38422.34	77.71	1.062	0.30 ( 0.27)	0.89	30245.4	11530.00
9	39402.69	82.05	1.033	0.30 ( 0.27)	0.90	32778.0	11701.00
10	40606.37	87.19	0.998	0.30 ( 0.27)	0.91	36148.8	13010.00
11	42440.51	95.62	0.955	0.30 ( 0.28)	0.92	41726.5	10800.00
12	42979.04	99.84	0.936	0.30 ( 0.28)	0.92	44671.8	11130.00
13	42699.12	109.43	0.895	0.30 ( 0.28)	0.93	49713.0	12410.00
14	42151.35	117.71	0.859	0.30 ( 0.28)	0.94	53452.1	11201.00
15	41728.16	122.68	0.843	0.30 ( 0.28)	0.94	55183.8	12201.00
16	40734.49	129.72	0.829	0.30 ( 0.28)	0.94	57041.0	12231.00
17	39471.13	137.52	0.813	0.30 ( 0.28)	0.94	58675.3	10400.00
18	38158.86	145.46	0.796	0.30 ( 0.28)	0.94	59970.4	12010.00
19	36996.07	151.41	0.784	0.30 ( 0.28)	0.94	60317.4	10210.00
20	32935.17	179.55	0.726	0.30 ( 0.28)	0.94	61055.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 42979.04 Tc (MIN.) = 99.84  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44671.82

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P505XX50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	255.49	17.27	0.30 ( 0.29)	0.96	146.4	50500.00

TOTAL AREA (ACRES) = 146.4

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11  
-----

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26426.03	24.10	1.959	0.30 ( 0.23)	0.76	6642.6	110.00
2	29477.05	33.61	1.619	0.30 ( 0.23)	0.78	10150.1	50220.00
3	30644.38	37.39	1.520	0.30 ( 0.24)	0.79	11796.7	50260.00
4	32327.49	43.67	1.393	0.30 ( 0.24)	0.82	14565.3	31100.00
5	33274.04	48.20	1.319	0.30 ( 0.25)	0.83	16738.0	390.00
6	35748.48	59.95	1.182	0.30 ( 0.26)	0.86	22237.6	13100.00
7	36610.85	66.96	1.134	0.30 ( 0.26)	0.88	25121.3	11801.00
8	38422.34	77.71	1.062	0.30 ( 0.27)	0.89	30245.4	11530.00
9	39402.69	82.05	1.033	0.30 ( 0.27)	0.90	32778.0	11701.00
10	40606.37	87.19	0.998	0.30 ( 0.27)	0.91	36148.8	13010.00
11	42440.51	95.62	0.955	0.30 ( 0.28)	0.92	41726.5	10800.00
12	42979.04	99.84	0.936	0.30 ( 0.28)	0.92	44671.8	11130.00
13	42699.12	109.43	0.895	0.30 ( 0.28)	0.93	49713.0	12410.00
14	42151.35	117.71	0.859	0.30 ( 0.28)	0.94	53452.1	11201.00
15	41728.16	122.68	0.843	0.30 ( 0.28)	0.94	55183.8	12201.00
16	40734.49	129.72	0.829	0.30 ( 0.28)	0.94	57041.0	12231.00
17	39471.13	137.52	0.813	0.30 ( 0.28)	0.94	58675.3	10400.00
18	38158.86	145.46	0.796	0.30 ( 0.28)	0.94	59970.4	12010.00
19	36996.07	151.41	0.784	0.30 ( 0.28)	0.94	60317.4	10210.00
20	32935.17	179.55	0.726	0.30 ( 0.28)	0.94	61055.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	255.49	17.27	2.434	0.30 ( 0.29)	0.96	146.4	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 5416.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24391.41	17.27	2.434	0.30 ( 0.23)	0.77	4906.5	50500.00
2	26624.95	24.10	1.959	0.30 ( 0.23)	0.76	6789.0	110.00
3	29635.57	33.61	1.619	0.30 ( 0.23)	0.78	10296.5	50220.00
4	30791.10	37.39	1.520	0.30 ( 0.24)	0.79	11943.1	50260.00
5	32459.00	43.67	1.393	0.30 ( 0.25)	0.82	14711.7	31100.00
6	33396.81	48.20	1.319	0.30 ( 0.25)	0.83	16884.4	390.00
7	35854.88	59.95	1.182	0.30 ( 0.26)	0.86	22384.0	13100.00
8	36711.61	66.96	1.134	0.30 ( 0.26)	0.88	25267.7	11801.00
9	38514.48	77.71	1.062	0.30 ( 0.27)	0.89	30391.8	11530.00
10	39491.36	82.05	1.033	0.30 ( 0.27)	0.90	32924.4	11701.00
11	40690.91	87.19	0.998	0.30 ( 0.27)	0.91	36295.2	13010.00

12 42519.91 95.62 0.955 0.30( 0.28) 0.92 41872.9 10800.00  
 13 43056.26 99.84 0.936 0.30( 0.28) 0.92 44818.2 11130.00  
 14 42771.39 109.43 0.895 0.30( 0.28) 0.93 49859.4 12410.00  
 15 42219.35 117.71 0.859 0.30( 0.28) 0.94 53598.5 11201.00  
 16 41794.32 122.68 0.843 0.30( 0.28) 0.94 55330.2 12201.00  
 17 40798.92 129.72 0.829 0.30( 0.28) 0.94 57187.4 12231.00  
 18 39533.64 137.52 0.813 0.30( 0.28) 0.94 58821.7 10400.00  
 19 38219.42 145.46 0.796 0.30( 0.28) 0.94 60116.8 12010.00  
 20 37055.17 151.41 0.784 0.30( 0.28) 0.94 60463.8 10210.00  
 21 32987.34 179.55 0.726 0.30( 0.28) 0.94 61202.2 10100.00  
 TOTAL AREA (ACRES) = 61202.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43056.26 Tc (MIN.) = 99.837  
 EFFECTIVE AREA (ACRES) = 44818.22 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 61202.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13402.00 TO NODE 13404.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 209.00 DOWNSTREAM (FEET) = 207.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 395.35 CHANNEL SLOPE = 0.0051  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 11.05  
 CHANNEL FLOW THRU SUBAREA (CFS) = 43056.26  
 FLOW VELOCITY (FEET/SEC.) = 15.27 FLOW DEPTH (FEET) = 11.05  
 TRAVEL TIME (MIN.) = 0.43 Tc (MIN.) = 100.27  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24391.41	17.79	2.390	0.30( 0.23)	0.77	4906.5	50500.00
2	26624.95	24.60	1.929	0.30( 0.23)	0.76	6789.0	110.00
3	29635.57	34.09	1.607	0.30( 0.23)	0.78	10296.5	50220.00
4	30791.10	37.87	1.508	0.30( 0.24)	0.79	11943.1	50260.00
5	32459.00	44.14	1.385	0.30( 0.25)	0.82	14711.7	31100.00
6	33396.81	48.67	1.312	0.30( 0.25)	0.83	16884.4	390.00
7	35854.88	60.41	1.178	0.30( 0.26)	0.86	22384.0	13100.00
8	36711.61	67.41	1.131	0.30( 0.26)	0.88	25267.7	11801.00
9	38514.48	78.16	1.059	0.30( 0.27)	0.89	30391.8	11530.00
10	39491.36	82.49	1.030	0.30( 0.27)	0.90	32924.4	11701.00
11	40690.91	87.63	0.995	0.30( 0.27)	0.91	36295.2	13010.00
12	42519.91	96.05	0.953	0.30( 0.28)	0.92	41872.9	10800.00
13	43056.26	100.27	0.935	0.30( 0.28)	0.92	44818.2	11130.00
14	42771.39	109.86	0.893	0.30( 0.28)	0.93	49859.4	12410.00
15	42219.35	118.14	0.857	0.30( 0.28)	0.94	53598.5	11201.00
16	41794.32	123.11	0.843	0.30( 0.28)	0.94	55330.2	12201.00
17	40798.92	130.16	0.828	0.30( 0.28)	0.94	57187.4	12231.00
18	39533.64	137.97	0.812	0.30( 0.28)	0.94	58821.7	10400.00
19	38219.42	145.90	0.795	0.30( 0.28)	0.94	60116.8	12010.00
20	37055.17	151.86	0.783	0.30( 0.28)	0.94	60463.8	10210.00

21 32987.34 180.02 0.725 0.30( 0.28) 0.94 61202.2 10100.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 43056.26 Tc (MIN.) = 100.27  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44818.22

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P506XX50.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	83.84	18.04	0.30( 0.29)	0.97	49.5	50600.00
TOTAL AREA (ACRES) = 49.5						

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24391.41	17.79	2.390	0.30( 0.23)	0.77	4906.5	50500.00
2	26624.95	24.60	1.929	0.30( 0.23)	0.76	6789.0	110.00
3	29635.57	34.09	1.607	0.30( 0.23)	0.78	10296.5	50220.00
4	30791.10	37.87	1.508	0.30( 0.24)	0.79	11943.1	50260.00
5	32459.00	44.14	1.385	0.30( 0.25)	0.82	14711.7	31100.00
6	33396.81	48.67	1.312	0.30( 0.25)	0.83	16884.4	390.00
7	35854.88	60.41	1.178	0.30( 0.26)	0.86	22384.0	13100.00
8	36711.61	67.41	1.131	0.30( 0.26)	0.88	25267.7	11801.00
9	38514.48	78.16	1.059	0.30( 0.27)	0.89	30391.8	11530.00
10	39491.36	82.49	1.030	0.30( 0.27)	0.90	32924.4	11701.00
11	40690.91	87.63	0.995	0.30( 0.27)	0.91	36295.2	13010.00
12	42519.91	96.05	0.953	0.30( 0.28)	0.92	41872.9	10800.00
13	43056.26	100.27	0.935	0.30( 0.28)	0.92	44818.2	11130.00
14	42771.39	109.86	0.893	0.30( 0.28)	0.93	49859.4	12410.00
15	42219.35	118.14	0.857	0.30( 0.28)	0.94	53598.5	11201.00
16	41794.32	123.11	0.843	0.30( 0.28)	0.94	55330.2	12201.00
17	40798.92	130.16	0.828	0.30( 0.28)	0.94	57187.4	12231.00
18	39533.64	137.97	0.812	0.30( 0.28)	0.94	58821.7	10400.00
19	38219.42	145.90	0.795	0.30( 0.28)	0.94	60116.8	12010.00
20	37055.17	151.86	0.783	0.30( 0.28)	0.94	60463.8	10210.00
21	32987.34	180.02	0.725	0.30( 0.28)	0.94	61202.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.							

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	83.84	18.04	2.369	0.30( 0.29)	0.97	49.5	50600.00
LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	24474.95	17.79	2.390	0.30 ( 0.23)	0.77	4955.4 50500.00
2	24556.06	18.04	2.369	0.30 ( 0.23)	0.77	5024.1 50600.00
3	26691.08	24.60	1.929	0.30 ( 0.23)	0.76	6838.5 110.00
4	29688.68	34.09	1.607	0.30 ( 0.23)	0.78	10346.0 50220.00
5	30840.23	37.87	1.508	0.30 ( 0.24)	0.79	11992.6 50260.00
6	32503.17	44.14	1.385	0.30 ( 0.25)	0.82	14761.2 31100.00
7	33438.02	48.67	1.312	0.30 ( 0.25)	0.83	16933.9 390.00
8	35890.71	60.41	1.178	0.30 ( 0.26)	0.86	22433.5 13100.00
9	36745.54	67.41	1.131	0.30 ( 0.26)	0.88	25317.2 11801.00
10	38545.50	78.16	1.059	0.30 ( 0.27)	0.89	30441.3 11530.00
11	39521.20	82.49	1.030	0.30 ( 0.27)	0.90	32973.9 11701.00
12	40719.36	87.63	0.995	0.30 ( 0.27)	0.91	36344.7 13010.00
13	42546.66	96.05	0.953	0.30 ( 0.28)	0.92	41922.4 10800.00
14	43082.27	100.27	0.935	0.30 ( 0.28)	0.92	44867.7 11130.00
15	42795.72	109.86	0.893	0.30 ( 0.28)	0.93	49908.9 12410.00
16	42242.23	118.14	0.857	0.30 ( 0.28)	0.94	53648.0 11201.00
17	41816.62	123.11	0.843	0.30 ( 0.28)	0.94	55379.7 12201.00
18	40820.63	130.16	0.828	0.30 ( 0.28)	0.94	57236.9 12231.00
19	39554.70	137.97	0.812	0.30 ( 0.28)	0.94	58871.2 10400.00
20	38239.82	145.90	0.795	0.30 ( 0.28)	0.94	60166.3 12010.00
21	37075.07	151.86	0.783	0.30 ( 0.28)	0.94	60513.2 10210.00
22	33004.90	180.02	0.725	0.30 ( 0.28)	0.94	61251.7 10100.00

TOTAL AREA (ACRES) = 61251.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43082.27 Tc (MIN.) = 100.268  
EFFECTIVE AREA (ACRES) = 44867.72 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61251.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 207.00 DOWNSTREAM (FEET) = 195.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1601.97 CHANNEL SLOPE = 0.0075  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.90  
CHANNEL FLOW THRU SUBAREA (CFS) = 43082.27  
FLOW VELOCITY (FEET/SEC.) = 17.44 FLOW DEPTH (FEET) = 9.90  
TRAVEL TIME (MIN.) = 1.53 Tc (MIN.) = 101.80  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24474.95	19.64	2.231	0.30 ( 0.23)	0.77	4955.4	50500.00
2	24556.06	19.88	2.210	0.30 ( 0.23)	0.77	5024.1	50600.00
3	26691.08	26.40	1.852	0.30 ( 0.23)	0.76	6838.5	110.00
4	29688.68	35.82	1.561	0.30 ( 0.23)	0.78	10346.0	50220.00
5	30840.23	39.58	1.463	0.30 ( 0.24)	0.79	11992.6	50260.00
6	32503.17	45.82	1.358	0.30 ( 0.25)	0.82	14761.2	31100.00
7	33438.02	50.34	1.286	0.30 ( 0.25)	0.83	16933.9	390.00

8	35890.71	62.03	1.167	0.30 ( 0.26)	0.86	22433.5	13100.00
9	36745.54	69.02	1.120	0.30 ( 0.26)	0.88	25317.2	11801.00
10	38545.50	79.74	1.048	0.30 ( 0.27)	0.89	30441.3	11530.00
11	39521.20	84.07	1.019	0.30 ( 0.27)	0.90	32973.9	11701.00
12	40719.36	89.19	0.984	0.30 ( 0.27)	0.91	36344.7	13010.00
13	42546.66	97.59	0.946	0.30 ( 0.28)	0.92	41922.4	10800.00
14	43082.27	101.80	0.928	0.30 ( 0.28)	0.92	44867.7	11130.00
15	42795.72	111.40	0.886	0.30 ( 0.28)	0.93	49908.9	12410.00
16	42242.23	119.68	0.850	0.30 ( 0.28)	0.94	53648.0	11201.00
17	41816.62	124.66	0.839	0.30 ( 0.28)	0.94	55379.7	12201.00
18	40820.63	131.72	0.825	0.30 ( 0.28)	0.94	57236.9	12231.00
19	39554.70	139.54	0.809	0.30 ( 0.28)	0.94	58871.2	10400.00
20	38239.82	147.49	0.792	0.30 ( 0.28)	0.94	60166.3	12010.00
21	37075.07	153.47	0.780	0.30 ( 0.28)	0.94	60513.2	10210.00
22	33004.90	181.69	0.723	0.30 ( 0.28)	0.94	61251.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 43082.27 Tc (MIN.) = 101.80  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44867.72

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 101.80  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.928  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	1.60	0.30	1.000	81

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 20.10 SUBAREA RUNOFF (CFS) = 11.36  
EFFECTIVE AREA (ACRES) = 44887.82 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61271.8 PEAK FLOW RATE (CFS) = 43082.27  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 101.80  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.928  
SUBAREA LOSS RATE DATA (AMC II):

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

AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 2.00 0.30 1.000 81  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 7.10 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 5.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 8.48  
EFFECTIVE AREA (ACRES) = 44902.82 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61286.8 PEAK FLOW RATE (CFS) = 43082.27  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 195.00 DOWNSTREAM (FEET) = 182.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2458.36 CHANNEL SLOPE = 0.0053  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 10.91  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.916

SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ LAND USE SCS SOIL GROUP AREA (ACRES) Fp (INCH/HR) Ap (DECIMAL) SCS CN

NATURAL FAIR COVER  
"OPEN BRUSH" B 7.00 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 3.30 0.30 1.000 65  
COMMERCIAL B 0.40 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
COMMERCIAL B 0.30 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 43085.79  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.51  
AVERAGE FLOW DEPTH (FEET) = 10.91 TRAVEL TIME (MIN.) = 2.64  
Tc (MIN.) = 104.44  
SUBAREA AREA (ACRES) = 12.40 SUBAREA RUNOFF (CFS) = 7.05  
EFFECTIVE AREA (ACRES) = 44915.22 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61299.2 PEAK FLOW RATE (CFS) = 43082.27  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 10.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 10.91 FLOW VELOCITY (FEET/SEC.) = 15.50

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24474.95	22.82	2.034	0.30 ( 0.23)	0.77	5002.9	50500.00
2	24556.06	23.06	2.020	0.30 ( 0.23)	0.77	5071.6	50600.00
3	26691.08	29.49	1.734	0.30 ( 0.23)	0.77	6886.0	110.00
4	29688.68	38.81	1.483	0.30 ( 0.23)	0.78	10393.5	50220.00
5	30840.23	42.53	1.411	0.30 ( 0.24)	0.79	12040.1	50260.00
6	32503.17	48.72	1.311	0.30 ( 0.25)	0.82	14808.7	31100.00
7	33438.02	53.20	1.255	0.30 ( 0.25)	0.83	16981.4	390.00
8	35890.71	64.84	1.148	0.30 ( 0.26)	0.87	22481.0	13100.00
9	36745.54	71.81	1.102	0.30 ( 0.26)	0.88	25364.7	11801.00
10	38545.50	82.48	1.030	0.30 ( 0.27)	0.89	30488.8	11530.00
11	39521.20	86.78	1.001	0.30 ( 0.27)	0.90	33021.4	11701.00
12	40719.36	91.88	0.971	0.30 ( 0.27)	0.91	36392.2	13010.00
13	42546.66	100.24	0.935	0.30 ( 0.28)	0.92	41969.9	10800.00
14	43082.27	104.44	0.916	0.30 ( 0.28)	0.92	44915.2	11130.00
15	42795.72	114.04	0.875	0.30 ( 0.28)	0.93	49956.4	12410.00
16	42242.23	122.34	0.844	0.30 ( 0.28)	0.94	53695.5	11201.00
17	41816.62	127.32	0.834	0.30 ( 0.28)	0.94	55427.2	12201.00
18	40820.63	134.41	0.819	0.30 ( 0.28)	0.94	57284.4	12231.00
19	39554.70	142.26	0.803	0.30 ( 0.28)	0.94	58918.7	10400.00
20	38239.82	150.24	0.787	0.30 ( 0.28)	0.94	60213.8	12010.00
21	37075.07	156.25	0.774	0.30 ( 0.28)	0.94	60560.8	10210.00
22	33004.90	184.57	0.720	0.30 ( 0.28)	0.94	61299.2	10100.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 43082.27 Tc (MIN.) = 104.44  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44915.22

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 2P50EVBB.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	748.33	9.86	0.30 ( 0.11)	0.38	244.2	429.00
2	793.01	11.37	0.30 ( 0.11)	0.38	281.3	425.00
3	804.73	11.79	0.30 ( 0.11)	0.38	291.7	400.00
4	836.36	13.23	0.30 ( 0.11)	0.38	327.6	300.00
5	892.30	18.33	0.30 ( 0.11)	0.38	440.3	210.00
6	879.40	20.37	0.30 ( 0.11)	0.38	466.7	410.00
7	872.79	21.37	0.30 ( 0.11)	0.38	479.4	200.00
8	870.12	21.98	0.30 ( 0.11)	0.38	486.6	230.00
9	849.67	23.09	0.30 ( 0.11)	0.37	491.2	220.50
TOTAL AREA (ACRES) =		491.2				

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*****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1      24474.95  22.82  2.034  0.30( 0.23) 0.77  5002.9  50500.00
2      24556.06  23.06  2.020  0.30( 0.23) 0.77  5071.6  50600.00
3      26691.08  29.49  1.734  0.30( 0.23) 0.77  6886.0  110.00
4      29688.68  38.81  1.483  0.30( 0.23) 0.78  10393.5  50220.00
5      30840.23  42.53  1.411  0.30( 0.24) 0.79  12040.1  50260.00
6      32503.17  48.72  1.311  0.30( 0.25) 0.82  14808.7  31100.00
7      33438.02  53.20  1.255  0.30( 0.25) 0.83  16981.4  390.00
8      35890.71  64.84  1.148  0.30( 0.26) 0.87  22481.0  13100.00
9      36745.54  71.81  1.102  0.30( 0.26) 0.88  25364.7  11801.00
10     38545.50  82.48  1.030  0.30( 0.27) 0.89  30488.8  11530.00
11     39521.20  86.78  1.001  0.30( 0.27) 0.90  33021.4  11701.00
12     40719.36  91.88  0.971  0.30( 0.27) 0.91  36392.2  13010.00
13     42546.66  100.24 0.935  0.30( 0.28) 0.92  41969.9  10800.00
14     43082.27  104.44 0.916  0.30( 0.28) 0.92  44915.2  11130.00
15     42795.72  114.04 0.875  0.30( 0.28) 0.93  49956.4  12410.00
16     42242.23  122.34 0.844  0.30( 0.28) 0.94  53695.5  11201.00
17     41816.62  127.32 0.834  0.30( 0.28) 0.94  55427.2  12201.00
18     40820.63  134.41 0.819  0.30( 0.28) 0.94  57284.4  12231.00
19     39554.70  142.26 0.803  0.30( 0.28) 0.94  58918.7  10400.00
20     38239.82  150.24 0.787  0.30( 0.28) 0.94  60213.8  12010.00
21     37075.07  156.25 0.774  0.30( 0.28) 0.94  60560.8  10210.00
22     33004.90  184.57 0.720  0.30( 0.28) 0.94  61299.2  10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.
```

```
** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1      748.33   9.86   3.472  0.30( 0.11) 0.38  244.2  429.00
2      793.01  11.37  3.204  0.30( 0.11) 0.38  281.3  425.00
3      804.73  11.79  3.137  0.30( 0.11) 0.38  291.7  400.00
4      836.36  13.23  2.909  0.30( 0.11) 0.38  327.6  300.00
5      892.30  18.33  2.343  0.30( 0.11) 0.38  440.3  210.00
6      879.40  20.37  2.178  0.30( 0.11) 0.38  466.7  410.00
7      872.79  21.37  2.119  0.30( 0.11) 0.38  479.4  200.00
8      870.12  21.98  2.083  0.30( 0.11) 0.38  486.6  230.00
9      849.67  23.09  2.018  0.30( 0.11) 0.37  491.2  220.50
LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13408.00 = 11903.00 FEET.
```

```
** PEAK FLOW RATE TABLE **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1      19759.18  9.86   3.472  0.30( 0.22) 0.73  2406.5  429.00
2      20892.13  11.37  3.204  0.30( 0.22) 0.73  2774.0  425.00
3      21180.54  11.79  3.137  0.30( 0.22) 0.73  2876.5  400.00
4      21910.50  13.23  2.909  0.30( 0.22) 0.73  3229.0  300.00
5      23922.73  18.33  2.343  0.30( 0.22) 0.73  4460.0  210.00
6      24473.72  20.37  2.178  0.30( 0.22) 0.73  4933.7  410.00
7      24877.33  21.37  2.119  0.30( 0.22) 0.73  5165.3  200.00
8      25092.26  21.98  2.083  0.30( 0.22) 0.73  5307.1  230.00
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9      25329.66  22.82  2.034  0.30( 0.22) 0.73  5492.9  50500.00
10     25406.30  23.06  2.020  0.30( 0.22) 0.73  5562.7  50600.00
11     25415.91  23.09  2.018  0.30( 0.22) 0.73  5571.5  220.50
12     27413.84  29.49  1.734  0.30( 0.22) 0.74  7377.2  110.00
13     30299.79  38.81  1.483  0.30( 0.23) 0.76  10884.7  50220.00
14     31419.14  42.53  1.411  0.30( 0.23) 0.78  12531.3  50260.00
15     33037.38  48.72  1.311  0.30( 0.24) 0.80  15299.9  31100.00
16     33947.39  53.20  1.255  0.30( 0.25) 0.82  17472.6  390.00
17     36352.54  64.84  1.148  0.30( 0.26) 0.85  22972.2  13100.00
18     37186.46  71.81  1.102  0.30( 0.26) 0.87  25855.9  11801.00
19     38954.38  82.48  1.030  0.30( 0.27) 0.89  30980.0  11530.00
20     39917.15  86.78  1.001  0.30( 0.27) 0.89  33512.6  11701.00
21     41102.02  91.88  0.971  0.30( 0.27) 0.90  36883.4  13010.00
22     42913.18  100.24 0.935  0.30( 0.27) 0.91  42461.1  10800.00
23     43440.68  104.44 0.916  0.30( 0.28) 0.92  45406.4  11130.00
24     43135.58  114.04 0.875  0.30( 0.28) 0.93  50447.6  12410.00
25     42568.43  122.34 0.844  0.30( 0.28) 0.93  54186.7  11201.00
26     42138.23  127.32 0.834  0.30( 0.28) 0.93  55918.4  12201.00
27     41135.70  134.41 0.819  0.30( 0.28) 0.93  57775.6  12231.00
28     39862.55  142.26 0.803  0.30( 0.28) 0.93  59409.9  10400.00
29     38540.31  150.24 0.787  0.30( 0.28) 0.94  60705.0  12010.00
30     37370.03  156.25 0.774  0.30( 0.28) 0.94  61051.9  10210.00
31     33275.81  184.57 0.720  0.30( 0.28) 0.94  61790.4  10100.00
TOTAL AREA(ACRES) = 61790.4
```

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 43440.68 Tc(MIN.) = 104.442
EFFECTIVE AREA(ACRES) = 45406.42 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.78
TOTAL AREA(ACRES) = 61790.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.
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*****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12
-----
>>>>CLEAR MEMORY BANK # 2 <<<<
=====
*****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 2 <<<<
=====
PEAK FLOWRATE TABLE FILE NAME: P507XX50.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)  (ACRES)  NODE
1      337.32   22.37  0.30( 0.30) 0.99  231.4  50700.00
TOTAL AREA(ACRES) = 231.4
```

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*****
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)    Ap    Ae    HEADWATER
```

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	19759.18	9.86	3.472	0.30 ( 0.22)	0.73	2406.5 429.00
2	20892.13	11.37	3.204	0.30 ( 0.22)	0.73	2774.0 425.00
3	21180.54	11.79	3.137	0.30 ( 0.22)	0.73	2876.5 400.00
4	21910.50	13.23	2.909	0.30 ( 0.22)	0.73	3229.0 300.00
5	23922.73	18.33	2.343	0.30 ( 0.22)	0.73	4460.0 210.00
6	24473.72	20.37	2.178	0.30 ( 0.22)	0.73	4933.7 410.00
7	24877.33	21.37	2.119	0.30 ( 0.22)	0.73	5165.3 200.00
8	25092.26	21.98	2.083	0.30 ( 0.22)	0.73	5307.1 230.00
9	25329.66	22.82	2.034	0.30 ( 0.22)	0.73	5492.9 50500.00
10	25406.30	23.06	2.020	0.30 ( 0.22)	0.73	5562.7 50600.00
11	25415.91	23.09	2.018	0.30 ( 0.22)	0.73	5571.5 220.50
12	27413.84	29.49	1.734	0.30 ( 0.22)	0.74	7377.2 110.00
13	30299.79	38.81	1.483	0.30 ( 0.23)	0.76	10884.7 50220.00
14	31419.14	42.53	1.411	0.30 ( 0.23)	0.78	12531.3 50260.00
15	33037.38	48.72	1.311	0.30 ( 0.24)	0.80	15299.9 31100.00
16	33947.39	53.20	1.255	0.30 ( 0.25)	0.82	17472.6 390.00
17	36352.54	64.84	1.148	0.30 ( 0.26)	0.85	22972.2 13100.00
18	37186.46	71.81	1.102	0.30 ( 0.26)	0.87	25855.9 11801.00
19	38954.38	82.48	1.030	0.30 ( 0.27)	0.89	30980.0 11530.00
20	39917.15	86.78	1.001	0.30 ( 0.27)	0.89	33512.6 11701.00
21	41102.02	91.88	0.971	0.30 ( 0.27)	0.90	36883.4 13010.00
22	42913.18	100.24	0.935	0.30 ( 0.27)	0.91	42461.1 10800.00
23	43440.68	104.44	0.916	0.30 ( 0.28)	0.92	45406.4 11130.00
24	43135.58	114.04	0.875	0.30 ( 0.28)	0.93	50447.6 12410.00
25	42568.43	122.34	0.844	0.30 ( 0.28)	0.93	54186.7 11201.00
26	42138.23	127.32	0.834	0.30 ( 0.28)	0.93	55918.4 12201.00
27	41135.70	134.41	0.819	0.30 ( 0.28)	0.93	57775.6 12231.00
28	39862.55	142.26	0.803	0.30 ( 0.28)	0.93	59409.9 10400.00
29	38540.31	150.24	0.787	0.30 ( 0.28)	0.94	60705.0 12010.00
30	37370.03	156.25	0.774	0.30 ( 0.28)	0.94	61051.9 10210.00
31	33275.81	184.57	0.720	0.30 ( 0.28)	0.94	61790.4 10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	337.32	22.37	2.061	0.30 ( 0.30)	0.99	231.4	50700.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20026.85	9.86	3.472	0.30 ( 0.22)	0.74	2508.5	429.00
2	21174.60	11.37	3.204	0.30 ( 0.22)	0.74	2891.6	425.00
3	21466.74	11.79	3.137	0.30 ( 0.22)	0.74	2998.4	400.00
4	22205.93	13.23	2.909	0.30 ( 0.22)	0.74	3365.8	300.00
5	24243.41	18.33	2.343	0.30 ( 0.22)	0.74	4649.6	210.00
6	24801.36	20.37	2.178	0.30 ( 0.22)	0.74	5144.4	410.00
7	25210.30	21.37	2.119	0.30 ( 0.22)	0.74	5386.4	200.00
8	25428.01	21.98	2.083	0.30 ( 0.22)	0.74	5534.5	230.00
9	25540.48	22.37	2.061	0.30 ( 0.22)	0.74	5625.3	50700.00
10	25662.00	22.82	2.034	0.30 ( 0.22)	0.74	5724.3	50500.00
11	25735.92	23.06	2.020	0.30 ( 0.22)	0.74	5794.1	50600.00
12	25745.19	23.09	2.018	0.30 ( 0.22)	0.74	5802.9	220.50
13	27688.68	29.49	1.734	0.30 ( 0.22)	0.75	7608.6	110.00
14	30526.73	38.81	1.483	0.30 ( 0.23)	0.77	11116.1	50220.00
15	31632.27	42.53	1.411	0.30 ( 0.23)	0.78	12762.7	50260.00

16	33231.33	48.72	1.311	0.30 ( 0.24)	0.81	15531.3	31100.00
17	34130.70	53.20	1.255	0.30 ( 0.25)	0.82	17704.0	390.00
18	36515.46	64.84	1.148	0.30 ( 0.26)	0.86	23203.6	13100.00
19	37340.40	71.81	1.102	0.30 ( 0.26)	0.87	26087.3	11801.00
20	39094.57	82.48	1.030	0.30 ( 0.27)	0.89	31211.4	11530.00
21	40051.80	86.78	1.001	0.30 ( 0.27)	0.89	33744.0	11701.00
22	41230.98	91.88	0.971	0.30 ( 0.27)	0.90	37114.8	13010.00
23	43035.21	100.24	0.935	0.30 ( 0.27)	0.91	42692.5	10800.00
24	43559.23	104.44	0.916	0.30 ( 0.28)	0.92	45637.8	11130.00
25	43246.17	114.04	0.875	0.30 ( 0.28)	0.93	50679.0	12410.00
26	42673.16	122.34	0.844	0.30 ( 0.28)	0.93	54418.1	11201.00
27	42240.99	127.32	0.834	0.30 ( 0.28)	0.93	56149.8	12201.00
28	41235.67	134.41	0.819	0.30 ( 0.28)	0.93	58007.0	12231.00
29	39959.41	142.26	0.803	0.30 ( 0.28)	0.94	59641.3	10400.00
30	38634.02	150.24	0.787	0.30 ( 0.28)	0.94	60936.4	12010.00
31	37461.37	156.25	0.774	0.30 ( 0.28)	0.94	61283.3	10210.00
32	33356.84	184.57	0.720	0.30 ( 0.28)	0.94	62021.8	10100.00

TOTAL AREA (ACRES) = 62021.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43559.23 Tc (MIN.) = 104.442  
EFFECTIVE AREA (ACRES) = 45637.82 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 62021.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72  
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.38  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.911

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 43560.13					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.44					
AVERAGE FLOW DEPTH (FEET) = 12.38 TRAVEL TIME (MIN.) = 1.18					
Tc (MIN.) = 105.62					
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 1.82					
EFFECTIVE AREA (ACRES) = 45641.12 AREA-AVERAGED Fm (INCH/HR) = 0.28					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92					
TOTAL AREA (ACRES) = 62025.1 PEAK FLOW RATE (CFS) = 43559.23					
NOTE: PEAK FLOW RATE DEFAULTS TO UPSTREAM VALUE					
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0					
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030					



\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 12.38 FLOW VELOCITY (FEET/SEC.) = 13.44

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20026.85	11.38	3.201	0.30 ( 0.22)	0.74	2511.8	429.00
2	21174.60	12.86	2.967	0.30 ( 0.22)	0.74	2894.9	425.00
3	21466.74	13.27	2.902	0.30 ( 0.22)	0.74	3001.7	400.00
4	22205.93	14.70	2.676	0.30 ( 0.22)	0.74	3369.1	300.00
5	24243.41	19.76	2.221	0.30 ( 0.22)	0.74	4652.9	210.00
6	24801.36	21.79	2.095	0.30 ( 0.22)	0.74	5147.7	410.00
7	25210.30	22.78	2.037	0.30 ( 0.22)	0.74	5389.7	200.00
8	25428.01	23.39	2.001	0.30 ( 0.22)	0.74	5537.8	230.00
9	25540.48	23.77	1.978	0.30 ( 0.22)	0.74	5628.6	50700.00
10	25662.00	24.22	1.952	0.30 ( 0.22)	0.74	5727.6	50500.00
11	25735.92	24.46	1.938	0.30 ( 0.22)	0.74	5797.4	50600.00
12	25745.19	24.49	1.936	0.30 ( 0.22)	0.74	5806.2	220.50
13	27688.68	30.85	1.692	0.30 ( 0.22)	0.75	7611.9	110.00
14	30526.73	40.13	1.450	0.30 ( 0.23)	0.77	11119.4	50220.00
15	31632.27	43.84	1.390	0.30 ( 0.23)	0.78	12766.0	50260.00
16	33231.33	50.01	1.290	0.30 ( 0.24)	0.81	15534.6	31100.00
17	34130.70	54.48	1.241	0.30 ( 0.25)	0.82	17707.3	390.00
18	36515.46	66.09	1.140	0.30 ( 0.26)	0.86	23206.9	13100.00
19	37340.40	73.05	1.093	0.30 ( 0.26)	0.87	26090.6	11801.00
20	39094.57	83.70	1.021	0.30 ( 0.27)	0.89	31214.7	11530.00
21	40051.80	88.00	0.992	0.30 ( 0.27)	0.89	33747.3	11701.00
22	41230.98	93.09	0.966	0.30 ( 0.27)	0.90	37118.1	13010.00
23	43035.21	101.42	0.929	0.30 ( 0.27)	0.91	42695.8	10800.00
24	43559.23	105.62	0.911	0.30 ( 0.28)	0.92	45641.1	11130.00
25	43246.17	115.23	0.870	0.30 ( 0.28)	0.93	50682.3	12410.00
26	42673.16	123.53	0.842	0.30 ( 0.28)	0.93	54421.4	11201.00
27	42240.99	128.52	0.831	0.30 ( 0.28)	0.93	56153.1	12201.00
28	41235.67	135.61	0.817	0.30 ( 0.28)	0.93	58010.3	12231.00
29	39959.41	143.47	0.800	0.30 ( 0.28)	0.94	59644.6	10400.00
30	38634.02	151.47	0.784	0.30 ( 0.28)	0.94	60939.7	12010.00
31	37461.37	157.48	0.772	0.30 ( 0.28)	0.94	61286.6	10210.00
32	33356.84	185.86	0.719	0.30 ( 0.28)	0.94	62025.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 43559.23 Tc (MIN.) = 105.62

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 45641.12

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU50EV36.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2426.61	27.79	0.30 ( 0.27)	0.90	1478.1	110.00
2	2523.08	30.18	0.30 ( 0.27)	0.90	1650.5	100.00
3	2535.23	31.37	0.30 ( 0.27)	0.90	1727.1	100.00
4	2565.50	34.38	0.30 ( 0.27)	0.91	1904.1	130.00
5	2700.64	47.40	0.30 ( 0.28)	0.93	2638.7	20100.00
6	2620.76	52.90	0.30 ( 0.28)	0.93	2824.4	13600.00
7	2498.72	87.84	0.30 ( 0.28)	0.93	3795.6	13510.00
8	2354.93	96.73	0.30 ( 0.28)	0.93	3859.7	13500.00
TOTAL AREA (ACRES) =			3859.7			

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20026.85	11.38	3.201	0.30 ( 0.22)	0.74	2511.8	429.00
2	21174.60	12.86	2.967	0.30 ( 0.22)	0.74	2894.9	425.00
3	21466.74	13.27	2.902	0.30 ( 0.22)	0.74	3001.7	400.00
4	22205.93	14.70	2.676	0.30 ( 0.22)	0.74	3369.1	300.00
5	24243.41	19.76	2.221	0.30 ( 0.22)	0.74	4652.9	210.00
6	24801.36	21.79	2.095	0.30 ( 0.22)	0.74	5147.7	410.00
7	25210.30	22.78	2.037	0.30 ( 0.22)	0.74	5389.7	200.00
8	25428.01	23.39	2.001	0.30 ( 0.22)	0.74	5537.8	230.00
9	25540.48	23.77	1.978	0.30 ( 0.22)	0.74	5628.6	50700.00
10	25662.00	24.22	1.952	0.30 ( 0.22)	0.74	5727.6	50500.00
11	25735.92	24.46	1.938	0.30 ( 0.22)	0.74	5797.4	50600.00
12	25745.19	24.49	1.936	0.30 ( 0.22)	0.74	5806.2	220.50
13	27688.68	30.85	1.692	0.30 ( 0.22)	0.75	7611.9	110.00
14	30526.73	40.13	1.450	0.30 ( 0.23)	0.77	11119.4	50220.00
15	31632.27	43.84	1.390	0.30 ( 0.23)	0.78	12766.0	50260.00
16	33231.33	50.01	1.290	0.30 ( 0.24)	0.81	15534.6	31100.00
17	34130.70	54.48	1.241	0.30 ( 0.25)	0.82	17707.3	390.00
18	36515.46	66.09	1.140	0.30 ( 0.26)	0.86	23206.9	13100.00
19	37340.40	73.05	1.093	0.30 ( 0.26)	0.87	26090.6	11801.00
20	39094.57	83.70	1.021	0.30 ( 0.27)	0.89	31214.7	11530.00
21	40051.80	88.00	0.992	0.30 ( 0.27)	0.89	33747.3	11701.00
22	41230.98	93.09	0.966	0.30 ( 0.27)	0.90	37118.1	13010.00
23	43035.21	101.42	0.929	0.30 ( 0.27)	0.91	42695.8	10800.00
24	43559.23	105.62	0.911	0.30 ( 0.28)	0.92	45641.1	11130.00
25	43246.17	115.23	0.870	0.30 ( 0.28)	0.93	50682.3	12410.00
26	42673.16	123.53	0.842	0.30 ( 0.28)	0.93	54421.4	11201.00
27	42240.99	128.52	0.831	0.30 ( 0.28)	0.93	56153.1	12201.00
28	41235.67	135.61	0.817	0.30 ( 0.28)	0.93	58010.3	12231.00
29	39959.41	143.47	0.800	0.30 ( 0.28)	0.94	59644.6	10400.00
30	38634.02	151.47	0.784	0.30 ( 0.28)	0.94	60939.7	12010.00
31	37461.37	157.48	0.772	0.30 ( 0.28)	0.94	61286.6	10210.00
32	33356.84	185.86	0.719	0.30 ( 0.28)	0.94	62025.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	2426.61	27.79	1.799	0.30 ( 0.27)	0.90	1478.1 110.00
2	2523.08	30.18	1.709	0.30 ( 0.27)	0.90	1650.5 100.00
3	2535.23	31.37	1.678	0.30 ( 0.27)	0.90	1727.1 100.00
4	2565.50	34.38	1.599	0.30 ( 0.27)	0.91	1904.1 130.00
5	2700.64	47.40	1.332	0.30 ( 0.28)	0.93	2638.7 20100.00
6	2620.76	52.90	1.258	0.30 ( 0.28)	0.93	2824.4 13600.00
7	2498.72	87.84	0.994	0.30 ( 0.28)	0.93	3795.6 13510.00
8	2354.93	96.73	0.950	0.30 ( 0.28)	0.93	3859.7 13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

**\*\* PEAK FLOW RATE TABLE \*\***

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21932.86	11.38	3.201	0.30 ( 0.23)	0.77	3117.2	429.00
2	23156.31	12.86	2.967	0.30 ( 0.23)	0.77	3578.9	425.00
3	23462.54	13.27	2.902	0.30 ( 0.23)	0.77	3707.7	400.00
4	24226.67	14.70	2.676	0.30 ( 0.23)	0.77	4151.1	300.00
5	26444.98	19.76	2.221	0.30 ( 0.23)	0.77	5703.8	210.00
6	27072.36	21.79	2.095	0.30 ( 0.23)	0.77	6306.5	410.00
7	27508.78	22.78	2.037	0.30 ( 0.23)	0.77	6601.2	200.00
8	27740.08	23.39	2.001	0.30 ( 0.23)	0.77	6781.8	230.00
9	27859.89	23.77	1.978	0.30 ( 0.23)	0.77	6893.1	50700.00
10	27988.55	24.22	1.952	0.30 ( 0.23)	0.77	7015.6	50500.00
11	28065.82	24.46	1.938	0.30 ( 0.23)	0.77	7098.2	50600.00
12	28075.48	24.49	1.936	0.30 ( 0.23)	0.77	7108.6	220.50
13	29180.44	27.79	1.799	0.30 ( 0.23)	0.77	8221.5	110.00
14	30006.05	30.18	1.709	0.30 ( 0.23)	0.78	9071.3	100.00
15	30218.64	30.85	1.692	0.30 ( 0.23)	0.78	9305.9	110.00
16	30381.46	31.37	1.678	0.30 ( 0.23)	0.78	9533.7	100.00
17	31333.12	34.38	1.599	0.30 ( 0.23)	0.78	10849.5	130.00
18	33151.90	40.13	1.450	0.30 ( 0.24)	0.79	13347.9	50220.00
19	34295.90	43.84	1.390	0.30 ( 0.24)	0.80	15203.5	50260.00
20	35257.31	47.40	1.332	0.30 ( 0.25)	0.82	17005.2	20100.00
21	35894.14	50.01	1.290	0.30 ( 0.25)	0.83	18261.2	31100.00
22	36433.76	52.90	1.258	0.30 ( 0.25)	0.83	19764.2	13600.00
23	36745.94	54.48	1.241	0.30 ( 0.25)	0.84	20575.7	390.00
24	39090.16	66.09	1.140	0.30 ( 0.26)	0.87	26397.8	13100.00
25	39890.78	73.05	1.093	0.30 ( 0.26)	0.88	29475.0	11801.00
26	41607.73	83.70	1.021	0.30 ( 0.27)	0.89	34895.3	11530.00
27	42515.17	87.84	0.994	0.30 ( 0.27)	0.90	37449.4	13510.00
28	42547.96	88.00	0.992	0.30 ( 0.27)	0.90	37544.0	11701.00
29	43644.88	93.09	0.966	0.30 ( 0.27)	0.90	40951.5	13010.00
30	44374.93	96.73	0.950	0.30 ( 0.27)	0.91	43416.9	13500.00
31	45318.66	101.42	0.929	0.30 ( 0.27)	0.92	46555.5	10800.00
32	45778.70	105.62	0.911	0.30 ( 0.28)	0.92	49500.8	11130.00
33	45319.30	115.23	0.870	0.30 ( 0.28)	0.93	54542.0	12410.00
34	44647.93	123.53	0.842	0.30 ( 0.28)	0.93	58281.1	11201.00
35	44179.53	128.52	0.831	0.30 ( 0.28)	0.93	60012.8	12201.00
36	43122.66	135.61	0.817	0.30 ( 0.28)	0.93	61870.0	12231.00
37	41789.29	143.47	0.800	0.30 ( 0.28)	0.93	63504.3	10400.00
38	40405.80	151.47	0.784	0.30 ( 0.28)	0.94	64799.4	12010.00
39	39189.43	157.48	0.772	0.30 ( 0.28)	0.94	65146.3	10210.00
40	34899.45	185.86	0.719	0.30 ( 0.28)	0.94	65884.8	10100.00

TOTAL AREA (ACRES) = 65884.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 45778.70 Tc (MIN.) = 105.623

EFFECTIVE AREA (ACRES) = 49500.80 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
 TOTAL AREA (ACRES) = 65884.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 9.30  
 CHANNEL FLOW THRU SUBAREA (CFS) = 45778.70  
 FLOW VELOCITY (FEET/SEC.) = 19.96 FLOW DEPTH (FEET) = 9.30  
 TRAVEL TIME (MIN.) = 0.14 Tc (MIN.) = 105.77  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

**\*\* PEAK FLOW RATE TABLE \*\***

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21932.86	11.56	3.173	0.30 ( 0.23)	0.77	3117.2	429.00
2	23156.31	13.04	2.939	0.30 ( 0.23)	0.77	3578.9	425.00
3	23462.54	13.45	2.874	0.30 ( 0.23)	0.77	3707.7	400.00
4	24226.67	14.88	2.648	0.30 ( 0.23)	0.77	4151.1	300.00
5	26444.98	19.93	2.206	0.30 ( 0.23)	0.77	5703.8	210.00
6	27072.36	21.96	2.085	0.30 ( 0.23)	0.77	6306.5	410.00
7	27508.78	22.95	2.027	0.30 ( 0.23)	0.77	6601.2	200.00
8	27740.08	23.56	1.991	0.30 ( 0.23)	0.77	6781.8	230.00
9	27859.89	23.94	1.968	0.30 ( 0.23)	0.77	6893.1	50700.00
10	27988.55	24.38	1.942	0.30 ( 0.23)	0.77	7015.6	50500.00
11	28065.82	24.62	1.928	0.30 ( 0.23)	0.77	7098.2	50600.00
12	28075.48	24.65	1.926	0.30 ( 0.23)	0.77	7108.6	220.50
13	29180.44	27.96	1.793	0.30 ( 0.23)	0.77	8221.5	110.00
14	30006.05	30.34	1.705	0.30 ( 0.23)	0.78	9071.3	100.00
15	30218.64	31.01	1.687	0.30 ( 0.23)	0.78	9305.9	110.00
16	30381.46	31.53	1.674	0.30 ( 0.23)	0.78	9533.7	100.00
17	31333.12	34.54	1.595	0.30 ( 0.23)	0.78	10849.5	130.00
18	33151.90	40.29	1.447	0.30 ( 0.24)	0.79	13347.9	50220.00
19	34295.90	43.99	1.387	0.30 ( 0.24)	0.80	15203.5	50260.00
20	35257.31	47.56	1.330	0.30 ( 0.25)	0.82	17005.2	20100.00
21	35894.14	50.16	1.288	0.30 ( 0.25)	0.83	18261.2	31100.00
22	36433.76	53.05	1.257	0.30 ( 0.25)	0.83	19764.2	13600.00
23	36745.94	54.63	1.239	0.30 ( 0.25)	0.84	20575.7	390.00
24	39090.16	66.24	1.139	0.30 ( 0.26)	0.87	26397.8	13100.00
25	39890.78	73.20	1.092	0.30 ( 0.26)	0.88	29475.0	11801.00
26	41607.73	83.85	1.020	0.30 ( 0.27)	0.89	34895.3	11530.00
27	42515.17	87.98	0.993	0.30 ( 0.27)	0.90	37449.4	13510.00
28	42547.96	88.14	0.992	0.30 ( 0.27)	0.90	37544.0	11701.00
29	43644.88	93.23	0.965	0.30 ( 0.27)	0.90	40951.5	13010.00
30	44374.93	96.88	0.949	0.30 ( 0.27)	0.91	43416.9	13500.00
31	45318.66	101.57	0.929	0.30 ( 0.27)	0.92	46555.5	10800.00
32	45778.70	105.77	0.911	0.30 ( 0.28)	0.92	49500.8	11130.00
33	45319.30	115.37	0.869	0.30 ( 0.28)	0.93	54542.0	12410.00
34	44647.93	123.68	0.841	0.30 ( 0.28)	0.93	58281.1	11201.00

35	44179.53	128.66	0.831	0.30 ( 0.28)	0.93	60012.8	12201.00
36	43122.66	135.76	0.816	0.30 ( 0.28)	0.93	61870.0	12231.00
37	41789.29	143.62	0.800	0.30 ( 0.28)	0.93	63504.3	10400.00
38	40405.80	151.62	0.784	0.30 ( 0.28)	0.94	64799.4	12010.00
39	39189.43	157.63	0.771	0.30 ( 0.28)	0.94	65146.3	10210.00
40	34899.45	186.01	0.719	0.30 ( 0.28)	0.94	65884.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 45778.70 Tc(MIN.) = 105.77  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 49500.80

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506101C.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	570.78	37.58	0.30 ( 0.30)	0.98	591.0	10100.00
TOTAL AREA(ACRES) =		591.0				

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21932.86	11.56	3.173	0.30 ( 0.23)	0.77	3117.2	429.00
2	23156.31	13.04	2.939	0.30 ( 0.23)	0.77	3578.9	425.00
3	23462.54	13.45	2.874	0.30 ( 0.23)	0.77	3707.7	400.00
4	24226.67	14.88	2.648	0.30 ( 0.23)	0.77	4151.1	300.00
5	26444.98	19.93	2.206	0.30 ( 0.23)	0.77	5703.8	210.00
6	27072.36	21.96	2.085	0.30 ( 0.23)	0.77	6306.5	410.00
7	27508.78	22.95	2.027	0.30 ( 0.23)	0.77	6601.2	200.00
8	27740.08	23.56	1.991	0.30 ( 0.23)	0.77	6781.8	230.00
9	27859.89	23.94	1.968	0.30 ( 0.23)	0.77	6893.1	50700.00
10	27988.55	24.38	1.942	0.30 ( 0.23)	0.77	7015.6	50500.00
11	28065.82	24.62	1.928	0.30 ( 0.23)	0.77	7098.2	50600.00
12	28075.48	24.65	1.926	0.30 ( 0.23)	0.77	7108.6	220.50
13	29180.44	27.96	1.793	0.30 ( 0.23)	0.77	8221.5	110.00
14	30006.05	30.34	1.705	0.30 ( 0.23)	0.78	9071.3	100.00
15	30218.64	31.01	1.687	0.30 ( 0.23)	0.78	9305.9	110.00
16	30381.46	31.53	1.674	0.30 ( 0.23)	0.78	9533.7	100.00
17	31333.12	34.54	1.595	0.30 ( 0.23)	0.78	10849.5	130.00
18	33151.90	40.29	1.447	0.30 ( 0.24)	0.79	13347.9	50220.00
19	34295.90	43.99	1.387	0.30 ( 0.24)	0.80	15203.5	50260.00
20	35257.31	47.56	1.330	0.30 ( 0.25)	0.82	17005.2	20100.00

21	35894.14	50.16	1.288	0.30 ( 0.25)	0.83	18261.2	31100.00
22	36433.76	53.05	1.257	0.30 ( 0.25)	0.83	19764.2	13600.00
23	36745.94	54.63	1.239	0.30 ( 0.25)	0.84	20575.7	390.00
24	39090.16	66.24	1.139	0.30 ( 0.26)	0.87	26397.8	13100.00
25	39890.78	73.20	1.092	0.30 ( 0.26)	0.88	29475.0	11801.00
26	41607.73	83.85	1.020	0.30 ( 0.27)	0.89	34895.3	11530.00
27	42515.17	87.98	0.993	0.30 ( 0.27)	0.90	37449.4	13510.00
28	42547.96	88.14	0.992	0.30 ( 0.27)	0.90	37544.0	11701.00
29	43644.88	93.23	0.965	0.30 ( 0.27)	0.90	40951.5	13010.00
30	44374.93	96.88	0.949	0.30 ( 0.27)	0.91	43416.9	13500.00
31	45318.66	101.57	0.929	0.30 ( 0.27)	0.92	46555.5	10800.00
32	45778.70	105.77	0.911	0.30 ( 0.28)	0.92	49500.8	11130.00
33	45319.30	115.37	0.869	0.30 ( 0.28)	0.93	54542.0	12410.00
34	44647.93	123.68	0.841	0.30 ( 0.28)	0.93	58281.1	11201.00
35	44179.53	128.66	0.831	0.30 ( 0.28)	0.93	60012.8	12201.00
36	43122.66	135.76	0.816	0.30 ( 0.28)	0.93	61870.0	12231.00
37	41789.29	143.62	0.800	0.30 ( 0.28)	0.93	63504.3	10400.00
38	40405.80	151.62	0.784	0.30 ( 0.28)	0.94	64799.4	12010.00
39	39189.43	157.63	0.771	0.30 ( 0.28)	0.94	65146.3	10210.00
40	34899.45	186.01	0.719	0.30 ( 0.28)	0.94	65884.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE	
1	570.78	37.58	1.515	0.30 ( 0.30)	0.98	591.0	10100.00	
LONGEST FLOWPATH FROM NODE		10100.00 TO NODE 13412.00 =					14677.00 FEET.	

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22347.00	11.56	3.173	0.30 ( 0.23)	0.78	3299.1	429.00
2	23585.41	13.04	2.939	0.30 ( 0.23)	0.78	3784.0	425.00
3	23894.28	13.45	2.874	0.30 ( 0.23)	0.78	3919.2	400.00
4	24662.42	14.88	2.648	0.30 ( 0.23)	0.78	4385.0	300.00
5	26918.98	19.93	2.206	0.30 ( 0.23)	0.78	6017.2	210.00
6	27561.48	21.96	2.085	0.30 ( 0.23)	0.78	6651.8	410.00
7	28003.33	22.95	2.027	0.30 ( 0.23)	0.78	6962.1	200.00
8	28237.26	23.56	1.991	0.30 ( 0.24)	0.78	7152.2	230.00
9	28358.46	23.94	1.968	0.30 ( 0.24)	0.78	7269.7	50700.00
10	28488.44	24.38	1.942	0.30 ( 0.24)	0.78	7399.1	50500.00
11	28566.29	24.62	1.928	0.30 ( 0.24)	0.78	7485.5	50600.00
12	28576.02	24.65	1.926	0.30 ( 0.24)	0.78	7496.3	220.50
13	29701.45	27.96	1.793	0.30 ( 0.24)	0.79	8661.1	110.00
14	30538.50	30.34	1.705	0.30 ( 0.24)	0.79	9548.5	100.00
15	30756.11	31.01	1.687	0.30 ( 0.24)	0.79	9793.6	110.00
16	30922.55	31.53	1.674	0.30 ( 0.24)	0.79	10029.6	100.00
17	31891.97	34.54	1.595	0.30 ( 0.24)	0.79	11392.7	130.00
18	32865.37	37.58	1.515	0.30 ( 0.24)	0.80	12761.2	10100.00
19	33690.83	40.29	1.447	0.30 ( 0.24)	0.80	13938.9	50220.00
20	34806.76	43.99	1.387	0.30 ( 0.24)	0.81	15794.5	50260.00
21	35741.16	47.56	1.330	0.30 ( 0.25)	0.82	17596.2	20100.00
22	36358.67	50.16	1.288	0.30 ( 0.25)	0.83	18852.2	31100.00
23	36883.54	53.05	1.257	0.30 ( 0.25)	0.84	20355.2	13600.00
24	37187.66	54.63	1.239	0.30 ( 0.25)	0.84	21166.7	390.00
25	39484.89	66.24	1.139	0.30 ( 0.26)	0.87	26988.8	13100.00
26	40263.59	73.20	1.092	0.30 ( 0.26)	0.88	30066.0	11801.00
27	41946.99	83.85	1.020	0.30 ( 0.27)	0.89	35486.3	11530.00

28	42841.41	87.98	0.993	0.30	( 0.27)	0.90	38040.4	13510.00
29	42873.70	88.14	0.992	0.30	( 0.27)	0.90	38135.0	11701.00
30	43958.22	93.23	0.965	0.30	( 0.27)	0.91	41542.5	13010.00
31	44680.88	96.88	0.949	0.30	( 0.27)	0.91	44007.9	13500.00
32	45615.11	101.57	0.929	0.30	( 0.27)	0.92	47146.5	10800.00
33	46066.64	105.77	0.911	0.30	( 0.28)	0.92	50091.8	11130.00
34	45587.77	115.37	0.869	0.30	( 0.28)	0.93	55133.0	12410.00
35	44903.46	123.68	0.841	0.30	( 0.28)	0.93	58872.1	11201.00
36	44430.25	128.66	0.831	0.30	( 0.28)	0.93	60603.8	12201.00
37	43366.52	135.76	0.816	0.30	( 0.28)	0.93	62461.0	12231.00
38	42025.55	143.62	0.800	0.30	( 0.28)	0.94	64095.3	10400.00
39	40634.33	151.62	0.784	0.30	( 0.28)	0.94	65390.4	12010.00
40	39412.14	157.63	0.771	0.30	( 0.28)	0.94	65737.3	10210.00
41	35097.56	186.01	0.719	0.30	( 0.28)	0.94	66475.8	10100.00

TOTAL AREA (ACRES) = 66475.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 46066.64 Tc (MIN.) = 105.765  
EFFECTIVE AREA (ACRES) = 50091.80 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 66475.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 176.93 DOWNSTREAM (FEET) = 173.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 260.10 CHANNEL SLOPE = 0.0151  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.43  
CHANNEL FLOW THRU SUBAREA (CFS) = 46066.64  
FLOW VELOCITY (FEET/SEC.) = 22.57 FLOW DEPTH (FEET) = 8.43  
TRAVEL TIME (MIN.) = 0.19 Tc (MIN.) = 105.96  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22347.00	11.81	3.134	0.30 ( 0.23)	0.78	3299.1	429.00
2	23585.41	13.28	2.901	0.30 ( 0.23)	0.78	3784.0	425.00
3	23894.28	13.69	2.836	0.30 ( 0.23)	0.78	3919.2	400.00
4	24662.42	15.11	2.619	0.30 ( 0.23)	0.78	4385.0	300.00
5	26918.98	20.16	2.191	0.30 ( 0.23)	0.78	6017.2	210.00
6	27561.48	22.18	2.072	0.30 ( 0.23)	0.78	6651.8	410.00
7	28003.33	23.17	2.013	0.30 ( 0.23)	0.78	6962.1	200.00
8	28237.26	23.78	1.978	0.30 ( 0.24)	0.78	7152.2	230.00
9	28358.46	24.17	1.955	0.30 ( 0.24)	0.78	7269.7	50700.00
10	28488.44	24.61	1.929	0.30 ( 0.24)	0.78	7399.1	50500.00
11	28566.29	24.85	1.915	0.30 ( 0.24)	0.78	7485.5	50600.00
12	28576.02	24.88	1.913	0.30 ( 0.24)	0.78	7496.3	220.50
13	29701.45	28.18	1.784	0.30 ( 0.24)	0.79	8661.1	110.00
14	30538.50	30.56	1.699	0.30 ( 0.24)	0.79	9548.5	100.00
15	30756.11	31.24	1.682	0.30 ( 0.24)	0.79	9793.6	110.00
16	30922.55	31.75	1.668	0.30 ( 0.24)	0.79	10029.6	100.00

17	31891.97	34.76	1.589	0.30	( 0.24)	0.79	11392.7	130.00
18	32865.37	37.79	1.510	0.30	( 0.24)	0.80	12761.2	10100.00
19	33690.83	40.50	1.444	0.30	( 0.24)	0.80	13938.9	50220.00
20	34806.76	44.20	1.384	0.30	( 0.24)	0.81	15794.5	50260.00
21	35741.16	47.77	1.326	0.30	( 0.25)	0.82	17596.2	20100.00
22	36358.67	50.37	1.286	0.30	( 0.25)	0.83	18852.2	31100.00
23	36883.54	53.26	1.254	0.30	( 0.25)	0.84	20355.2	13600.00
24	37187.66	54.84	1.237	0.30	( 0.25)	0.84	21166.7	390.00
25	39484.89	66.44	1.138	0.30	( 0.26)	0.87	26988.8	13100.00
26	40263.59	73.40	1.091	0.30	( 0.26)	0.88	30066.0	11801.00
27	41946.99	84.05	1.019	0.30	( 0.27)	0.89	35486.3	11530.00
28	42841.41	88.18	0.991	0.30	( 0.27)	0.90	38040.4	13510.00
29	42873.70	88.34	0.990	0.30	( 0.27)	0.90	38135.0	11701.00
30	43958.22	93.42	0.964	0.30	( 0.27)	0.91	41542.5	13010.00
31	44680.88	97.07	0.948	0.30	( 0.27)	0.91	44007.9	13500.00
32	45615.11	101.76	0.928	0.30	( 0.27)	0.92	47146.5	10800.00
33	46066.64	105.96	0.910	0.30	( 0.28)	0.92	50091.8	11130.00
34	45587.77	115.56	0.868	0.30	( 0.28)	0.93	55133.0	12410.00
35	44903.46	123.87	0.841	0.30	( 0.28)	0.93	58872.1	11201.00
36	44430.25	128.86	0.831	0.30	( 0.28)	0.93	60603.8	12201.00
37	43366.52	135.95	0.816	0.30	( 0.28)	0.93	62461.0	12231.00
38	42025.55	143.82	0.800	0.30	( 0.28)	0.94	64095.3	10400.00
39	40634.33	151.82	0.783	0.30	( 0.28)	0.94	65390.4	12010.00
40	39412.14	157.84	0.771	0.30	( 0.28)	0.94	65737.3	10210.00
41	35097.56	186.22	0.718	0.30	( 0.28)	0.94	66475.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 46066.64 Tc (MIN.) = 105.96  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 50091.80

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

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

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

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P508XX50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	192.92	22.10	0.30 ( 0.30)	0.99	131.3	50800.00

TOTAL AREA (ACRES) = 131.3

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

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22347.00	11.81	3.134	0.30 ( 0.23)	0.78	3299.1	429.00

2	23585.41	13.28	2.901	0.30 ( 0.23)	0.78	3784.0	425.00
3	23894.28	13.69	2.836	0.30 ( 0.23)	0.78	3919.2	400.00
4	24662.42	15.11	2.619	0.30 ( 0.23)	0.78	4385.0	300.00
5	26918.98	20.16	2.191	0.30 ( 0.23)	0.78	6017.2	210.00
6	27561.48	22.18	2.072	0.30 ( 0.23)	0.78	6651.8	410.00
7	28003.33	23.17	2.013	0.30 ( 0.23)	0.78	6962.1	200.00
8	28237.26	23.78	1.978	0.30 ( 0.24)	0.78	7152.2	230.00
9	28358.46	24.17	1.955	0.30 ( 0.24)	0.78	7269.7	50700.00
10	28488.44	24.61	1.929	0.30 ( 0.24)	0.78	7399.1	50500.00
11	28566.29	24.85	1.915	0.30 ( 0.24)	0.78	7485.5	50600.00
12	28576.02	24.88	1.913	0.30 ( 0.24)	0.78	7496.3	220.50
13	29701.45	28.18	1.784	0.30 ( 0.24)	0.79	8661.1	110.00
14	30538.50	30.56	1.699	0.30 ( 0.24)	0.79	9548.5	100.00
15	30756.11	31.24	1.682	0.30 ( 0.24)	0.79	9793.6	110.00
16	30922.55	31.75	1.668	0.30 ( 0.24)	0.79	10029.6	100.00
17	31891.97	34.76	1.589	0.30 ( 0.24)	0.79	11392.7	130.00
18	32865.37	37.79	1.510	0.30 ( 0.24)	0.80	12761.2	10100.00
19	33690.83	40.50	1.444	0.30 ( 0.24)	0.80	13938.9	50220.00
20	34806.76	44.20	1.384	0.30 ( 0.24)	0.81	15794.5	50260.00
21	35741.16	47.77	1.326	0.30 ( 0.25)	0.82	17596.2	20100.00
22	36358.67	50.37	1.286	0.30 ( 0.25)	0.83	18852.2	31100.00
23	36883.54	53.26	1.254	0.30 ( 0.25)	0.84	20355.2	13600.00
24	37187.66	54.84	1.237	0.30 ( 0.25)	0.84	21166.7	390.00
25	39484.89	66.44	1.138	0.30 ( 0.26)	0.87	26988.8	13100.00
26	40263.59	73.40	1.091	0.30 ( 0.26)	0.88	30066.0	11801.00
27	41946.99	84.05	1.019	0.30 ( 0.27)	0.89	35486.3	11530.00
28	42841.41	88.18	0.991	0.30 ( 0.27)	0.90	38040.4	13510.00
29	42873.70	88.34	0.990	0.30 ( 0.27)	0.90	38135.0	11701.00
30	43958.22	93.42	0.964	0.30 ( 0.27)	0.91	41542.5	13010.00
31	44680.88	97.07	0.948	0.30 ( 0.27)	0.91	44007.9	13500.00
32	45615.11	101.76	0.928	0.30 ( 0.27)	0.92	47146.5	10800.00
33	46066.64	105.96	0.910	0.30 ( 0.28)	0.92	50091.8	11130.00
34	45587.77	115.56	0.868	0.30 ( 0.28)	0.93	55133.0	12410.00
35	44903.46	123.87	0.841	0.30 ( 0.28)	0.93	58872.1	11201.00
36	44430.25	128.86	0.831	0.30 ( 0.28)	0.93	60603.8	12201.00
37	43366.52	135.95	0.816	0.30 ( 0.28)	0.93	62461.0	12231.00
38	42025.55	143.82	0.800	0.30 ( 0.28)	0.94	64095.3	10400.00
39	40634.33	151.82	0.783	0.30 ( 0.28)	0.94	65390.4	12010.00
40	39412.14	157.84	0.771	0.30 ( 0.28)	0.94	65737.3	10210.00
41	35097.56	186.22	0.718	0.30 ( 0.28)	0.94	66475.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	192.92	22.10	2.076	0.30 ( 0.30)	0.99	131.3	50800.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22511.31	11.81	3.134	0.30 ( 0.24)	0.79	3369.2	429.00
2	23755.03	13.28	2.901	0.30 ( 0.24)	0.79	3862.8	425.00
3	24064.79	13.69	2.836	0.30 ( 0.24)	0.79	4000.5	400.00
4	24834.58	15.11	2.619	0.30 ( 0.24)	0.79	4474.8	300.00
5	27106.23	20.16	2.191	0.30 ( 0.24)	0.79	6137.0	210.00
6	27728.58	22.10	2.076	0.30 ( 0.24)	0.79	6757.6	50800.00
7	27753.89	22.18	2.072	0.30 ( 0.24)	0.79	6783.1	410.00

8	28189.43	23.17	2.013	0.30 ( 0.24)	0.79	7093.4	200.00
9	28419.48	23.78	1.978	0.30 ( 0.24)	0.79	7283.5	230.00
10	28538.22	24.17	1.955	0.30 ( 0.24)	0.79	7401.0	50700.00
11	28665.39	24.61	1.929	0.30 ( 0.24)	0.79	7530.4	50500.00
12	28741.72	24.85	1.915	0.30 ( 0.24)	0.79	7616.8	50600.00
13	28751.25	24.88	1.913	0.30 ( 0.24)	0.79	7627.6	220.50
14	29862.69	28.18	1.784	0.30 ( 0.24)	0.79	8792.4	110.00
15	30690.56	30.56	1.699	0.30 ( 0.24)	0.79	9679.8	100.00
16	30906.25	31.24	1.682	0.30 ( 0.24)	0.79	9924.9	110.00
17	31071.24	31.75	1.668	0.30 ( 0.24)	0.79	10160.9	100.00
18	32032.11	34.76	1.589	0.30 ( 0.24)	0.79	11524.0	130.00
19	32996.89	37.79	1.510	0.30 ( 0.24)	0.80	12892.5	10100.00
20	33815.20	40.50	1.444	0.30 ( 0.24)	0.80	14070.2	50220.00
21	34924.64	44.20	1.384	0.30 ( 0.24)	0.81	15925.8	50260.00
22	35852.78	47.77	1.326	0.30 ( 0.25)	0.82	17727.5	20100.00
23	36465.93	50.37	1.286	0.30 ( 0.25)	0.83	18983.5	31100.00
24	36987.38	53.26	1.254	0.30 ( 0.25)	0.84	20486.5	13600.00
25	37289.64	54.84	1.237	0.30 ( 0.25)	0.84	21298.0	390.00
26	39576.07	66.44	1.138	0.30 ( 0.26)	0.87	27120.1	13100.00
27	40349.69	73.40	1.091	0.30 ( 0.26)	0.88	30197.3	11801.00
28	42025.32	84.05	1.019	0.30 ( 0.27)	0.89	35617.6	11530.00
29	42916.72	88.18	0.991	0.30 ( 0.27)	0.90	38171.7	13510.00
30	42948.89	88.34	0.990	0.30 ( 0.27)	0.90	38266.3	11701.00
31	44030.59	93.42	0.964	0.30 ( 0.27)	0.91	41673.8	13010.00
32	44751.55	97.07	0.948	0.30 ( 0.27)	0.91	44139.2	13500.00
33	45683.57	101.76	0.928	0.30 ( 0.27)	0.92	47277.8	10800.00
34	46133.12	105.96	0.910	0.30 ( 0.28)	0.92	50223.1	11130.00
35	45649.75	115.56	0.868	0.30 ( 0.28)	0.93	55264.3	12410.00
36	44962.49	123.87	0.841	0.30 ( 0.28)	0.93	59003.4	11201.00
37	44488.16	128.86	0.831	0.30 ( 0.28)	0.93	60735.1	12201.00
38	43422.84	135.95	0.816	0.30 ( 0.28)	0.93	62592.3	12231.00
39	42080.11	143.82	0.800	0.30 ( 0.28)	0.94	64226.6	10400.00
40	40687.09	151.82	0.783	0.30 ( 0.28)	0.94	65521.7	12010.00
41	39463.56	157.84	0.771	0.30 ( 0.28)	0.94	65868.6	10210.00
42	35143.30	186.22	0.718	0.30 ( 0.28)	0.94	66607.1	10100.00

TOTAL AREA (ACRES) = 66607.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) =	46133.12	Tc (MIN.) =	105.957
EFFECTIVE AREA (ACRES) =	50223.10	AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30	AREA-AVERAGED Ap =	0.92
TOTAL AREA (ACRES) =	66607.1		
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 =	124551.97 FEET.		

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) =	66607.1	TC (MIN.) =	105.96
EFFECTIVE AREA (ACRES) =	50223.10	AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30	AREA-AVERAGED Ap =	0.921
PEAK FLOW RATE (CFS) =	46133.12		

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22511.31	11.81	3.134	0.30 ( 0.24)	0.79	3369.2	429.00
2	23755.03	13.28	2.901	0.30 ( 0.24)	0.79	3862.8	425.00
3	24064.79	13.69	2.836	0.30 ( 0.24)	0.79	4000.5	400.00
4	24834.58	15.11	2.619	0.30 ( 0.24)	0.79	4474.8	300.00
5	27106.23	20.16	2.191	0.30 ( 0.24)	0.79	6137.0	210.00

6	27728.58	22.10	2.076	0.30	( 0.24)	0.79	6757.6	50800.00
7	27753.89	22.18	2.072	0.30	( 0.24)	0.79	6783.1	410.00
8	28189.43	23.17	2.013	0.30	( 0.24)	0.79	7093.4	200.00
9	28419.48	23.78	1.978	0.30	( 0.24)	0.79	7283.5	230.00
10	28538.22	24.17	1.955	0.30	( 0.24)	0.79	7401.0	50700.00
11	28665.39	24.61	1.929	0.30	( 0.24)	0.79	7530.4	50500.00
12	28741.72	24.85	1.915	0.30	( 0.24)	0.79	7616.8	50600.00
13	28751.25	24.88	1.913	0.30	( 0.24)	0.79	7627.6	220.50
14	29862.69	28.18	1.784	0.30	( 0.24)	0.79	8792.4	110.00
15	30690.56	30.56	1.699	0.30	( 0.24)	0.79	9679.8	100.00
16	30906.25	31.24	1.682	0.30	( 0.24)	0.79	9924.9	110.00
17	31071.24	31.75	1.668	0.30	( 0.24)	0.79	10160.9	100.00
18	32032.11	34.76	1.589	0.30	( 0.24)	0.79	11524.0	130.00
19	32996.89	37.79	1.510	0.30	( 0.24)	0.80	12892.5	10100.00
20	33815.20	40.50	1.444	0.30	( 0.24)	0.80	14070.2	50220.00
21	34924.64	44.20	1.384	0.30	( 0.24)	0.81	15925.8	50260.00
22	35852.78	47.77	1.326	0.30	( 0.25)	0.82	17727.5	20100.00
23	36465.93	50.37	1.286	0.30	( 0.25)	0.83	18983.5	31100.00
24	36987.38	53.26	1.254	0.30	( 0.25)	0.84	20486.5	13600.00
25	37289.64	54.84	1.237	0.30	( 0.25)	0.84	21298.0	390.00
26	39576.07	66.44	1.138	0.30	( 0.26)	0.87	27120.1	13100.00
27	40349.69	73.40	1.091	0.30	( 0.26)	0.88	30197.3	11801.00
28	42025.32	84.05	1.019	0.30	( 0.27)	0.89	35617.6	11530.00
29	42916.72	88.18	0.991	0.30	( 0.27)	0.90	38171.7	13510.00
30	42948.89	88.34	0.990	0.30	( 0.27)	0.90	38266.3	11701.00
31	44030.59	93.42	0.964	0.30	( 0.27)	0.91	41673.8	13010.00
32	44751.55	97.07	0.948	0.30	( 0.27)	0.91	44139.2	13500.00
33	45683.57	101.76	0.928	0.30	( 0.27)	0.92	47277.8	10800.00
34	46133.12	105.96	0.910	0.30	( 0.28)	0.92	50223.1	11130.00
35	45649.75	115.56	0.868	0.30	( 0.28)	0.93	55264.3	12410.00
36	44962.49	123.87	0.841	0.30	( 0.28)	0.93	59003.4	11201.00
37	44488.16	128.86	0.831	0.30	( 0.28)	0.93	60735.1	12201.00
38	43422.84	135.95	0.816	0.30	( 0.28)	0.93	62592.3	12231.00
39	42080.11	143.82	0.800	0.30	( 0.28)	0.94	64226.6	10400.00
40	40687.09	151.82	0.783	0.30	( 0.28)	0.94	65521.7	12010.00
41	39463.56	157.84	0.771	0.30	( 0.28)	0.94	65868.6	10210.00
42	35143.30	186.22	0.718	0.30	( 0.28)	0.94	66607.1	10100.00

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S36- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV36.DAT  
TIME/DATE OF STUDY: 11:50 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.245
- 2) 10.00; 3.396
- 3) 15.00; 2.615
- 4) 20.00; 2.190
- 5) 25.00; 1.899
- 6) 30.00; 1.707
- 7) 40.00; 1.447
- 8) 50.00; 1.285
- 9) 60.00; 1.174
- 10) 90.00; 0.972
- 11) 120.00; 0.842
- 12) 180.00; 0.717
- 13) 360.00; 0.527
- 14) 1200.00; 0.230

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0313 0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21  
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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61  
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.241  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	-	3.39	0.30	1.000	69	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 8.97  
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 8.97

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32  
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.43  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.962  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.45	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.92  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.91  
AVERAGE FLOW DEPTH(FEET) = 0.42 TRAVEL TIME(MIN.) = 1.78  
Tc(MIN.) = 12.78  
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 17.85  
EFFECTIVE AREA(ACRES) = 10.84 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 10.8 PEAK FLOW RATE(CFS) = 25.97  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.52 FLOW VELOCITY(FEET/SEC.) = 4.49  
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13601.00 = 906.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13601.00 TO NODE 13602.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 707.32 DOWNSTREAM(FEET) = 657.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 777.60 CHANNEL SLOPE = 0.0646  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.97  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.596

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.32	0.30	1.000	-
USER-DEFINED	-	4.70	0.30	1.000	-
USER-DEFINED	-	25.05	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	0.44	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 58.05

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.29

AVERAGE FLOW DEPTH(FEET) = 0.93 TRAVEL TIME(MIN.) = 2.45

Tc(MIN.) = 15.23

SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 63.97  
EFFECTIVE AREA(ACRES) = 41.80 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 41.8 PEAK FLOW RATE(CFS) = 86.36  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.16 FLOW VELOCITY(FEET/SEC.) = 6.03

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13602.00 = 1684.51 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13602.00 TO NODE 13603.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 657.12 DOWNSTREAM(FEET) = 584.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1186.54 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.36  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.331

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.03	0.30	1.000	-
USER-DEFINED	-	2.51	0.30	1.000	-

USER-DEFINED - 1.52 0.30 1.000 -  
USER-DEFINED - 12.30 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 107.74

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.35

AVERAGE FLOW DEPTH(FEET) = 1.34 TRAVEL TIME(MIN.) = 3.11

Tc(MIN.) = 18.34

SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 42.70

EFFECTIVE AREA(ACRES) = 65.16 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 65.2 PEAK FLOW RATE(CFS) = 119.11

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.41 FLOW VELOCITY(FEET/SEC.) = 6.56

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13603.00 = 2871.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 584.58 DOWNSTREAM(FEET) = 544.91  
CHANNEL LENGTH THRU SUBAREA(FEET) = 860.98 CHANNEL SLOPE = 0.0461  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.67  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.152

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	10.22	0.30	1.000	-
USER-DEFINED	-	4.19	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-
USER-DEFINED	-	0.09	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 136.82

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.22

AVERAGE FLOW DEPTH(FEET) = 1.65 TRAVEL TIME(MIN.) = 2.31

Tc(MIN.) = 20.65

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 35.41

EFFECTIVE AREA(ACRES) = 86.40 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) = 144.04

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 6.30

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.



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*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 10
-----
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 2 <<<<<
=====
PEAK FLOWRATE TABLE FILE NAME: S35X50.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1      1198.50  52.93  0.30( 0.28)  0.95    1515.8  13510.00
  2      1092.68  61.25  0.30( 0.28)  0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 14.0
-----
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
=====
MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1      1198.50  52.93  0.30( 0.28)  0.95    1515.8  13510.00
  2      1092.68  61.25  0.30( 0.28)  0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13620.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 632.19 DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 2062.96 CHANNEL SLOPE = 0.0423
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.57
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.222
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED      -      17.68      0.30      1.000      -
USER-DEFINED      -      2.36      0.30      1.000      -
USER-DEFINED      -      0.60      0.30      1.000      -
USER-DEFINED      -      0.22      0.30      1.000      -
USER-DEFINED      -      2.22      0.30      1.000      -
USER-DEFINED      -      3.42      0.30      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1209.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.50

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AVERAGE FLOW DEPTH(FEET) = 2.57 TRAVEL TIME(MIN.) = 2.75
Tc(MIN.) = 55.68
SUBAREA AREA(ACRES) = 26.50 SUBAREA RUNOFF(CFS) = 22.00
EFFECTIVE AREA(ACRES) = 1542.26 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1606.3 PEAK FLOW RATE(CFS) = 1301.65
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.68 FLOW VELOCITY(FEET/SEC.) = 12.80
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1301.65  55.68  1.222  0.30( 0.28)  0.95    1542.3  13510.00
  2      1247.57  64.08  1.147  0.30( 0.28)  0.95    1606.3  13500.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1301.65 Tc(MIN.) = 55.68
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 1542.26

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 55.68
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.222
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      1.44      0.30      1.000      65
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      0.01      0.30      1.000      65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 1.20
EFFECTIVE AREA(ACRES) = 1543.71 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 1302.85

*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1302.85  55.68  1.222  0.30( 0.28)  0.95    1543.7  13510.00
  2      1248.68  64.08  1.147  0.30( 0.28)  0.95    1607.8  13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

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\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	144.04	20.65	2.152	0.30 ( 0.30)	1.00	86.4	13600.00

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1106.54	20.65	2.152	0.30 ( 0.29)	0.95	658.9	13600.00
2	1374.55	55.68	1.222	0.30 ( 0.29)	0.95	1630.1	13510.00
3	1314.51	64.08	1.147	0.30 ( 0.28)	0.95	1694.2	13500.00

TOTAL AREA (ACRES) = 1694.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1374.55 Tc(MIN.) = 55.676  
EFFECTIVE AREA(ACRES) = 1630.11 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1694.2  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13620.00 TO NODE 13640.00 IS CODE = 56  
-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 544.91 DOWNSTREAM(FEET) = 489.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1384.37 CHANNEL SLOPE = 0.0404  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.82  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.202  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.39	0.30	1.000	-
USER-DEFINED	-	16.30	0.30	1.000	-
USER-DEFINED	-	4.08	0.30	1.000	-
USER-DEFINED	-	12.36	0.30	1.000	-
USER-DEFINED	-	11.23	0.30	1.000	-
USER-DEFINED	-	5.16	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1396.69  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.88  
AVERAGE FLOW DEPTH(FEET) = 2.82 TRAVEL TIME(MIN.) = 1.79  
Tc(MIN.) = 57.47  
SUBAREA AREA(ACRES) = 54.52 SUBAREA RUNOFF(CFS) = 44.27  
EFFECTIVE AREA(ACRES) = 1684.63 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1748.7 PEAK FLOW RATE(CFS) = 1389.65  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 2.81 FLOW VELOCITY(FEET/SEC.) = 12.87

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1126.15	22.55	2.041	0.30 ( 0.29)	0.96	713.4	13600.00
2	1389.65	57.47	1.202	0.30 ( 0.29)	0.95	1684.6	13510.00
3	1336.79	65.90	1.134	0.30 ( 0.28)	0.95	1748.7	13500.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE(CFS) = 1389.65 Tc(MIN.) = 57.47  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 1684.63

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 81  
-----  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc(MIN.) = 57.47  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.202  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.93	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	3.98	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 58.36 SUBAREA RUNOFF(CFS) = 47.39  
EFFECTIVE AREA(ACRES) = 1742.99 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1807.1 PEAK FLOW RATE(CFS) = 1437.03

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 15.1  
-----  
>>>>DEFINE MEMORY BANK # 3 <<<<<  
=====

PEAK FLOWRATE TABLE FILE NAME: P201XX50.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	238.49	17.13	0.30 ( 0.26)	0.85	133.8	20100.00

TOTAL AREA(ACRES) = 133.8

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1217.61	22.55	2.041	0.30 ( 0.29)	0.96	771.8	13600.00
2	1437.03	57.47	1.202	0.30 ( 0.29)	0.95	1743.0	13510.00
3	1380.61	65.90	1.134	0.30 ( 0.29)	0.95	1807.1	13500.00

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

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 238.49 17.13 2.434 0.30( 0.26) 0.85 133.8 20100.00
LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 13640.00 = 5247.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 1370.34 17.13 2.434 0.30( 0.28) 0.94 719.9 20100.00
2 1413.09 22.55 2.041 0.30( 0.28) 0.95 905.6 13600.00
3 1540.61 57.47 1.202 0.30( 0.28) 0.95 1876.8 13510.00
4 1476.77 65.90 1.134 0.30( 0.28) 0.94 1940.9 13500.00
TOTAL AREA (ACRES) = 1940.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1540.61 Tc (MIN.) = 57.467
EFFECTIVE AREA (ACRES) = 1876.79 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 1940.9
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 489.00 DOWNSTREAM (FEET) = 436.89
CHANNEL LENGTH THRU SUBAREA (FEET) = 2994.52 CHANNEL SLOPE = 0.0174
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.79
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.157

Subarea Loss Rate Data (AMC II) table with columns: DEVELOPMENT TYPE/, LAND USE, SCS SOIL GROUP, AREA (ACRES), Fp (INCH/HR), Ap (DECIMAL), SCS CN

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1566.69
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.98
AVERAGE FLOW DEPTH (FEET) = 3.79 TRAVEL TIME (MIN.) = 5.00
Tc (MIN.) = 62.47
SUBAREA AREA (ACRES) = 67.58 SUBAREA RUNOFF (CFS) = 52.15
EFFECTIVE AREA (ACRES) = 1944.37 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 2008.4 PEAK FLOW RATE (CFS) = 1540.61

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 3.76 FLOW VELOCITY (FEET/SEC.) = 9.93
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13641.00 = 25056.61 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 1370.34 17.13 2.058 0.30( 0.28) 0.95 787.5 20100.00
2 1413.09 27.67 1.797 0.30( 0.28) 0.95 973.1 13600.00
3 1540.61 62.47 1.157 0.30( 0.28) 0.95 1944.4 13510.00
4 1476.77 70.96 1.100 0.30( 0.28) 0.95 2008.4 13500.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE (CFS) = 1540.61 Tc (MIN.) = 62.47
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA (ACRES) = 1944.37

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 62.47
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.157
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 16.49 0.30 1.000 -
USER-DEFINED - 20.39 0.30 1.000 -
USER-DEFINED - 7.02 0.30 1.000 -
USER-DEFINED - 12.58 0.30 1.000 -
USER-DEFINED - 42.49 0.30 1.000 -
USER-DEFINED - 5.73 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 104.70 SUBAREA RUNOFF (CFS) = 80.80
EFFECTIVE AREA (ACRES) = 2049.07 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 2113.1 PEAK FLOW RATE (CFS) = 1608.30

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 62.47
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.157
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 1.78 0.30 1.000 -
USER-DEFINED - 6.25 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 8.03 SUBAREA RUNOFF (CFS) = 6.20
EFFECTIVE AREA (ACRES) = 2057.10 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 2121.2 PEAK FLOW RATE (CFS) = 1614.50

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*****
FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 436.89 DOWNSTREAM(FEET) = 394.80
CHANNEL LENGTH THRU SUBAREA(FEET) = 2814.16 CHANNEL SLOPE = 0.0150
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.13
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.125
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.67 0.30 1.000 -
USER-DEFINED - 24.24 0.30 1.000 -
USER-DEFINED - 1.34 0.30 1.000 -
USER-DEFINED - 74.98 0.30 1.000 -
USER-DEFINED - 101.12 0.30 1.000 -
USER-DEFINED - 16.90 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1695.89
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.70
AVERAGE FLOW DEPTH(FEET) = 4.12 TRAVEL TIME(MIN.) = 4.83
Tc(MIN.) = 67.30
SUBAREA AREA(ACRES) = 219.25 SUBAREA RUNOFF(CFS) = 162.77
EFFECTIVE AREA(ACRES) = 2276.35 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 2340.4 PEAK FLOW RATE(CFS) = 1717.01
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 4.16 FLOW VELOCITY(FEET/SEC.) = 9.73
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13642.00 = 27870.77 FEET.

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\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1536.97	27.21	1.814	0.30( 0.29)	0.96	1119.4	20100.00
2	1587.17	32.58	1.640	0.30( 0.29)	0.96	1305.1	13600.00
3	1717.01	67.30	1.125	0.30( 0.29)	0.96	2276.4	13510.00
4	1645.19	75.85	1.067	0.30( 0.29)	0.95	2340.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 1717.01 Tc(MIN.) = 67.30  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA(ACRES) = 2276.35

```

*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 67.30

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* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.125
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 9.95 0.30 1.000 -
USER-DEFINED - 10.02 0.30 1.000 -
USER-DEFINED - 4.45 0.30 1.000 -
USER-DEFINED - 179.37 0.30 1.000 -
USER-DEFINED - 11.47 0.30 1.000 -
USER-DEFINED - 0.17 0.30 0.850 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 215.43 SUBAREA RUNOFF(CFS) = 159.94
EFFECTIVE AREA(ACRES) = 2491.78 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 2555.9 PEAK FLOW RATE(CFS) = 1876.96

*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 67.30
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.125
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.03 0.30 0.850 -
USER-DEFINED - 5.14 0.30 1.000 -
USER-DEFINED - 11.22 0.30 1.000 -
USER-DEFINED - 0.33 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 16.72 SUBAREA RUNOFF(CFS) = 12.41
EFFECTIVE AREA(ACRES) = 2508.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 2572.6 PEAK FLOW RATE(CFS) = 1889.37

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*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 56
-----

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 394.80 DOWNSTREAM(FEET) = 342.39
CHANNEL LENGTH THRU SUBAREA(FEET) = 2913.57 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.23
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.094
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.22 0.30 1.000 -
USER-DEFINED - 2.17 0.30 1.000 -
USER-DEFINED - 9.19 0.30 1.000 -
USER-DEFINED - 67.57 0.30 1.000 -
USER-DEFINED - 35.19 0.30 1.000 -

```

USER-DEFINED - 30.67 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1941.22  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.77  
 AVERAGE FLOW DEPTH (FEET) = 4.22 TRAVEL TIME (MIN.) = 4.51  
 Tc (MIN.) = 71.81  
 SUBAREA AREA (ACRES) = 145.01 SUBAREA RUNOFF (CFS) = 103.69  
 EFFECTIVE AREA (ACRES) = 2653.51 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 2717.6 PEAK FLOW RATE (CFS) = 1924.53  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 4.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 4.21 FLOW VELOCITY (FEET/SEC.) = 10.73  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1853.35	31.72	1.662	0.30 (0.29)	0.97	1496.6	20100.00
2	1867.13	37.09	1.523	0.30 (0.29)	0.97	1682.3	13600.00
3	1924.53	71.81	1.094	0.30 (0.29)	0.96	2653.5	13510.00
4	1830.43	80.42	1.036	0.30 (0.29)	0.96	2717.6	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 1924.53 Tc (MIN.) = 71.81  
 AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA (ACRES) = 2653.51

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 71.81

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.094

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.30	1.000	-
USER-DEFINED	-	20.65	0.30	1.000	-
USER-DEFINED	-	2.69	0.30	1.000	-
USER-DEFINED	-	8.45	0.30	1.000	-
USER-DEFINED	-	96.93	0.30	1.000	-
USER-DEFINED	-	13.19	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 142.80 SUBAREA RUNOFF (CFS) = 102.11

EFFECTIVE AREA (ACRES) = 2796.31 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96

TOTAL AREA (ACRES) = 2860.4 PEAK FLOW RATE (CFS) = 2026.64

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 71.81  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.094  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/  
LAND USE SCS SOIL AREA Fp Ap SCS  
GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 42.54 0.30 1.000 -  
 USER-DEFINED - 16.96 0.30 1.000 -  
 USER-DEFINED - 80.60 0.30 1.000 -  
 USER-DEFINED - 1.56 0.30 1.000 -  
 USER-DEFINED - 2.00 0.30 1.000 -  
 USER-DEFINED - 3.11 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 146.77 SUBAREA RUNOFF (CFS) = 104.95  
 EFFECTIVE AREA (ACRES) = 2943.08 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 3007.2 PEAK FLOW RATE (CFS) = 2131.59

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2201.63	31.72	1.662	0.30 (0.29)	0.98	1786.2	20100.00
2	2183.27	37.09	1.523	0.30 (0.29)	0.97	1971.9	13600.00
3	2131.59	71.81	1.094	0.30 (0.29)	0.97	2943.1	13510.00
4	2022.39	80.42	1.036	0.30 (0.29)	0.96	3007.2	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 2201.63 Tc (MIN.) = 31.72  
 AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA (ACRES) = 1786.18

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 342.39 DOWNSTREAM (FEET) = 300.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 1591.23 CHANNEL SLOPE = 0.0266

GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.10

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.609

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.30	1.000	-
USER-DEFINED	-	23.73	0.30	1.000	-
USER-DEFINED	-	0.27	0.30	1.000	-
USER-DEFINED	-	19.87	0.30	1.000	-
USER-DEFINED	-	6.40	0.30	1.000	-
USER-DEFINED	-	3.14	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2233.62

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.88

AVERAGE FLOW DEPTH (FEET) = 4.10 TRAVEL TIME (MIN.) = 2.06

Tc (MIN.) = 33.78

SUBAREA AREA (ACRES) = 54.30 SUBAREA RUNOFF (CFS) = 63.97  
EFFECTIVE AREA (ACRES) = 1840.48 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 3061.5 PEAK FLOW RATE (CFS) = 2201.63  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 4.06 FLOW VELOCITY (FEET/SEC.) = 12.84  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2201.63	33.78	1.609	0.30 (0.29)	0.98	1840.5	20100.00
2	2183.27	39.15	1.469	0.30 (0.29)	0.98	2026.2	13600.00
3	2132.60	73.89	1.080	0.30 (0.29)	0.97	2997.4	13510.00
4	2022.39	82.54	1.022	0.30 (0.29)	0.96	3061.5	13500.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 2201.63 Tc (MIN.) = 33.78  
AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA (ACRES) = 1840.48

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*

MAINLINE Tc (MIN.) = 33.78  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.609

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	9.52	0.30	1.000	-
USER-DEFINED	-	0.71	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	39.42	0.30	1.000	-
USER-DEFINED	-	0.62	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 51.16 SUBAREA RUNOFF (CFS) = 60.27  
EFFECTIVE AREA (ACRES) = 1891.64 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 3112.6 PEAK FLOW RATE (CFS) = 2239.80

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*

MAINLINE Tc (MIN.) = 33.78  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.609

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	9.52	0.30	1.000	-
USER-DEFINED	-	0.71	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	39.42	0.30	1.000	-
USER-DEFINED	-	0.62	0.30	1.000	-

USER-DEFINED - 0.11 0.30 1.000 -  
USER-DEFINED - 0.77 0.30 1.000 -  
USER-DEFINED - 0.22 0.30 1.000 -  
USER-DEFINED - 2.69 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 3.79 SUBAREA RUNOFF (CFS) = 4.46  
EFFECTIVE AREA (ACRES) = 1895.43 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 3116.4 PEAK FLOW RATE (CFS) = 2244.27

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
PEAK FLOWRATE TABLE FILE NAME: 2P50EVA.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	528.88	14.09	0.30 (0.11)	0.36	173.1	110.00
2	529.33	16.63	0.30 (0.11)	0.37	204.3	100.00
3	521.87	17.83	0.30 (0.11)	0.38	213.9	100.00
4	463.87	20.89	0.30 (0.12)	0.40	221.1	130.00
TOTAL AREA (ACRES) =						221.1

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31  
-----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

\*\*\*\*\*

ELEVATION DATA: UPSTREAM (FEET) = 338.00 DOWNSTREAM (FEET) = 300.00  
FLOW LENGTH (FEET) = 881.07 MANNING'S N = 0.013  
DEPTH OF FLOW IN 108.0 INCH PIPE IS 81.0 INCHES  
PIPE-FLOW VELOCITY (FEET/SEC.) = 43.83  
ESTIMATED PIPE DIAMETER (INCH) = 108.00 NUMBER OF PIPES = 1  
PIPE-FLOW (CFS) = 2244.27  
PIPE TRAVEL TIME (MIN.) = 0.34 Tc (MIN.) = 34.11  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11  
-----

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

\*\*\*\*\*

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2244.27	34.11	1.600	0.30 (0.29)	0.98	1895.4	20100.00
2	2202.96	39.49	1.460	0.30 (0.29)	0.98	2081.1	13600.00

3 2171.20 74.23 1.078 0.30( 0.29) 0.97 3052.3 13510.00  
 4 2054.87 82.88 1.020 0.30( 0.29) 0.97 3116.4 13500.00  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	528.88	14.09	2.758	0.30( 0.11)	0.36	173.1	110.00
2	529.33	16.63	2.477	0.30( 0.11)	0.37	204.3	100.00
3	521.87	17.83	2.374	0.30( 0.11)	0.38	213.9	100.00
4	463.87	20.89	2.138	0.30( 0.12)	0.40	221.1	130.00

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2276.62	14.09	2.758	0.30( 0.26)	0.87	955.9	110.00
2	2357.12	16.63	2.477	0.30( 0.26)	0.87	1128.4	100.00
3	2390.18	17.83	2.374	0.30( 0.26)	0.87	1204.9	100.00
4	2404.22	20.89	2.138	0.30( 0.27)	0.89	1381.9	130.00
5	2584.45	34.11	1.600	0.30( 0.28)	0.92	2116.5	20100.00
6	2510.99	39.49	1.460	0.30( 0.28)	0.92	2302.2	13600.00
7	2391.39	74.23	1.078	0.30( 0.28)	0.93	3273.4	13510.00
8	2261.67	82.88	1.020	0.30( 0.28)	0.93	3337.5	13500.00

TOTAL AREA (ACRES) = 3337.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2584.45 Tc(MIN.) = 34.110  
 EFFECTIVE AREA(ACRES) = 2116.53 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
 TOTAL AREA(ACRES) = 3337.5  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 34.11

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.600

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	1.11	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	0.44	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.49	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	1.70	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	1.09	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	18.57	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 24.40 SUBAREA RUNOFF(CFS) = 28.55

EFFECTIVE AREA(ACRES) = 2140.93 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3361.9 PEAK FLOW RATE(CFS) = 2584.45  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 34.11

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.600

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL FAIR COVER "ORCHARDS"	B	12.39	0.30	1.000	65
AGRICULTURAL FAIR COVER "ORCHARDS"	B	2.30	0.30	1.000	65
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	5.19	0.30	1.000	79
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	28.71	0.30	1.000	81
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.17	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 48.76 SUBAREA RUNOFF(CFS) = 57.06  
 EFFECTIVE AREA(ACRES) = 2189.69 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3410.7 PEAK FLOW RATE(CFS) = 2609.48

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 300.00 DOWNSTREAM(FEET) = 288.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 933.89 CHANNEL SLOPE = 0.0128

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.43

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	9.23	0.30	1.000	-
USER-DEFINED	-	0.54	0.30	1.000	-
USER-DEFINED	-	5.66	0.30	1.000	-
USER-DEFINED	-	3.66	0.30	1.000	-
USER-DEFINED	-	0.67	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2620.82  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.43  
 AVERAGE FLOW DEPTH(FEET) = 5.43 TRAVEL TIME(MIN.) = 1.49

Tc(MIN.) = 35.60  
 SUBAREA AREA(ACRES) = 19.98 SUBAREA RUNOFF(CFS) = 22.68  
 EFFECTIVE AREA(ACRES) = 2209.67 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3430.6 PEAK FLOW RATE(CFS) = 2609.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.41 FLOW VELOCITY(FEET/SEC.) = 10.43  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2310.60	15.63	2.561	0.30( 0.26)	0.88	1049.1	110.00
2	2393.75	18.16	2.347	0.30( 0.26)	0.88	1221.5	100.00
3	2427.48	19.36	2.245	0.30( 0.26)	0.88	1298.1	100.00
4	2450.06	22.41	2.050	0.30( 0.27)	0.89	1475.1	130.00
5	2609.48	35.60	1.561	0.30( 0.28)	0.92	2209.7	20100.00
6	2529.63	40.99	1.431	0.30( 0.28)	0.92	2395.3	13600.00
7	2406.81	75.76	1.068	0.30( 0.28)	0.93	3366.6	13510.00
8	2274.74	84.43	1.009	0.30( 0.28)	0.93	3430.6	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2609.48 Tc(MIN.) = 35.60  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 2209.67

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 35.60  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	9.40	0.30	1.000	-
USER-DEFINED	-	2.76	0.30	1.000	-
USER-DEFINED	-	17.38	0.30	1.000	-
USER-DEFINED	-	2.46	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 39.12 SUBAREA RUNOFF(CFS) = 44.41  
 EFFECTIVE AREA(ACRES) = 2248.79 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3469.8 PEAK FLOW RATE(CFS) = 2609.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 35.60  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.65	0.30	1.000	-
USER-DEFINED	-	1.70	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 2.35 SUBAREA RUNOFF(CFS) = 2.67  
 EFFECTIVE AREA(ACRES) = 2251.14 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3472.1 PEAK FLOW RATE(CFS) = 2609.48  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 35.60  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.29	0.30	1.000	-
USER-DEFINED	-	31.25	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	6.26	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 43.31 SUBAREA RUNOFF(CFS) = 49.17  
 EFFECTIVE AREA(ACRES) = 2294.45 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3515.4 PEAK FLOW RATE(CFS) = 2651.97

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 35.60  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	2.47	0.30	0.850	-
USER-DEFINED	-	3.06	0.30	0.850	-
USER-DEFINED	-	17.76	0.30	0.500	-



USER-DEFINED - 7.31 0.30 0.500 -  
 USER-DEFINED - 0.34 0.30 1.000 -  
 USER-DEFINED - 8.22 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.659  
 SUBAREA AREA (ACRES) = 39.16 SUBAREA RUNOFF (CFS) = 48.07  
 EFFECTIVE AREA (ACRES) = 2333.61 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 3554.6 PEAK FLOW RATE (CFS) = 2700.04

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 35.60  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.561  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.53 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 0.53 SUBAREA RUNOFF (CFS) = 0.60  
 EFFECTIVE AREA (ACRES) = 2334.14 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 3555.1 PEAK FLOW RATE (CFS) = 2700.64

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13682.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 288.00 DOWNSTREAM (FEET) = 242.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2860.77 CHANNEL SLOPE = 0.0161  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.20  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.453  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.22 0.30 1.000 -  
 USER-DEFINED - 5.28 0.30 1.000 -  
 USER-DEFINED - 0.52 0.30 1.000 -  
 USER-DEFINED - 3.61 0.30 1.000 -  
 USER-DEFINED - 0.67 0.30 1.000 -  
 USER-DEFINED - 1.37 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2706.69  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.41  
 AVERAGE FLOW DEPTH (FEET) = 5.20 TRAVEL TIME (MIN.) = 4.18  
 Tc (MIN.) = 39.78  
 SUBAREA AREA (ACRES) = 11.67 SUBAREA RUNOFF (CFS) = 12.11  
 EFFECTIVE AREA (ACRES) = 2345.81 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 3566.8 PEAK FLOW RATE (CFS) = 2700.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.19

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 5.19 FLOW VELOCITY (FEET/SEC.) = 11.41  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2426.61	19.94	2.195	0.30 ( 0.26)	0.88	1185.2	110.00
2	2523.08	22.41	2.050	0.30 ( 0.26)	0.88	1357.6	100.00
3	2535.23	23.61	1.980	0.30 ( 0.26)	0.88	1434.2	100.00
4	2565.50	26.65	1.836	0.30 ( 0.27)	0.89	1611.2	130.00
5	2700.64	39.78	1.453	0.30 ( 0.28)	0.92	2345.8	20100.00
6	2617.49	45.21	1.363	0.30 ( 0.28)	0.92	2531.5	13600.00
7	2479.31	80.04	1.039	0.30 ( 0.28)	0.93	3502.7	13510.00
8	2338.52	88.79	0.980	0.30 ( 0.28)	0.93	3566.8	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 2700.64 Tc (MIN.) = 39.78  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 2345.81

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 39.78  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.453  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.90 0.30 1.000 -  
 USER-DEFINED - 23.04 0.30 1.000 -  
 USER-DEFINED - 1.18 0.30 1.000 -  
 USER-DEFINED - 1.56 0.30 1.000 -  
 USER-DEFINED - 53.20 0.30 1.000 -  
 USER-DEFINED - 2.08 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 87.96 SUBAREA RUNOFF (CFS) = 91.26  
 EFFECTIVE AREA (ACRES) = 2433.77 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 3654.7 PEAK FLOW RATE (CFS) = 2700.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

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

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 39.78  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.453  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	0.18	0.30	1.000	-
USER-DEFINED	-	0.38	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	7.73	0.30	1.000	-
USER-DEFINED	-	4.37	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 12.89 SUBAREA RUNOFF (CFS) = 13.37  
EFFECTIVE AREA (ACRES) = 2446.66 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3667.6 PEAK FLOW RATE (CFS) = 2700.64  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 39.78  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.453  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	2.57	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	1.97	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.98	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.39	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	1.67	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 12.58 SUBAREA RUNOFF (CFS) = 13.05  
EFFECTIVE AREA (ACRES) = 2459.24 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3680.2 PEAK FLOW RATE (CFS) = 2700.64  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 39.78  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.453  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.44	0.30	1.000	66

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	2.65	0.30	0.850	56
PUBLIC PARK	B	1.16	0.30	0.850	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.47	0.30	0.500	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.25	0.30	0.500	56
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	20.24	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.963  
SUBAREA AREA (ACRES) = 25.21 SUBAREA RUNOFF (CFS) = 26.41  
EFFECTIVE AREA (ACRES) = 2484.45 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3705.4 PEAK FLOW RATE (CFS) = 2700.64  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 39.78  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.453  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.08	0.30	1.000	-
USER-DEFINED	-	6.75	0.30	1.000	-
USER-DEFINED	-	0.02	0.30	1.000	-
USER-DEFINED	-	0.93	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 14.78 SUBAREA RUNOFF (CFS) = 15.33  
EFFECTIVE AREA (ACRES) = 2499.23 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 3720.2 PEAK FLOW RATE (CFS) = 2700.64  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 242.00 DOWNSTREAM (FEET) = 208.53  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2526.22 CHANNEL SLOPE = 0.0132  
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 5.49  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.387

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.30	1.000	-
USER-DEFINED	-	13.31	0.30	1.000	-
USER-DEFINED	-	0.87	0.30	1.000	-
USER-DEFINED	-	20.26	0.30	1.000	-
USER-DEFINED	-	1.21	0.30	1.000	-

USER-DEFINED - 0.05 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2722.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.67  
 AVERAGE FLOW DEPTH (FEET) = 5.49 TRAVEL TIME (MIN.) = 3.95  
 Tc (MIN.) = 43.73  
 SUBAREA AREA (ACRES) = 44.19 SUBAREA RUNOFF (CFS) = 43.22  
 EFFECTIVE AREA (ACRES) = 2543.42 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3764.4 PEAK FLOW RATE (CFS) = 2700.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 5.47 FLOW VELOCITY (FEET/SEC.) = 10.64  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2426.61	24.00	1.957	0.30 (0.27)	0.90	1382.8	110.00
2	2523.08	26.43	1.844	0.30 (0.27)	0.90	1555.2	100.00
3	2535.23	27.62	1.798	0.30 (0.27)	0.90	1631.8	100.00
4	2565.50	30.65	1.690	0.30 (0.27)	0.90	1808.8	130.00
5	2700.64	43.73	1.387	0.30 (0.28)	0.93	2543.4	20100.00
6	2620.76	49.19	1.298	0.30 (0.28)	0.93	2729.1	13600.00
7	2498.72	84.08	1.012	0.30 (0.28)	0.93	3700.3	13510.00
8	2345.92	92.91	0.959	0.30 (0.28)	0.93	3764.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 2700.64 Tc (MIN.) = 43.73  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 2543.42

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc (MIN.) = 43.73  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.387  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.56	0.30	1.000	-
USER-DEFINED	-	0.81	0.30	1.000	-
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	0.59	0.30	1.000	-
USER-DEFINED	-	3.04	0.30	1.000	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 18.12 SUBAREA RUNOFF (CFS) = 17.72  
 EFFECTIVE AREA (ACRES) = 2561.54 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3782.5 PEAK FLOW RATE (CFS) = 2700.64

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc (MIN.) = 43.73  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.387  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.30	0.30	0.850	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.70	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
PUBLIC PARK	B	2.90	0.30	0.850	56

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.835  
 SUBAREA AREA (ACRES) = 6.20 SUBAREA RUNOFF (CFS) = 6.34  
 EFFECTIVE AREA (ACRES) = 2567.74 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3788.7 PEAK FLOW RATE (CFS) = 2700.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====  
 MAINLINE Tc (MIN.) = 43.73  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.387  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
CONDOMINIUMS	B	0.10	0.30	0.350	56
PUBLIC PARK	B	6.90	0.30	0.850	56
PUBLIC PARK	B	0.40	0.30	0.850	56

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.839  
 SUBAREA AREA (ACRES) = 7.50 SUBAREA RUNOFF (CFS) = 7.66  
 EFFECTIVE AREA (ACRES) = 2575.24 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3796.2 PEAK FLOW RATE (CFS) = 2700.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*MEMORY BANK # 3 IS EMPTY - PROCESS IGNORED.\*\*\*

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 43.73

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	2.55	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	0.01	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	1.35	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	0.44	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.67	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	1.06	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 6.08 SUBAREA RUNOFF(CFS) = 5.95

EFFECTIVE AREA(ACRES) = 2581.32 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 3802.3 PEAK FLOW RATE(CFS) = 2700.64

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 43.73

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	2.16	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	2.45	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	6.15	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	1.34	0.30	1.000	81
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	18.46	0.30	1.000	81
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	4.13	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 34.69 SUBAREA RUNOFF(CFS) = 33.93

EFFECTIVE AREA(ACRES) = 2616.01 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 3837.0 PEAK FLOW RATE(CFS) = 2700.64

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 43.73

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	8.69	0.30	1.000	81
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.73	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.41	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	1.37	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.11	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 14.31 SUBAREA RUNOFF(CFS) = 13.99

EFFECTIVE AREA(ACRES) = 2630.32 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 3851.3 PEAK FLOW RATE(CFS) = 2700.64

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13683.00 TO NODE 13685.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 208.53 DOWNSTREAM(FEET) = 194.24

CHANNEL LENGTH THRU SUBAREA(FEET) = 289.01 CHANNEL SLOPE = 0.0494

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.84

CHANNEL FLOW THRU SUBAREA(CFS) = 2700.64

FLOW VELOCITY(FEET/SEC.) = 16.94 FLOW DEPTH(FEET) = 3.84

TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 44.01

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13685.00 = 39866.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2426.61	24.30	1.940	0.30( 0.27)	0.90	1469.7	110.00
2	2523.08	26.72	1.833	0.30( 0.27)	0.90	1642.1	100.00
3	2535.23	27.91	1.787	0.30( 0.27)	0.90	1718.7	100.00
4	2565.50	30.94	1.683	0.30( 0.27)	0.91	1895.7	130.00
5	2700.64	44.01	1.382	0.30( 0.28)	0.93	2630.3	20100.00
6	2620.76	49.48	1.293	0.30( 0.28)	0.93	2816.0	13600.00
7	2498.72	84.37	1.010	0.30( 0.28)	0.93	3787.2	13510.00
8	2354.93	93.20	0.958	0.30( 0.28)	0.93	3851.3	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2700.64 Tc(MIN.) = 44.01  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2630.32

\*\*\*\*\*

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

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

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.16

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.327

SUBAREA LOSS RATE DATA(AMC II):

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

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2704.52

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.06

AVERAGE FLOW DEPTH(FEET) = 6.16 TRAVEL TIME(MIN.) = 3.39

Tc(MIN.) = 47.40

SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 7.76

EFFECTIVE AREA(ACRES) = 2638.71 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 2700.64

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 6.15 FLOW VELOCITY(FEET/SEC.) = 9.06

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2426.61	27.79	1.792	0.30( 0.27)	0.90	1478.1	110.00
2	2523.08	30.18	1.702	0.30( 0.27)	0.90	1650.5	100.00
3	2535.23	31.37	1.671	0.30( 0.27)	0.90	1727.1	100.00
4	2565.50	34.38	1.593	0.30( 0.27)	0.91	1904.1	130.00
5	2700.64	47.40	1.327	0.30( 0.28)	0.93	2638.7	20100.00
6	2620.76	52.90	1.253	0.30( 0.28)	0.93	2824.4	13600.00
7	2498.72	87.84	0.987	0.30( 0.28)	0.93	3795.6	13510.00
8	2354.93	96.73	0.943	0.30( 0.28)	0.93	3859.7	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2700.64 Tc(MIN.) = 47.40

AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2638.71

=====  
 END OF STUDY SUMMARY:  
 TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 47.40  
 EFFECTIVE AREA(ACRES) = 2638.71 AREA-AVERAGED Fm(INCH/HR)= 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.928  
 PEAK FLOW RATE(CFS) = 2700.64

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2426.61	27.79	1.792	0.30( 0.27)	0.90	1478.1	110.00
2	2523.08	30.18	1.702	0.30( 0.27)	0.90	1650.5	100.00
3	2535.23	31.37	1.671	0.30( 0.27)	0.90	1727.1	100.00
4	2565.50	34.38	1.593	0.30( 0.27)	0.91	1904.1	130.00
5	2700.64	47.40	1.327	0.30( 0.28)	0.93	2638.7	20100.00
6	2620.76	52.90	1.253	0.30( 0.28)	0.93	2824.4	13600.00
7	2498.72	87.84	0.987	0.30( 0.28)	0.93	3795.6	13510.00
8	2354.93	96.73	0.943	0.30( 0.28)	0.93	3859.7	13500.00

=====  
 END OF RATIONAL METHOD ANALYSIS



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

Analysis prepared by:

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Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S37- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV37.DAT  
TIME/DATE OF STUDY: 11:51 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.240
- 2) 10.00; 3.389
- 3) 15.00; 2.611
- 4) 20.00; 2.187
- 5) 25.00; 1.897
- 6) 30.00; 1.705
- 7) 40.00; 1.446
- 8) 50.00; 1.284
- 9) 60.00; 1.172
- 10) 90.00; 0.970
- 11) 120.00; 0.840
- 12) 180.00; 0.715
- 13) 360.00; 0.524
- 14) 1200.00; 0.229

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	(FT)	(FT)	SIDE / SIDE/ WAY	(FT)	(FT)	(FT)	(FT)	(n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU50EV34.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24834.58	15.11	0.30 ( 0.24)	0.79	4474.8	300.00
2	27106.23	20.16	0.30 ( 0.24)	0.79	6137.0	210.00
3	29862.69	28.18	0.30 ( 0.24)	0.79	8792.4	110.00
4	32032.11	34.76	0.30 ( 0.24)	0.79	11524.0	130.00
5	34924.64	44.20	0.30 ( 0.24)	0.81	15925.8	50260.00
6	37289.64	54.84	0.30 ( 0.25)	0.84	21298.0	390.00
7	39576.07	66.44	0.30 ( 0.26)	0.87	27120.1	13100.00
8	40349.69	73.40	0.30 ( 0.26)	0.88	30197.3	11801.00
9	42948.89	88.34	0.30 ( 0.27)	0.90	38266.3	11701.00
10	44751.55	97.07	0.30 ( 0.27)	0.91	44139.2	13500.00
11	45683.57	101.76	0.30 ( 0.27)	0.92	47277.8	10800.00
12	46133.12	105.96	0.30 ( 0.28)	0.92	50223.1	11130.00
13	45649.75	115.56	0.30 ( 0.28)	0.93	55264.3	12410.00
14	44962.49	123.87	0.30 ( 0.28)	0.93	59003.4	11201.00
15	44488.16	128.86	0.30 ( 0.28)	0.93	60735.1	12201.00
16	43422.84	135.95	0.30 ( 0.28)	0.93	62592.3	12231.00
17	42080.11	143.82	0.30 ( 0.28)	0.94	64226.6	10400.00
18	40687.09	151.82	0.30 ( 0.28)	0.94	65521.7	12010.00
19	39463.56	157.84	0.30 ( 0.28)	0.94	65868.6	10210.00
20	35143.30	186.22	0.30 ( 0.28)	0.94	66607.1	10100.00
TOTAL AREA (ACRES) =						66607.1

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

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24834.58	15.11	0.30 ( 0.24)	0.79	4474.8	300.00
2	27106.23	20.16	0.30 ( 0.24)	0.79	6137.0	210.00
3	29862.69	28.18	0.30 ( 0.24)	0.79	8792.4	110.00
4	32032.11	34.76	0.30 ( 0.24)	0.79	11524.0	130.00
5	34924.64	44.20	0.30 ( 0.24)	0.81	15925.8	50260.00
6	37289.64	54.84	0.30 ( 0.25)	0.84	21298.0	390.00
7	39576.07	66.44	0.30 ( 0.26)	0.87	27120.1	13100.00
8	40349.69	73.40	0.30 ( 0.26)	0.88	30197.3	11801.00
9	42948.89	88.34	0.30 ( 0.27)	0.90	38266.3	11701.00
10	44751.55	97.07	0.30 ( 0.27)	0.91	44139.2	13500.00
11	45683.57	101.76	0.30 ( 0.27)	0.92	47277.8	10800.00
12	46133.12	105.96	0.30 ( 0.28)	0.92	50223.1	11130.00
13	45649.75	115.56	0.30 ( 0.28)	0.93	55264.3	12410.00

14 44962.49 123.87 0.30( 0.28) 0.93 59003.4 11201.00  
 15 44488.16 128.86 0.30( 0.28) 0.93 60735.1 12201.00  
 16 43422.84 135.95 0.30( 0.28) 0.93 62592.3 12231.00  
 17 42080.11 143.82 0.30( 0.28) 0.94 64226.6 10400.00  
 18 40687.09 151.82 0.30( 0.28) 0.94 65521.7 12010.00  
 19 39463.56 157.84 0.30( 0.28) 0.94 65868.6 10210.00  
 20 35143.30 186.22 0.30( 0.28) 0.94 66607.1 10100.00  
 TOTAL AREA(ACRES) = 66607.1

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM( FEET ) = 170.00 DOWNSTREAM( FEET ) = 165.51  
 CHANNEL LENGTH THRU SUBAREA( FEET ) = 1891.83 CHANNEL SLOPE = 0.0024  
 GIVEN CHANNEL BASE( FEET ) = 200.00 CHANNEL FREEBOARD( FEET ) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT( FEET ) = 14.16  
 CHANNEL FLOW THRU SUBAREA( CFS ) = 46133.12  
 FLOW VELOCITY( FEET/SEC. ) = 12.03 FLOW DEPTH( FEET ) = 14.16  
 TRAVEL TIME( MIN. ) = 2.62 Tc( MIN. ) = 108.58  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24834.58	18.30	2.331	0.30( 0.24)	0.79	4474.8	300.00
2	27106.23	23.26	1.998	0.30( 0.24)	0.79	6137.0	210.00
3	29862.69	31.18	1.674	0.30( 0.24)	0.79	8792.4	110.00
4	32032.11	37.69	1.506	0.30( 0.24)	0.79	11524.0	130.00
5	34924.64	47.06	1.332	0.30( 0.24)	0.81	15925.8	50260.00
6	37289.64	57.64	1.198	0.30( 0.25)	0.84	21298.0	390.00
7	39576.07	69.19	1.110	0.30( 0.26)	0.87	27120.1	13100.00
8	40349.69	76.13	1.063	0.30( 0.26)	0.88	30197.3	11801.00
9	42948.89	91.02	0.966	0.30( 0.27)	0.90	38266.3	11701.00
10	44751.55	99.72	0.928	0.30( 0.27)	0.91	44139.2	13500.00
11	45683.57	104.39	0.908	0.30( 0.27)	0.92	47277.8	10800.00
12	46133.12	108.58	0.889	0.30( 0.28)	0.92	50223.1	11130.00
13	45649.75	118.19	0.848	0.30( 0.28)	0.93	55264.3	12410.00
14	44962.49	126.51	0.826	0.30( 0.28)	0.93	59003.4	11201.00
15	44488.16	131.51	0.816	0.30( 0.28)	0.93	60735.1	12201.00
16	43422.84	138.62	0.801	0.30( 0.28)	0.93	62592.3	12231.00
17	42080.11	146.51	0.785	0.30( 0.28)	0.94	64226.6	10400.00
18	40687.09	154.54	0.768	0.30( 0.28)	0.94	65521.7	12010.00
19	39463.56	160.59	0.755	0.30( 0.28)	0.94	65868.6	10210.00
20	35143.30	189.07	0.705	0.30( 0.28)	0.94	66607.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE( CFS ) = 46133.12 Tc( MIN. ) = 108.58  
 AREA-AVERAGED Fm( INCH/HR ) = 0.28 AREA-AVERAGED Fp( INCH/HR ) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA( ACRES ) = 50223.10

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0506102C.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	368.04	14.55	0.30( 0.29)	0.96	189.6	10230.00
2	334.70	24.11	0.30( 0.29)	0.95	240.8	10200.00
3	332.42	24.51	0.30( 0.29)	0.95	241.8	10250.00
4	305.13	28.32	0.30( 0.29)	0.95	246.3	10220.00

TOTAL AREA( ACRES ) = 246.3

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24834.58	18.30	2.331	0.30( 0.24)	0.79	4474.8	300.00
2	27106.23	23.26	1.998	0.30( 0.24)	0.79	6137.0	210.00
3	29862.69	31.18	1.674	0.30( 0.24)	0.79	8792.4	110.00
4	32032.11	37.69	1.506	0.30( 0.24)	0.79	11524.0	130.00
5	34924.64	47.06	1.332	0.30( 0.24)	0.81	15925.8	50260.00
6	37289.64	57.64	1.198	0.30( 0.25)	0.84	21298.0	390.00
7	39576.07	69.19	1.110	0.30( 0.26)	0.87	27120.1	13100.00
8	40349.69	76.13	1.063	0.30( 0.26)	0.88	30197.3	11801.00
9	42948.89	91.02	0.966	0.30( 0.27)	0.90	38266.3	11701.00
10	44751.55	99.72	0.928	0.30( 0.27)	0.91	44139.2	13500.00
11	45683.57	104.39	0.908	0.30( 0.27)	0.92	47277.8	10800.00
12	46133.12	108.58	0.889	0.30( 0.28)	0.92	50223.1	11130.00
13	45649.75	118.19	0.848	0.30( 0.28)	0.93	55264.3	12410.00
14	44962.49	126.51	0.826	0.30( 0.28)	0.93	59003.4	11201.00
15	44488.16	131.51	0.816	0.30( 0.28)	0.93	60735.1	12201.00
16	43422.84	138.62	0.801	0.30( 0.28)	0.93	62592.3	12231.00
17	42080.11	146.51	0.785	0.30( 0.28)	0.94	64226.6	10400.00
18	40687.09	154.54	0.768	0.30( 0.28)	0.94	65521.7	12010.00
19	39463.56	160.59	0.755	0.30( 0.28)	0.94	65868.6	10210.00
20	35143.30	189.07	0.705	0.30( 0.28)	0.94	66607.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	368.04	14.55	2.681	0.30( 0.29)	0.96	189.6	10230.00
2	334.70	24.11	1.948	0.30( 0.29)	0.95	240.8	10200.00
3	332.42	24.51	1.925	0.30( 0.29)	0.95	241.8	10250.00
4	305.13	28.32	1.769	0.30( 0.29)	0.95	246.3	10220.00

LONGEST FLOWPATH FROM NODE 10200.00 TO NODE 13720.00 = 9099.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	23409.65	14.55	2.681	0.30 ( 0.24)	0.80	3746.5 10230.00
2	25189.54	18.30	2.331	0.30 ( 0.24)	0.79	4684.5 300.00
3	27443.92	23.26	1.998	0.30 ( 0.24)	0.79	6373.2 210.00
4	27739.37	24.11	1.948	0.30 ( 0.24)	0.79	6665.3 10200.00
5	27874.78	24.51	1.925	0.30 ( 0.24)	0.79	6798.9 10250.00
6	29172.74	28.32	1.769	0.30 ( 0.24)	0.79	8080.1 10220.00
7	30148.26	31.18	1.674	0.30 ( 0.24)	0.79	9038.7 110.00
8	32282.98	37.69	1.506	0.30 ( 0.24)	0.80	11770.3 130.00
9	35139.70	47.06	1.332	0.30 ( 0.24)	0.81	16172.0 50260.00
10	37477.30	57.64	1.198	0.30 ( 0.25)	0.84	21544.2 390.00
11	39745.57	69.19	1.110	0.30 ( 0.26)	0.87	27366.3 13100.00
12	40509.59	76.13	1.063	0.30 ( 0.26)	0.88	30443.6 11801.00
13	43088.66	91.02	0.966	0.30 ( 0.27)	0.90	38512.6 11701.00
14	44883.57	99.72	0.928	0.30 ( 0.27)	0.91	44385.5 13500.00
15	45811.42	104.39	0.908	0.30 ( 0.27)	0.92	47524.0 10800.00
16	46257.25	108.58	0.889	0.30 ( 0.28)	0.92	50469.4 11130.00
17	45765.30	118.19	0.848	0.30 ( 0.28)	0.93	55510.6 12410.00
18	45073.64	126.51	0.826	0.30 ( 0.28)	0.93	59249.7 11201.00
19	44597.17	131.51	0.816	0.30 ( 0.28)	0.93	60981.4 12201.00
20	43528.80	138.62	0.801	0.30 ( 0.28)	0.93	62838.5 12231.00
21	42182.69	146.51	0.785	0.30 ( 0.28)	0.94	64472.8 10400.00
22	40786.23	154.54	0.768	0.30 ( 0.28)	0.94	65767.9 12010.00
23	39560.11	160.59	0.755	0.30 ( 0.28)	0.94	66114.9 10210.00
24	35229.54	189.07	0.705	0.30 ( 0.28)	0.94	66853.3 10100.00

TOTAL AREA (ACRES) = 66853.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 46257.25 Tc(MIN.) = 108.577  
EFFECTIVE AREA(ACRES) = 50469.36 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88  
TOTAL AREA(ACRES) = 66853.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 165.51 DOWNSTREAM(FEET) = 161.03  
CHANNEL LENGTH THRU SUBAREA(FEET) = 2067.54 CHANNEL SLOPE = 0.0022  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 14.54  
CHANNEL FLOW THRU SUBAREA(CFS) = 46257.25  
FLOW VELOCITY(FEET/SEC.) = 11.67 FLOW DEPTH(FEET) = 14.54  
TRAVEL TIME(MIN.) = 2.95 Tc(MIN.) = 111.53  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23409.65	18.21	2.339	0.30 ( 0.24)	0.80	3746.5	10230.00
2	25189.54	21.88	2.078	0.30 ( 0.24)	0.79	4684.5	300.00
3	27443.92	26.74	1.830	0.30 ( 0.24)	0.79	6373.2	210.00
4	27739.37	27.58	1.798	0.30 ( 0.24)	0.79	6665.3	10200.00
5	27874.78	27.97	1.783	0.30 ( 0.24)	0.79	6798.9	10250.00

6	29172.74	31.73	1.660	0.30 ( 0.24)	0.79	8080.1	10220.00
7	30148.26	34.56	1.587	0.30 ( 0.24)	0.79	9038.7	110.00
8	32282.98	41.00	1.430	0.30 ( 0.24)	0.80	11770.3	130.00
9	35139.70	50.28	1.281	0.30 ( 0.24)	0.81	16172.0	50260.00
10	37477.30	60.79	1.167	0.30 ( 0.25)	0.84	21544.2	390.00
11	39745.57	72.28	1.089	0.30 ( 0.26)	0.87	27366.3	13100.00
12	40509.59	79.20	1.043	0.30 ( 0.26)	0.88	30443.6	11801.00
13	43088.66	94.04	0.953	0.30 ( 0.27)	0.90	38512.6	11701.00
14	44883.57	102.70	0.915	0.30 ( 0.27)	0.91	44385.5	13500.00
15	45811.42	107.35	0.895	0.30 ( 0.27)	0.92	47524.0	10800.00
16	46257.25	111.53	0.877	0.30 ( 0.28)	0.92	50469.4	11130.00
17	45765.30	121.16	0.838	0.30 ( 0.28)	0.93	55510.6	12410.00
18	45073.64	129.49	0.820	0.30 ( 0.28)	0.93	59249.7	11201.00
19	44597.17	134.49	0.810	0.30 ( 0.28)	0.93	60981.4	12201.00
20	43528.80	141.63	0.795	0.30 ( 0.28)	0.93	62838.5	12231.00
21	42182.69	149.55	0.778	0.30 ( 0.28)	0.94	64472.8	10400.00
22	40786.23	157.61	0.762	0.30 ( 0.28)	0.94	65767.9	12010.00
23	39560.11	163.69	0.749	0.30 ( 0.28)	0.94	66114.9	10210.00
24	35229.54	192.29	0.702	0.30 ( 0.28)	0.94	66853.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 46257.25 Tc(MIN.) = 111.53  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 50469.36

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 12  
-----

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506103C.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	702.74	18.17	0.30 ( 0.23)	0.76	400.0	10300.00
2	704.90	18.97	0.30 ( 0.23)	0.76	413.4	10380.00
3	693.05	21.35	0.30 ( 0.23)	0.76	439.7	10320.00
4	668.71	23.48	0.30 ( 0.23)	0.76	451.6	10360.00
5	629.78	26.35	0.30 ( 0.23)	0.76	460.8	10340.00

TOTAL AREA(ACRES) = 460.8

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23409.65	18.21	2.339	0.30 ( 0.24)	0.80	3746.5	10230.00
2	25189.54	21.88	2.078	0.30 ( 0.24)	0.79	4684.5	300.00
3	27443.92	26.74	1.830	0.30 ( 0.24)	0.79	6373.2	210.00

4	27739.37	27.58	1.798	0.30 ( 0.24)	0.79	6665.3	10200.00
5	27874.78	27.97	1.783	0.30 ( 0.24)	0.79	6798.9	10250.00
6	29172.74	31.73	1.660	0.30 ( 0.24)	0.79	8080.1	10220.00
7	30148.26	34.56	1.587	0.30 ( 0.24)	0.79	9038.7	110.00
8	32282.98	41.00	1.430	0.30 ( 0.24)	0.80	11770.3	130.00
9	35139.70	50.28	1.281	0.30 ( 0.24)	0.81	16172.0	50260.00
10	37477.30	60.79	1.167	0.30 ( 0.25)	0.84	21544.2	390.00
11	39745.57	72.28	1.089	0.30 ( 0.26)	0.87	27366.3	13100.00
12	40509.59	79.20	1.043	0.30 ( 0.26)	0.88	30443.6	11801.00
13	43088.66	94.04	0.953	0.30 ( 0.27)	0.90	38512.6	11701.00
14	44883.57	102.70	0.915	0.30 ( 0.27)	0.91	44385.5	13500.00
15	45811.42	107.35	0.895	0.30 ( 0.27)	0.92	47524.0	10800.00
16	46257.25	111.53	0.877	0.30 ( 0.28)	0.92	50469.4	11130.00
17	45765.30	121.16	0.838	0.30 ( 0.28)	0.93	55510.6	12410.00
18	45073.64	129.49	0.820	0.30 ( 0.28)	0.93	59249.7	11201.00
19	44597.17	134.49	0.810	0.30 ( 0.28)	0.93	60981.4	12201.00
20	43528.80	141.63	0.795	0.30 ( 0.28)	0.93	62838.5	12231.00
21	42182.69	149.55	0.778	0.30 ( 0.28)	0.94	64472.8	10400.00
22	40786.23	157.61	0.762	0.30 ( 0.28)	0.94	65767.9	12010.00
23	39560.11	163.69	0.749	0.30 ( 0.28)	0.94	66114.9	10210.00
24	35229.54	192.29	0.702	0.30 ( 0.28)	0.94	66853.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	702.74	18.17	2.342	0.30 ( 0.23)	0.76	400.0	10300.00
2	704.90	18.97	2.274	0.30 ( 0.23)	0.76	413.4	10380.00
3	693.05	21.35	2.109	0.30 ( 0.23)	0.76	439.7	10320.00
4	668.71	23.48	1.985	0.30 ( 0.23)	0.76	451.6	10360.00
5	629.78	26.35	1.845	0.30 ( 0.23)	0.76	460.8	10340.00

LONGEST FLOWPATH FROM NODE 10320.00 TO NODE 13740.00 = 8457.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24098.09	18.17	2.342	0.30 ( 0.24)	0.79	4137.9	10300.00
2	24112.50	18.21	2.339	0.30 ( 0.24)	0.79	4147.2	10230.00
3	24483.99	18.97	2.274	0.30 ( 0.24)	0.79	4354.6	10380.00
4	25625.63	21.35	2.109	0.30 ( 0.24)	0.79	4988.8	10320.00
5	25876.53	21.88	2.078	0.30 ( 0.24)	0.79	5127.1	300.00
6	26600.13	23.48	1.985	0.30 ( 0.24)	0.79	5691.8	10360.00
7	27896.60	26.35	1.845	0.30 ( 0.24)	0.79	6701.4	10340.00
8	28067.99	26.74	1.830	0.30 ( 0.24)	0.79	6834.0	210.00
9	28350.79	27.58	1.798	0.30 ( 0.24)	0.79	7126.1	10200.00
10	28480.36	27.97	1.783	0.30 ( 0.24)	0.79	7259.7	10250.00
11	29730.48	31.73	1.660	0.30 ( 0.24)	0.79	8540.9	10220.00
12	30677.48	34.56	1.587	0.30 ( 0.24)	0.79	9499.5	110.00
13	32750.96	41.00	1.430	0.30 ( 0.24)	0.80	12231.1	130.00
14	35549.64	50.28	1.281	0.30 ( 0.24)	0.81	16632.8	50260.00
15	37842.72	60.79	1.167	0.30 ( 0.25)	0.84	22005.0	390.00
16	40080.84	72.28	1.089	0.30 ( 0.26)	0.87	27827.1	13100.00
17	40826.69	79.20	1.043	0.30 ( 0.26)	0.88	30904.4	11801.00
18	43370.62	94.04	0.953	0.30 ( 0.27)	0.90	38973.4	11701.00
19	45150.89	102.70	0.915	0.30 ( 0.27)	0.91	44846.3	13500.00
20	46070.89	107.35	0.895	0.30 ( 0.27)	0.92	47984.8	10800.00
21	46509.66	111.53	0.877	0.30 ( 0.28)	0.92	50930.2	11130.00
22	46002.46	121.16	0.838	0.30 ( 0.28)	0.93	55971.4	12410.00

23	45304.04	129.49	0.820	0.30 ( 0.28)	0.93	59710.5	11201.00
24	44823.51	134.49	0.810	0.30 ( 0.28)	0.93	61442.2	12201.00
25	43749.34	141.63	0.795	0.30 ( 0.28)	0.93	63299.3	12231.00
26	42396.80	149.55	0.778	0.30 ( 0.28)	0.93	64933.6	10400.00
27	40993.80	157.61	0.762	0.30 ( 0.28)	0.94	66228.7	12010.00
28	39762.75	163.69	0.749	0.30 ( 0.28)	0.94	66575.7	10210.00
29	35413.85	192.29	0.702	0.30 ( 0.28)	0.94	67314.1	10100.00

TOTAL AREA (ACRES) = 67314.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 46509.66 Tc (MIN.) = 111.531  
EFFECTIVE AREA (ACRES) = 50930.16 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 67314.1  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

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FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 161.03 DOWNSTREAM (FEET) = 141.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 364.08 CHANNEL SLOPE = 0.0550  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.45  
CHANNEL FLOW THRU SUBAREA (CFS) = 46509.66  
FLOW VELOCITY (FEET/SEC.) = 41.15 FLOW DEPTH (FEET) = 8.45  
TRAVEL TIME (MIN.) = 0.15 Tc (MIN.) = 111.68  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24098.09	18.35	2.327	0.30 ( 0.24)	0.79	4137.9	10300.00
2	24112.50	18.39	2.323	0.30 ( 0.24)	0.79	4147.2	10230.00
3	24483.99	19.15	2.259	0.30 ( 0.24)	0.79	4354.6	10380.00
4	25625.63	21.53	2.098	0.30 ( 0.24)	0.79	4988.8	10320.00
5	25876.53	22.06	2.068	0.30 ( 0.24)	0.79	5127.1	300.00
6	26600.13	23.65	1.975	0.30 ( 0.24)	0.79	5691.8	10360.00
7	27896.60	26.53	1.838	0.30 ( 0.24)	0.79	6701.4	10340.00
8	28067.99	26.91	1.824	0.30 ( 0.24)	0.79	6834.0	210.00
9	28350.79	27.75	1.791	0.30 ( 0.24)	0.79	7126.1	10200.00
10	28480.36	28.14	1.776	0.30 ( 0.24)	0.79	7259.7	10250.00
11	29730.48	31.90	1.656	0.30 ( 0.24)	0.79	8540.9	10220.00
12	30677.48	34.73	1.583	0.30 ( 0.24)	0.79	9499.5	110.00
13	32750.96	41.16	1.427	0.30 ( 0.24)	0.80	12231.1	130.00
14	35549.64	50.44	1.279	0.30 ( 0.24)	0.81	16632.8	50260.00
15	37842.72	60.95	1.166	0.30 ( 0.25)	0.84	22005.0	390.00
16	40080.84	72.44	1.088	0.30 ( 0.26)	0.87	27827.1	13100.00
17	40826.69	79.36	1.042	0.30 ( 0.26)	0.88	30904.4	11801.00
18	43370.62	94.19	0.952	0.30 ( 0.27)	0.90	38973.4	11701.00
19	45150.89	102.84	0.914	0.30 ( 0.27)	0.91	44846.3	13500.00
20	46070.89	107.50	0.894	0.30 ( 0.27)	0.92	47984.8	10800.00
21	46509.66	111.68	0.876	0.30 ( 0.28)	0.92	50930.2	11130.00
22	46002.46	121.30	0.837	0.30 ( 0.28)	0.93	55971.4	12410.00
23	45304.04	129.64	0.820	0.30 ( 0.28)	0.93	59710.5	11201.00

24	44823.51	134.64	0.809	0.30 ( 0.28)	0.93	61442.2	12201.00
25	43749.34	141.78	0.795	0.30 ( 0.28)	0.93	63299.3	12231.00
26	42396.80	149.70	0.778	0.30 ( 0.28)	0.93	64933.6	10400.00
27	40993.80	157.76	0.761	0.30 ( 0.28)	0.94	66228.7	12010.00
28	39762.75	163.84	0.749	0.30 ( 0.28)	0.94	66575.7	10210.00
29	35413.85	192.45	0.702	0.30 ( 0.28)	0.94	67314.1	10100.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 46509.66 Tc(MIN.) = 111.68  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 50930.16

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

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1  
 -----  
 >>>>DEFINE MEMORY BANK # 3 <<<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: 0506104C.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	71.30	19.53	2.227	0.30 ( 0.24)	0.80	44.3	10400.00

 TOTAL AREA(ACRES) = 44.3

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24098.09	18.35	2.327	0.30 ( 0.24)	0.79	4137.9	10300.00
2	24112.50	18.39	2.323	0.30 ( 0.24)	0.79	4147.2	10230.00
3	24483.99	19.15	2.259	0.30 ( 0.24)	0.79	4354.6	10380.00
4	25625.63	21.53	2.098	0.30 ( 0.24)	0.79	4988.8	10320.00
5	25876.53	22.06	2.068	0.30 ( 0.24)	0.79	5127.1	300.00
6	26600.13	23.65	1.975	0.30 ( 0.24)	0.79	5691.8	10360.00
7	27896.60	26.53	1.838	0.30 ( 0.24)	0.79	6701.4	10340.00
8	28067.99	26.91	1.824	0.30 ( 0.24)	0.79	6834.0	210.00
9	28350.79	27.75	1.791	0.30 ( 0.24)	0.79	7126.1	10200.00
10	28480.36	28.14	1.776	0.30 ( 0.24)	0.79	7259.7	10250.00
11	29730.48	31.90	1.656	0.30 ( 0.24)	0.79	8540.9	10220.00
12	30677.48	34.73	1.583	0.30 ( 0.24)	0.79	9499.5	110.00
13	32750.96	41.16	1.427	0.30 ( 0.24)	0.80	12231.1	130.00
14	35549.64	50.44	1.279	0.30 ( 0.24)	0.81	16632.8	50260.00
15	37842.72	60.95	1.166	0.30 ( 0.25)	0.84	22005.0	390.00
16	40080.84	72.44	1.088	0.30 ( 0.26)	0.87	27827.1	13100.00
17	40826.69	79.36	1.042	0.30 ( 0.26)	0.88	30904.4	11801.00
18	43370.62	94.19	0.952	0.30 ( 0.27)	0.90	38973.4	11701.00
19	45150.89	102.84	0.914	0.30 ( 0.27)	0.91	44846.3	13500.00
20	46070.89	107.50	0.894	0.30 ( 0.27)	0.92	47984.8	10800.00

21	46509.66	111.68	0.876	0.30 ( 0.28)	0.92	50930.2	11130.00
22	46002.46	121.30	0.837	0.30 ( 0.28)	0.93	55971.4	12410.00
23	45304.04	129.64	0.820	0.30 ( 0.28)	0.93	59710.5	11201.00
24	44823.51	134.64	0.809	0.30 ( 0.28)	0.93	61442.2	12201.00
25	43749.34	141.78	0.795	0.30 ( 0.28)	0.93	63299.3	12231.00
26	42396.80	149.70	0.778	0.30 ( 0.28)	0.93	64933.6	10400.00
27	40993.80	157.76	0.761	0.30 ( 0.28)	0.94	66228.7	12010.00
28	39762.75	163.84	0.749	0.30 ( 0.28)	0.94	66575.7	10210.00
29	35413.85	192.45	0.702	0.30 ( 0.28)	0.94	67314.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	71.30	19.53	2.227	0.30 ( 0.24)	0.80	44.3	10400.00

 LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 = 6237.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24168.46	18.35	2.327	0.30 ( 0.24)	0.79	4179.5	10300.00
2	24182.91	18.39	2.323	0.30 ( 0.24)	0.79	4188.9	10230.00
3	24555.04	19.15	2.259	0.30 ( 0.24)	0.79	4398.0	10380.00
4	24738.83	19.53	2.227	0.30 ( 0.24)	0.79	4500.8	10400.00
5	25692.34	21.53	2.098	0.30 ( 0.24)	0.79	5033.1	10320.00
6	25942.13	22.06	2.068	0.30 ( 0.24)	0.79	5171.4	300.00
7	26662.41	23.65	1.975	0.30 ( 0.24)	0.79	5736.1	10360.00
8	27953.97	26.53	1.838	0.30 ( 0.24)	0.79	6745.7	10340.00
9	28124.84	26.91	1.824	0.30 ( 0.24)	0.79	6878.3	210.00
10	28406.47	27.75	1.791	0.30 ( 0.24)	0.79	7170.4	10200.00
11	28535.50	28.14	1.776	0.30 ( 0.24)	0.79	7304.0	10250.00
12	29781.31	31.90	1.656	0.30 ( 0.24)	0.79	8585.2	10220.00
13	30725.67	34.73	1.583	0.30 ( 0.24)	0.79	9543.8	110.00
14	32793.58	41.16	1.427	0.30 ( 0.24)	0.80	12275.4	130.00
15	35586.95	50.44	1.279	0.30 ( 0.24)	0.81	16677.1	50260.00
16	37875.96	60.95	1.166	0.30 ( 0.25)	0.84	22049.3	390.00
17	40111.30	72.44	1.088	0.30 ( 0.26)	0.87	27871.4	13100.00
18	40855.47	79.36	1.042	0.30 ( 0.26)	0.88	30948.7	11801.00
19	43396.18	94.19	0.952	0.30 ( 0.27)	0.90	39017.7	11701.00
20	45175.11	102.84	0.914	0.30 ( 0.27)	0.91	44890.6	13500.00
21	46094.38	107.50	0.894	0.30 ( 0.27)	0.92	48029.1	10800.00
22	46532.50	111.68	0.876	0.30 ( 0.28)	0.92	50974.5	11130.00
23	46023.92	121.30	0.837	0.30 ( 0.28)	0.93	56015.7	12410.00
24	45324.87	129.64	0.820	0.30 ( 0.28)	0.93	59754.8	11201.00
25	44843.96	134.64	0.809	0.30 ( 0.28)	0.93	61486.5	12201.00
26	43769.26	141.78	0.795	0.30 ( 0.28)	0.93	63343.6	12231.00
27	42416.13	149.70	0.778	0.30 ( 0.28)	0.93	64977.9	10400.00
28	41012.53	157.76	0.761	0.30 ( 0.28)	0.94	66273.0	12010.00
29	39781.02	163.84	0.749	0.30 ( 0.28)	0.94	66620.0	10210.00
30	35430.44	192.45	0.702	0.30 ( 0.28)	0.94	67358.4	10100.00

TOTAL AREA(ACRES) = 67358.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 46532.50 Tc(MIN.) = 111.678  
 EFFECTIVE AREA(ACRES) = 50974.46 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 67358.4  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

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FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 141.00 DOWNSTREAM(FEET) = 135.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1533.41 CHANNEL SLOPE = 0.0039
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 17.08
CHANNEL FLOW THRU SUBAREA(CFS) = 46532.50
FLOW VELOCITY(FEET/SEC.) = 16.19 FLOW DEPTH(FEET) = 17.08
TRAVEL TIME(MIN.) = 1.58 Tc(MIN.) = 113.26
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 30 rows of data.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 46532.50 Tc(MIN.) = 113.26
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 50974.46

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FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

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FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506105J.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 3 rows of data.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 30 rows of data.

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	385.37	14.62	2.670	0.30( 0.27)	0.90	207.5	10520.00
2	453.34	31.20	1.674	0.30( 0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22319.33	14.62	2.670	0.30( 0.24)	0.80	3224.2	10520.00
2	24576.93	20.26	2.172	0.30( 0.24)	0.80	4453.7	10300.00
3	24591.54	20.30	2.170	0.30( 0.24)	0.80	4463.6	10230.00
4	24966.75	21.05	2.126	0.30( 0.24)	0.80	4681.6	10380.00
5	25152.10	21.43	2.104	0.30( 0.24)	0.80	4788.8	10400.00
6	26113.69	23.40	1.990	0.30( 0.24)	0.80	5344.4	10320.00
7	26365.63	23.92	1.960	0.30( 0.24)	0.80	5488.9	300.00
8	27092.39	25.50	1.878	0.30( 0.24)	0.80	6072.3	10360.00
9	28395.63	28.35	1.768	0.30( 0.24)	0.80	7115.6	10340.00
10	28568.05	28.73	1.754	0.30( 0.24)	0.80	7252.7	210.00
11	28853.12	29.57	1.721	0.30( 0.24)	0.80	7554.7	10200.00
12	28983.74	29.96	1.707	0.30( 0.24)	0.80	7692.9	10250.00
13	29404.11	31.20	1.674	0.30( 0.24)	0.80	8134.7	10500.00
14	30213.71	33.69	1.609	0.30( 0.24)	0.80	8988.8	10220.00
15	31134.44	36.50	1.537	0.30( 0.24)	0.80	9947.4	110.00
16	33157.64	42.91	1.399	0.30( 0.24)	0.80	12679.0	130.00
17	35905.90	52.14	1.260	0.30( 0.24)	0.82	17080.7	50260.00
18	38160.58	62.62	1.154	0.30( 0.25)	0.84	22452.9	390.00
19	40370.86	74.08	1.077	0.30( 0.26)	0.87	28275.0	13100.00
20	41099.92	81.00	1.031	0.30( 0.26)	0.88	31352.3	11801.00
21	43612.77	95.80	0.945	0.30( 0.27)	0.90	39421.3	11701.00
22	45379.55	104.44	0.907	0.30( 0.27)	0.91	45294.2	13500.00
23	46292.28	109.08	0.887	0.30( 0.27)	0.92	48432.7	10800.00
24	46724.52	113.26	0.869	0.30( 0.28)	0.92	51378.1	11130.00
25	46204.49	122.89	0.834	0.30( 0.28)	0.93	56419.3	12410.00
26	45499.80	131.23	0.817	0.30( 0.28)	0.93	60158.4	11201.00
27	45015.50	136.24	0.806	0.30( 0.28)	0.93	61890.1	12201.00
28	43935.96	143.39	0.791	0.30( 0.28)	0.93	63747.2	12231.00
29	42577.47	151.32	0.775	0.30( 0.28)	0.93	65381.5	10400.00
30	41168.40	159.40	0.758	0.30( 0.28)	0.94	66676.6	12010.00
31	39932.77	165.49	0.745	0.30( 0.28)	0.94	67023.6	10210.00
32	35567.50	194.15	0.700	0.30( 0.28)	0.94	67762.0	10100.00

TOTAL AREA (ACRES) = 67762.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 46724.52 Tc(MIN.) = 113.257  
EFFECTIVE AREA(ACRES) = 51378.06 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA(ACRES) = 67762.0  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

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FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 135.00 DOWNSTREAM(FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 207.23 CHANNEL SLOPE = 0.0097

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 13.54  
CHANNEL FLOW THRU SUBAREA(CFS) = 46724.52  
FLOW VELOCITY(FEET/SEC.) = 22.39 FLOW DEPTH(FEET) = 13.54  
TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 113.41  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22319.33	14.81	2.640	0.30( 0.24)	0.80	3224.2	10520.00
2	24576.93	20.44	2.161	0.30( 0.24)	0.80	4453.7	10300.00
3	24591.54	20.48	2.159	0.30( 0.24)	0.80	4463.6	10230.00
4	24966.75	21.23	2.115	0.30( 0.24)	0.80	4681.6	10380.00
5	25152.10	21.61	2.094	0.30( 0.24)	0.80	4788.8	10400.00
6	26113.69	23.58	1.979	0.30( 0.24)	0.80	5344.4	10320.00
7	26365.63	24.10	1.949	0.30( 0.24)	0.80	5488.9	300.00
8	27092.39	25.69	1.871	0.30( 0.24)	0.80	6072.3	10360.00
9	28395.63	28.53	1.761	0.30( 0.24)	0.80	7115.6	10340.00
10	28568.05	28.91	1.747	0.30( 0.24)	0.80	7252.7	210.00
11	28853.12	29.75	1.715	0.30( 0.24)	0.80	7554.7	10200.00
12	28983.74	30.14	1.701	0.30( 0.24)	0.80	7692.9	10250.00
13	29404.11	31.38	1.669	0.30( 0.24)	0.80	8134.7	10500.00
14	30213.71	33.87	1.605	0.30( 0.24)	0.80	8988.8	10220.00
15	31134.44	36.68	1.532	0.30( 0.24)	0.80	9947.4	110.00
16	33157.64	43.08	1.396	0.30( 0.24)	0.80	12679.0	130.00
17	35905.90	52.31	1.258	0.30( 0.24)	0.82	17080.7	50260.00
18	38160.58	62.79	1.153	0.30( 0.25)	0.84	22452.9	390.00
19	40370.86	74.24	1.076	0.30( 0.26)	0.87	28275.0	13100.00
20	41099.92	81.16	1.030	0.30( 0.26)	0.88	31352.3	11801.00
21	43612.77	95.96	0.944	0.30( 0.27)	0.90	39421.3	11701.00
22	45379.55	104.59	0.907	0.30( 0.27)	0.91	45294.2	13500.00
23	46292.28	109.24	0.887	0.30( 0.27)	0.92	48432.7	10800.00
24	46724.52	113.41	0.869	0.30( 0.28)	0.92	51378.1	11130.00
25	46204.49	123.04	0.834	0.30( 0.28)	0.93	56419.3	12410.00
26	45499.80	131.38	0.816	0.30( 0.28)	0.93	60158.4	11201.00
27	45015.50	136.39	0.806	0.30( 0.28)	0.93	61890.1	12201.00
28	43935.96	143.55	0.791	0.30( 0.28)	0.93	63747.2	12231.00
29	42577.47	151.48	0.774	0.30( 0.28)	0.93	65381.5	10400.00
30	41168.40	159.56	0.758	0.30( 0.28)	0.94	66676.6	12010.00
31	39932.77	165.65	0.745	0.30( 0.28)	0.94	67023.6	10210.00
32	35567.50	194.32	0.700	0.30( 0.28)	0.94	67762.0	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 46724.52 Tc(MIN.) = 113.41  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 51378.06

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FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

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FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506106C.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.85	17.52	0.30	(0.20)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =							36.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22319.33	14.81	2.640	0.30 (0.24)	0.80	3224.2	10520.00
2	24576.93	20.44	2.161	0.30 (0.24)	0.80	4453.7	10300.00
3	24591.54	20.48	2.159	0.30 (0.24)	0.80	4463.6	10230.00
4	24966.75	21.23	2.115	0.30 (0.24)	0.80	4681.6	10380.00
5	25152.10	21.61	2.094	0.30 (0.24)	0.80	4788.8	10400.00
6	26113.69	23.58	1.979	0.30 (0.24)	0.80	5344.4	10320.00
7	26365.63	24.10	1.949	0.30 (0.24)	0.80	5488.9	300.00
8	27092.39	25.69	1.871	0.30 (0.24)	0.80	6072.3	10360.00
9	28395.63	28.53	1.761	0.30 (0.24)	0.80	7115.6	10340.00
10	28568.05	28.91	1.747	0.30 (0.24)	0.80	7252.7	210.00
11	28853.12	29.75	1.715	0.30 (0.24)	0.80	7554.7	10200.00
12	28983.74	30.14	1.701	0.30 (0.24)	0.80	7692.9	10250.00
13	29404.11	31.38	1.669	0.30 (0.24)	0.80	8134.7	10500.00
14	30213.71	33.87	1.605	0.30 (0.24)	0.80	8988.8	10220.00
15	31134.44	36.68	1.532	0.30 (0.24)	0.80	9947.4	110.00
16	33157.64	43.08	1.396	0.30 (0.24)	0.80	12679.0	130.00
17	35905.90	52.31	1.258	0.30 (0.24)	0.82	17080.7	50260.00
18	38160.58	62.79	1.153	0.30 (0.25)	0.84	22452.9	390.00
19	40370.86	74.24	1.076	0.30 (0.26)	0.87	28275.0	13100.00
20	41099.92	81.16	1.030	0.30 (0.26)	0.88	31352.3	11801.00
21	43612.77	95.96	0.944	0.30 (0.27)	0.90	39421.3	11701.00
22	45379.55	104.59	0.907	0.30 (0.27)	0.91	45294.2	13500.00
23	46292.28	109.24	0.887	0.30 (0.27)	0.92	48432.7	10800.00
24	46724.52	113.41	0.869	0.30 (0.28)	0.92	51378.1	11130.00
25	46204.49	123.04	0.834	0.30 (0.28)	0.93	56419.3	12410.00
26	45499.80	131.38	0.816	0.30 (0.28)	0.93	60158.4	11201.00
27	45015.50	136.39	0.806	0.30 (0.28)	0.93	61890.1	12201.00
28	43935.96	143.55	0.791	0.30 (0.28)	0.93	63747.2	12231.00
29	42577.47	151.48	0.774	0.30 (0.28)	0.93	65381.5	10400.00
30	41168.40	159.56	0.758	0.30 (0.28)	0.94	66676.6	12010.00
31	39932.77	165.65	0.745	0.30 (0.28)	0.94	67023.6	10210.00
32	35567.50	194.32	0.700	0.30 (0.28)	0.94	67762.0	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 =							130616.05 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.85	17.52	2.397	0.30 (0.20)	0.67	36.9	10600.00
LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 =							1713.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22379.28	14.81	2.640	0.30 (0.24)	0.80	3255.4	10520.00
2	23469.11	17.52	2.397	0.30 (0.24)	0.80	3852.5	10600.00
3	24633.92	20.44	2.161	0.30 (0.24)	0.80	4490.6	10300.00
4	24648.47	20.48	2.159	0.30 (0.24)	0.80	4500.5	10230.00
5	25022.41	21.23	2.115	0.30 (0.24)	0.80	4718.5	10380.00
6	25207.12	21.61	2.094	0.30 (0.24)	0.80	4825.7	10400.00
7	26165.38	23.58	1.979	0.30 (0.24)	0.80	5381.3	10320.00
8	26416.45	24.10	1.949	0.30 (0.24)	0.80	5525.8	300.00
9	27140.94	25.69	1.871	0.30 (0.24)	0.80	6109.2	10360.00
10	28441.00	28.53	1.761	0.30 (0.24)	0.80	7152.5	10340.00
11	28612.99	28.91	1.747	0.30 (0.24)	0.80	7289.6	210.00
12	28897.13	29.75	1.715	0.30 (0.24)	0.80	7591.6	10200.00
13	29027.36	30.14	1.701	0.30 (0.24)	0.80	7729.8	10250.00
14	29446.80	31.38	1.669	0.30 (0.24)	0.80	8171.6	10500.00
15	30254.52	33.87	1.605	0.30 (0.24)	0.80	9025.7	10220.00
16	31173.14	36.68	1.532	0.30 (0.24)	0.80	9984.3	110.00
17	33192.39	43.08	1.396	0.30 (0.24)	0.80	12715.9	130.00
18	35936.63	52.31	1.258	0.30 (0.24)	0.82	17117.6	50260.00
19	38188.27	62.79	1.153	0.30 (0.25)	0.84	22489.8	390.00
20	40396.30	74.24	1.076	0.30 (0.26)	0.87	28311.9	13100.00
21	41124.01	81.16	1.030	0.30 (0.26)	0.88	31389.2	11801.00
22	43634.38	95.96	0.944	0.30 (0.27)	0.90	39458.2	11701.00
23	45400.07	104.59	0.907	0.30 (0.27)	0.91	45331.1	13500.00
24	46312.21	109.24	0.887	0.30 (0.27)	0.92	48469.6	10800.00
25	46743.93	113.41	0.869	0.30 (0.28)	0.92	51415.0	11130.00
26	46222.89	123.04	0.834	0.30 (0.28)	0.93	56456.2	12410.00
27	45517.69	131.38	0.816	0.30 (0.28)	0.93	60195.3	11201.00
28	45033.09	136.39	0.806	0.30 (0.28)	0.93	61927.0	12201.00
29	43953.12	143.55	0.791	0.30 (0.28)	0.93	63784.1	12231.00
30	42594.14	151.48	0.774	0.30 (0.28)	0.93	65418.4	10400.00
31	41184.58	159.56	0.758	0.30 (0.28)	0.94	66713.5	12010.00
32	39948.58	165.65	0.745	0.30 (0.28)	0.94	67060.5	10210.00
33	35582.00	194.32	0.700	0.30 (0.28)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 46743.93 Tc (MIN.) = 113.411  
EFFECTIVE AREA (ACRES) = 51414.96 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 67798.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 67798.9 TC (MIN.) = 113.41  
EFFECTIVE AREA (ACRES) = 51414.96 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.920  
PEAK FLOW RATE (CFS) = 46743.93

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22379.28	14.81	2.640	0.30 (0.24)	0.80	3255.4	10520.00
2	23469.11	17.52	2.397	0.30 (0.24)	0.80	3852.5	10600.00
3	24633.92	20.44	2.161	0.30 (0.24)	0.80	4490.6	10300.00
4	24648.47	20.48	2.159	0.30 (0.24)	0.80	4500.5	10230.00
5	25022.41	21.23	2.115	0.30 (0.24)	0.80	4718.5	10380.00

6	25207.12	21.61	2.094	0.30	( 0.24)	0.80	4825.7	10400.00
7	26165.38	23.58	1.979	0.30	( 0.24)	0.80	5381.3	10320.00
8	26416.45	24.10	1.949	0.30	( 0.24)	0.80	5525.8	300.00
9	27140.94	25.69	1.871	0.30	( 0.24)	0.80	6109.2	10360.00
10	28441.00	28.53	1.761	0.30	( 0.24)	0.80	7152.5	10340.00
11	28612.99	28.91	1.747	0.30	( 0.24)	0.80	7289.6	210.00
12	28897.13	29.75	1.715	0.30	( 0.24)	0.80	7591.6	10200.00
13	29027.36	30.14	1.701	0.30	( 0.24)	0.80	7729.8	10250.00
14	29446.80	31.38	1.669	0.30	( 0.24)	0.80	8171.6	10500.00
15	30254.52	33.87	1.605	0.30	( 0.24)	0.80	9025.7	10220.00
16	31173.14	36.68	1.532	0.30	( 0.24)	0.80	9984.3	110.00
17	33192.39	43.08	1.396	0.30	( 0.24)	0.80	12715.9	130.00
18	35936.63	52.31	1.258	0.30	( 0.24)	0.82	17117.6	50260.00
19	38188.27	62.79	1.153	0.30	( 0.25)	0.84	22489.8	390.00
20	40396.30	74.24	1.076	0.30	( 0.26)	0.87	28311.9	13100.00
21	41124.01	81.16	1.030	0.30	( 0.26)	0.88	31389.2	11801.00
22	43634.38	95.96	0.944	0.30	( 0.27)	0.90	39458.2	11701.00
23	45400.07	104.59	0.907	0.30	( 0.27)	0.91	45331.1	13500.00
24	46312.21	109.24	0.887	0.30	( 0.27)	0.92	48469.6	10800.00
25	46743.93	113.41	0.869	0.30	( 0.28)	0.92	51415.0	11130.00
26	46222.89	123.04	0.834	0.30	( 0.28)	0.93	56456.2	12410.00
27	45517.69	131.38	0.816	0.30	( 0.28)	0.93	60195.3	11201.00
28	45033.09	136.39	0.806	0.30	( 0.28)	0.93	61927.0	12201.00
29	43953.12	143.55	0.791	0.30	( 0.28)	0.93	63784.1	12231.00
30	42594.14	151.48	0.774	0.30	( 0.28)	0.93	65418.4	10400.00
31	41184.58	159.56	0.758	0.30	( 0.28)	0.94	66713.5	12010.00
32	39948.58	165.65	0.745	0.30	( 0.28)	0.94	67060.5	10210.00
33	35582.00	194.32	0.700	0.30	( 0.28)	0.94	67798.9	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S38- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FRAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV38.DAT  
TIME/DATE OF STUDY: 11:51 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.225
- 2) 10.00; 3.382
- 3) 15.00; 2.607
- 4) 20.00; 2.184
- 5) 25.00; 1.895
- 6) 30.00; 1.703
- 7) 40.00; 1.444
- 8) 50.00; 1.282
- 9) 60.00; 1.170
- 10) 90.00; 0.968
- 11) 120.00; 0.838
- 12) 180.00; 0.713
- 13) 360.00; 0.522
- 14) 1200.00; 0.227

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

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

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RU50EV37.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25207.12	21.61	0.30 ( 0.24)	0.80	4825.7	10400.00
2	27140.94	25.69	0.30 ( 0.24)	0.80	6109.2	10360.00
3	31173.14	36.68	0.30 ( 0.24)	0.80	9984.3	110.00
4	33192.39	43.08	0.30 ( 0.24)	0.80	12715.9	130.00
5	35936.63	52.31	0.30 ( 0.24)	0.82	17117.6	50260.00
6	38188.27	62.79	0.30 ( 0.25)	0.84	22489.8	390.00
7	40396.30	74.24	0.30 ( 0.26)	0.87	28311.9	13100.00
8	41124.01	81.16	0.30 ( 0.26)	0.88	31389.2	11801.00
9	43634.38	95.96	0.30 ( 0.27)	0.90	39458.2	11701.00
10	45400.07	104.59	0.30 ( 0.27)	0.91	45331.1	13500.00
11	46312.21	109.24	0.30 ( 0.27)	0.92	48469.6	10800.00
12	46743.93	113.41	0.30 ( 0.28)	0.92	51415.0	11130.00
13	46222.89	123.04	0.30 ( 0.28)	0.93	56456.2	12410.00
14	45517.69	131.38	0.30 ( 0.28)	0.93	60195.3	11201.00
15	45033.09	136.39	0.30 ( 0.28)	0.93	61927.0	12201.00
16	43953.12	143.55	0.30 ( 0.28)	0.93	63784.1	12231.00
17	42594.14	151.48	0.30 ( 0.28)	0.93	65418.4	10400.00
18	41184.58	159.56	0.30 ( 0.28)	0.94	66713.5	12010.00
19	39948.58	165.65	0.30 ( 0.28)	0.94	67060.5	10210.00
20	35582.00	194.32	0.30 ( 0.28)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25207.12	21.61	0.30 ( 0.24)	0.80	4825.7	10400.00
2	27140.94	25.69	0.30 ( 0.24)	0.80	6109.2	10360.00
3	31173.14	36.68	0.30 ( 0.24)	0.80	9984.3	110.00
4	33192.39	43.08	0.30 ( 0.24)	0.80	12715.9	130.00
5	35936.63	52.31	0.30 ( 0.24)	0.82	17117.6	50260.00
6	38188.27	62.79	0.30 ( 0.25)	0.84	22489.8	390.00
7	40396.30	74.24	0.30 ( 0.26)	0.87	28311.9	13100.00
8	41124.01	81.16	0.30 ( 0.26)	0.88	31389.2	11801.00
9	43634.38	95.96	0.30 ( 0.27)	0.90	39458.2	11701.00
10	45400.07	104.59	0.30 ( 0.27)	0.91	45331.1	13500.00
11	46312.21	109.24	0.30 ( 0.27)	0.92	48469.6	10800.00
12	46743.93	113.41	0.30 ( 0.28)	0.92	51415.0	11130.00
13	46222.89	123.04	0.30 ( 0.28)	0.93	56456.2	12410.00



14	45517.69	131.38	0.30	( 0.28)	0.93	60195.3	11201.00
15	45033.09	136.39	0.30	( 0.28)	0.93	61927.0	12201.00
16	43953.12	143.55	0.30	( 0.28)	0.93	63784.1	12231.00
17	42594.14	151.48	0.30	( 0.28)	0.93	65418.4	10400.00
18	41184.58	159.56	0.30	( 0.28)	0.94	66713.5	12010.00
19	39948.58	165.65	0.30	( 0.28)	0.94	67060.5	10210.00
20	35582.00	194.32	0.30	( 0.28)	0.94	67798.9	10100.00

TOTAL AREA (ACRES) = 67798.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 140.00 DOWNSTREAM (FEET) = 137.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 926.91 CHANNEL SLOPE = 0.0032  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 17.97

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.862

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.44	0.30	0.983	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.983

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 46751.95

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.13

AVERAGE FLOW DEPTH (FEET) = 17.97 TRAVEL TIME (MIN.) = 1.02

Tc (MIN.) = 114.43

SUBAREA AREA (ACRES) = 31.44 SUBAREA RUNOFF (CFS) = 16.05

EFFECTIVE AREA (ACRES) = 51446.40 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 67830.4 PEAK FLOW RATE (CFS) = 46743.93

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 17.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 17.97 FLOW VELOCITY (FEET/SEC.) = 15.13

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25207.12	22.83	2.021	0.30 ( 0.24)	0.80	4857.2	10400.00
2	27140.94	26.88	1.823	0.30 ( 0.24)	0.80	6140.7	10360.00
3	31173.14	37.82	1.500	0.30 ( 0.24)	0.80	10015.7	110.00
4	33192.39	44.20	1.376	0.30 ( 0.24)	0.80	12747.3	130.00
5	35936.63	53.41	1.244	0.30 ( 0.24)	0.82	17149.1	50260.00
6	38188.27	63.87	1.144	0.30 ( 0.25)	0.84	22521.3	390.00
7	40396.30	75.31	1.067	0.30 ( 0.26)	0.87	28343.4	13100.00
8	41124.01	82.21	1.020	0.30 ( 0.26)	0.88	31420.6	11801.00
9	43634.38	97.00	0.938	0.30 ( 0.27)	0.90	39489.6	11701.00
10	45400.07	105.62	0.900	0.30 ( 0.27)	0.91	45362.5	13500.00
11	46312.21	110.26	0.880	0.30 ( 0.27)	0.92	48501.1	10800.00

12	46743.93	114.43	0.862	0.30 ( 0.28)	0.92	51446.4	11130.00
13	46222.89	124.07	0.830	0.30 ( 0.28)	0.93	56487.6	12410.00
14	45517.69	132.41	0.812	0.30 ( 0.28)	0.93	60226.7	11201.00
15	45033.09	137.43	0.802	0.30 ( 0.28)	0.93	61958.4	12201.00
16	43953.12	144.59	0.787	0.30 ( 0.28)	0.93	63815.6	12231.00
17	42594.14	152.53	0.770	0.30 ( 0.28)	0.93	65449.9	10400.00
18	41184.58	160.62	0.753	0.30 ( 0.28)	0.94	66745.0	12010.00
19	39948.58	166.72	0.741	0.30 ( 0.28)	0.94	67091.9	10210.00
20	35582.00	195.42	0.697	0.30 ( 0.28)	0.94	67830.4	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 46743.93 Tc (MIN.) = 114.43

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 51446.40

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 1

-----  
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION (MIN.) = 114.43

RAINFALL INTENSITY (INCH/HR) = 0.86

AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92

EFFECTIVE STREAM AREA (ACRES) = 51446.40

TOTAL STREAM AREA (ACRES) = 67830.36

PEAK FLOW RATE (CFS) AT CONFLUENCE = 46743.93

\*\*\*\*\*

FLOW PROCESS FROM NODE 13810.00 TO NODE 13811.00 IS CODE = 21

-----  
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 648.54

ELEVATION DATA: UPSTREAM (FEET) = 756.46 DOWNSTREAM (FEET) = 586.02

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20

SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.293

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.027

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	-	5.58	0.30	1.000	65	12.29

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF (CFS) = 13.69

TOTAL AREA (ACRES) = 5.58 PEAK FLOW RATE (CFS) = 13.69

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 586.02 DOWNSTREAM(FEET) = 437.69  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 696.28 CHANNEL SLOPE = 0.2130  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.46  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.739  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 14.79 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29.95  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.26  
 AVERAGE FLOW DEPTH(FEET) = 0.44 TRAVEL TIME(MIN.) = 1.85  
 Tc(MIN.) = 14.15  
 SUBAREA AREA(ACRES) = 14.79 SUBAREA RUNOFF(CFS) = 32.47  
 EFFECTIVE AREA(ACRES) = 20.37 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 20.4 PEAK FLOW RATE(CFS) = 44.72  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.56  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.56 FLOW VELOCITY(FEET/SEC.) = 7.18  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 437.69 DOWNSTREAM(FEET) = 402.36  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 681.04 CHANNEL SLOPE = 0.0519  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.05  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.490  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 18.41 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 62.88  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.08  
 AVERAGE FLOW DEPTH(FEET) = 1.03 TRAVEL TIME(MIN.) = 2.23  
 Tc(MIN.) = 16.38  
 SUBAREA AREA(ACRES) = 18.41 SUBAREA RUNOFF(CFS) = 36.29  
 EFFECTIVE AREA(ACRES) = 38.78 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 38.8 PEAK FLOW RATE(CFS) = 76.44  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.15 FLOW VELOCITY(FEET/SEC.) = 5.41  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13812.00 = 2025.86 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 402.36 DOWNSTREAM(FEET) = 259.72  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1282.56 CHANNEL SLOPE = 0.1112  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.10  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.254  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 27.87 0.30 0.858 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.858  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 101.51  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.66  
 AVERAGE FLOW DEPTH(FEET) = 1.09 TRAVEL TIME(MIN.) = 2.79  
 Tc(MIN.) = 19.17  
 SUBAREA AREA(ACRES) = 27.87 SUBAREA RUNOFF(CFS) = 50.08  
 EFFECTIVE AREA(ACRES) = 66.65 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA(ACRES) = 66.7 PEAK FLOW RATE(CFS) = 118.29  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.19

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.19 FLOW VELOCITY(FEET/SEC.) = 8.05  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31

-----  
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00  
 FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 25.0 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 22.57  
 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 118.29  
 PIPE TRAVEL TIME(MIN.) = 1.78 Tc(MIN.) = 20.95  
 LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc(MIN.) = 20.95  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.129  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 83.64 0.30 0.570 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570  
 SUBAREA AREA(ACRES) = 83.64 SUBAREA RUNOFF(CFS) = 147.39  
 EFFECTIVE AREA(ACRES) = 150.29 AREA-AVERAGED Fm(INCH/HR) = 0.22  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA(ACRES) = 150.3 PEAK FLOW RATE(CFS) = 258.17

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 20.95  
 RAINFALL INTENSITY(INCH/HR) = 2.13  
 AREA-AVERAGED Fm(INCH/HR) = 0.22  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.73  
 EFFECTIVE STREAM AREA(ACRES) = 150.29  
 TOTAL STREAM AREA(ACRES) = 150.29  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 258.17

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25207.12	22.83	2.021	0.30( 0.24)	0.80	4857.2	10400.00
1	27140.94	26.88	1.823	0.30( 0.24)	0.80	6140.7	10360.00
1	31173.14	37.82	1.500	0.30( 0.24)	0.80	10015.7	110.00
1	33192.39	44.20	1.376	0.30( 0.24)	0.80	12747.3	130.00
1	35936.63	53.41	1.244	0.30( 0.24)	0.82	17149.1	50260.00
1	38188.27	63.87	1.144	0.30( 0.25)	0.84	22521.3	390.00
1	40396.30	75.31	1.067	0.30( 0.26)	0.87	28343.4	13100.00
1	41124.01	82.21	1.020	0.30( 0.26)	0.88	31420.6	11801.00
1	43634.38	97.00	0.938	0.30( 0.27)	0.90	39489.6	11701.00
1	45400.07	105.62	0.900	0.30( 0.27)	0.91	45362.5	13500.00
1	46312.21	110.26	0.880	0.30( 0.27)	0.92	48501.1	10800.00
1	46743.93	114.43	0.862	0.30( 0.28)	0.92	51446.4	11130.00
1	46222.89	124.07	0.830	0.30( 0.28)	0.93	56487.6	12410.00
1	45517.69	132.41	0.812	0.30( 0.28)	0.93	60226.7	11201.00
1	45033.09	137.43	0.802	0.30( 0.28)	0.93	61958.4	12201.00
1	43953.12	144.59	0.787	0.30( 0.28)	0.93	63815.6	12231.00
1	42594.14	152.53	0.770	0.30( 0.28)	0.93	65449.9	10400.00
1	41184.58	160.62	0.753	0.30( 0.28)	0.94	66745.0	12010.00
1	39948.58	166.72	0.741	0.30( 0.28)	0.94	67091.9	10210.00
1	35582.00	195.42	0.697	0.30( 0.28)	0.94	67830.4	10100.00
2	258.17	20.95	2.129	0.30( 0.22)	0.73	150.3	13810.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24803.13	20.95	2.129	0.30( 0.24)	0.80	4608.7	13810.00
2	25450.63	22.83	2.021	0.30( 0.24)	0.80	5007.5	10400.00
3	27357.72	26.88	1.823	0.30( 0.24)	0.80	6291.0	10360.00
4	31346.30	37.82	1.500	0.30( 0.24)	0.80	10166.0	110.00
5	33348.71	44.20	1.376	0.30( 0.24)	0.80	12897.6	130.00
6	36075.09	53.41	1.244	0.30( 0.24)	0.82	17299.4	50260.00
7	38313.21	63.87	1.144	0.30( 0.25)	0.84	22671.6	390.00
8	40510.83	75.31	1.067	0.30( 0.26)	0.87	28493.7	13100.00
9	41232.24	82.21	1.020	0.30( 0.26)	0.88	31570.9	11801.00
10	43731.41	97.00	0.938	0.30( 0.27)	0.90	39639.9	11701.00
11	45492.05	105.62	0.900	0.30( 0.27)	0.91	45512.8	13500.00
12	46401.48	110.26	0.880	0.30( 0.27)	0.91	48651.3	10800.00
13	46830.75	114.43	0.862	0.30( 0.28)	0.92	51596.7	11130.00
14	46305.30	124.07	0.830	0.30( 0.28)	0.93	56637.9	12410.00
15	45597.75	132.41	0.812	0.30( 0.28)	0.93	60377.0	11201.00
16	45111.73	137.43	0.802	0.30( 0.28)	0.93	62108.7	12201.00
17	44029.75	144.59	0.787	0.30( 0.28)	0.93	63965.9	12231.00
18	42668.53	152.53	0.770	0.30( 0.28)	0.93	65600.2	10400.00
19	41256.69	160.62	0.753	0.30( 0.28)	0.93	66895.2	12010.00
20	40018.97	166.72	0.741	0.30( 0.28)	0.94	67242.2	10210.00
21	35646.43	195.42	0.697	0.30( 0.28)	0.94	67980.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 46830.75 Tc(MIN.) = 114.43  
 EFFECTIVE AREA(ACRES) = 51596.69 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 67980.6  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56

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

=====  
 ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 18.08  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.856  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 31.60 0.30 0.683 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 46840.01  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.03  
 AVERAGE FLOW DEPTH(FEET) = 18.08 TRAVEL TIME(MIN.) = 1.40  
 Tc(MIN.) = 115.83  
 SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 18.52  
 EFFECTIVE AREA(ACRES) = 51628.29 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 68012.2 PEAK FLOW RATE(CFS) = 46830.75

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 18.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 18.08 FLOW VELOCITY (FEET/SEC.) = 15.03  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24803.13	22.63	2.032	0.30 ( 0.24)	0.80	4640.3	13810.00
2	25450.63	24.49	1.924	0.30 ( 0.24)	0.80	5039.1	10400.00
3	27357.72	28.50	1.760	0.30 ( 0.24)	0.80	6322.6	10360.00
4	31346.30	39.39	1.460	0.30 ( 0.24)	0.80	10197.6	110.00
5	33348.71	45.74	1.351	0.30 ( 0.24)	0.80	12929.2	130.00
6	36075.09	54.91	1.227	0.30 ( 0.24)	0.82	17331.0	50260.00
7	38313.21	65.35	1.134	0.30 ( 0.25)	0.84	22703.2	390.00
8	40510.83	76.76	1.057	0.30 ( 0.26)	0.87	28525.3	13100.00
9	41232.24	83.66	1.011	0.30 ( 0.26)	0.88	31602.5	11801.00
10	43731.41	98.42	0.932	0.30 ( 0.27)	0.90	39671.5	11701.00
11	45492.05	107.03	0.894	0.30 ( 0.27)	0.91	45544.4	13500.00
12	46401.48	111.66	0.874	0.30 ( 0.27)	0.91	48682.9	10800.00
13	46830.75	115.83	0.856	0.30 ( 0.28)	0.92	51628.3	11130.00
14	46305.30	125.47	0.827	0.30 ( 0.28)	0.93	56669.5	12410.00
15	45597.75	133.82	0.809	0.30 ( 0.28)	0.93	60408.6	11201.00
16	45111.73	138.84	0.799	0.30 ( 0.28)	0.93	62140.3	12201.00
17	44029.75	146.01	0.784	0.30 ( 0.28)	0.93	63997.5	12231.00
18	42668.53	153.96	0.767	0.30 ( 0.28)	0.93	65631.8	10400.00
19	41256.69	162.07	0.750	0.30 ( 0.28)	0.93	66926.8	12010.00
20	40018.97	168.18	0.738	0.30 ( 0.28)	0.94	67273.8	10210.00
21	35646.43	196.93	0.695	0.30 ( 0.28)	0.94	68012.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 46830.75 Tc (MIN.) = 115.83  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 51628.29

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 115.83  
 RAINFALL INTENSITY (INCH/HR) = 0.86  
 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA (ACRES) = 51628.29  
 TOTAL STREAM AREA (ACRES) = 68012.25  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 46830.75

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 744.71  
 ELEVATION DATA: UPSTREAM (FEET) = 1100.95 DOWNSTREAM (FEET) = 959.21

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.858  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.784

SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
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NATURAL FAIR COVER "CHAPARRAL, BROADLEAF"	-	5.06	0.30	1.000	65	13.86
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF (CFS) = 11.31

TOTAL AREA (ACRES) = 5.06 PEAK FLOW RATE (CFS) = 11.31

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 959.21 DOWNSTREAM (FEET) = 832.83  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1076.71 CHANNEL SLOPE = 0.1174

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.69

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.443

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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USER-DEFINED	-	32.57	0.30	1.000	-
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 42.87

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.82

AVERAGE FLOW DEPTH (FEET) = 0.65 TRAVEL TIME (MIN.) = 3.08

Tc (MIN.) = 16.94

SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 62.82

EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.000

TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 72.58

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 0.88 FLOW VELOCITY (FEET/SEC.) = 6.99

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 832.83 DOWNSTREAM(FEET) = 572.49  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1883.58 CHANNEL SLOPE = 0.1382  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.03  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.139

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 32.23 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 99.30  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.18  
AVERAGE FLOW DEPTH(FEET) = 1.01 TRAVEL TIME(MIN.) = 3.84  
Tc(MIN.) = 20.78  
SUBAREA AREA(ACRES) = 32.23 SUBAREA RUNOFF(CFS) = 53.35  
EFFECTIVE AREA(ACRES) = 69.86 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 69.9 PEAK FLOW RATE(CFS) = 115.63  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.10  
  
END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.10 FLOW VELOCITY(FEET/SEC.) = 8.59  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 572.49 DOWNSTREAM(FEET) = 471.65  
CHANNEL LENGTH THRU SUBAREA(FEET) = 943.78 CHANNEL SLOPE = 0.1068  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.32  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.030

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 27.51 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 137.05  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.31  
AVERAGE FLOW DEPTH(FEET) = 1.31 TRAVEL TIME(MIN.) = 1.89  
Tc(MIN.) = 22.67  
SUBAREA AREA(ACRES) = 27.51 SUBAREA RUNOFF(CFS) = 42.83  
EFFECTIVE AREA(ACRES) = 97.37 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 97.4 PEAK FLOW RATE(CFS) = 151.58  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.38 FLOW VELOCITY(FEET/SEC.) = 8.58  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 471.65 DOWNSTREAM(FEET) = 347.06  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1647.45 CHANNEL SLOPE = 0.0756  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.90  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.861

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 94.21 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 217.79  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.51  
AVERAGE FLOW DEPTH(FEET) = 1.86 TRAVEL TIME(MIN.) = 3.23  
Tc(MIN.) = 25.90  
SUBAREA AREA(ACRES) = 94.21 SUBAREA RUNOFF(CFS) = 132.32  
EFFECTIVE AREA(ACRES) = 191.58 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 191.6 PEAK FLOW RATE(CFS) = 269.08  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 2.09 FLOW VELOCITY(FEET/SEC.) = 9.06  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 347.06 DOWNSTREAM(FEET) = 269.29  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1696.71 CHANNEL SLOPE = 0.0458  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.09  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.734

SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 233.25 0.30 1.000 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 419.75  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.61

AVERAGE FLOW DEPTH (FEET) = 3.03 TRAVEL TIME (MIN.) = 3.28  
 Tc (MIN.) = 29.18  
 SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 301.14  
 EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 548.48  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.48 FLOW VELOCITY (FEET/SEC.) = 9.28  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 56  
 -----

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

ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.16  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.593

SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 134.70 0.30 0.880 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 629.05  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.31  
 AVERAGE FLOW DEPTH (FEET) = 4.14 TRAVEL TIME (MIN.) = 5.07  
 Tc (MIN.) = 34.25  
 SUBAREA AREA (ACRES) = 134.70 SUBAREA RUNOFF (CFS) = 161.11  
 EFFECTIVE AREA (ACRES) = 559.53 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 559.5 PEAK FLOW RATE (CFS) = 655.45  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 4.23 FLOW VELOCITY (FEET/SEC.) = 8.40  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13837.00 = 10522.15 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 191.87 DOWNSTREAM (FEET) = 133.00  
 FLOW LENGTH (FEET) = 1151.02 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 66.0 INCH PIPE IS 49.4 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 34.36

ESTIMATED PIPE DIAMETER (INCH) = 66.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 655.45  
 PIPE TRAVEL TIME (MIN.) = 0.56 Tc (MIN.) = 34.81  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 34.81  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.578  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 5.97 0.30 0.622 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622  
 SUBAREA AREA (ACRES) = 5.97 SUBAREA RUNOFF (CFS) = 7.48  
 EFFECTIVE AREA (ACRES) = 565.50 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 565.5 PEAK FLOW RATE (CFS) = 655.65

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 34.81  
 RAINFALL INTENSITY (INCH/HR) = 1.58  
 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97  
 EFFECTIVE STREAM AREA (ACRES) = 565.50  
 TOTAL STREAM AREA (ACRES) = 565.50  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 655.65

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24803.13	22.63	2.032	0.30 ( 0.24)	0.80	4640.3	13810.00
1	25450.63	24.49	1.924	0.30 ( 0.24)	0.80	5039.1	10400.00
1	27357.72	28.50	1.760	0.30 ( 0.24)	0.80	6322.6	10360.00
1	31346.30	39.39	1.460	0.30 ( 0.24)	0.80	10197.6	110.00
1	33348.71	45.74	1.351	0.30 ( 0.24)	0.80	12929.2	130.00
1	36075.09	54.91	1.227	0.30 ( 0.24)	0.82	17331.0	50260.00
1	38313.21	65.35	1.134	0.30 ( 0.25)	0.84	22703.2	390.00
1	40510.83	76.76	1.057	0.30 ( 0.26)	0.87	28525.3	13100.00
1	41232.24	83.66	1.011	0.30 ( 0.26)	0.88	31602.5	11801.00
1	43731.41	98.42	0.932	0.30 ( 0.27)	0.90	39671.5	11701.00
1	45492.05	107.03	0.894	0.30 ( 0.27)	0.91	45544.4	13500.00
1	46401.48	111.66	0.874	0.30 ( 0.27)	0.91	48682.9	10800.00
1	46830.75	115.83	0.856	0.30 ( 0.28)	0.92	51628.3	11130.00
1	46305.30	125.47	0.827	0.30 ( 0.28)	0.93	56669.5	12410.00
1	45597.75	133.82	0.809	0.30 ( 0.28)	0.93	60408.6	11201.00

1	45111.73	138.84	0.799	0.30	( 0.28)	0.93	62140.3	12201.00
1	44029.75	146.01	0.784	0.30	( 0.28)	0.93	63997.5	12231.00
1	42668.53	153.96	0.767	0.30	( 0.28)	0.93	65631.8	10400.00
1	41256.69	162.07	0.750	0.30	( 0.28)	0.93	66926.8	12010.00
1	40018.97	168.18	0.738	0.30	( 0.28)	0.94	67273.8	10210.00
1	35646.43	196.93	0.695	0.30	( 0.28)	0.94	68012.2	10100.00
2	655.65	34.81	1.578	0.30	( 0.29)	0.97	565.5	13830.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25379.43	22.63	2.032	0.30( 0.24)	0.81	5007.9	13810.00
2	26035.81	24.49	1.924	0.30( 0.24)	0.81	5436.9	10400.00
3	27970.45	28.50	1.760	0.30( 0.24)	0.81	6785.6	10360.00
4	30324.73	34.81	1.578	0.30( 0.24)	0.81	9133.6	13830.00
5	31941.63	39.39	1.460	0.30( 0.24)	0.80	10763.1	110.00
6	33888.64	45.74	1.351	0.30( 0.24)	0.81	13494.7	130.00
7	36551.89	54.91	1.227	0.30( 0.25)	0.82	17896.5	50260.00
8	38742.68	65.35	1.134	0.30( 0.25)	0.85	23268.7	390.00
9	40901.18	76.76	1.057	0.30( 0.26)	0.87	29090.8	13100.00
10	41598.94	83.66	1.011	0.30( 0.26)	0.88	32168.0	11801.00
11	44057.82	98.42	0.932	0.30( 0.27)	0.90	40237.0	11701.00
12	45799.47	107.03	0.894	0.30( 0.27)	0.91	46109.9	13500.00
13	46698.70	111.66	0.874	0.30( 0.27)	0.92	49248.4	10800.00
14	47118.76	115.83	0.856	0.30( 0.28)	0.92	52193.8	11130.00
15	46578.32	125.47	0.827	0.30( 0.28)	0.93	57235.0	12410.00
16	45861.91	133.82	0.809	0.30( 0.28)	0.93	60974.1	11201.00
17	45370.58	138.84	0.799	0.30( 0.28)	0.93	62705.8	12201.00
18	44280.99	146.01	0.784	0.30( 0.28)	0.93	64563.0	12231.00
19	42911.34	153.96	0.767	0.30( 0.28)	0.93	66197.3	10400.00
20	41490.91	162.07	0.750	0.30( 0.28)	0.94	67492.3	12010.00
21	40246.71	168.18	0.738	0.30( 0.28)	0.94	67839.3	10210.00
22	35852.49	196.93	0.695	0.30( 0.28)	0.94	68577.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 47118.76 Tc(MIN.) = 115.83  
EFFECTIVE AREA(ACRES) = 52193.79 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68577.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 133.00 DOWNSTREAM(FEET) = 130.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 654.44 CHANNEL SLOPE = 0.0046

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 16.51

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.853

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  
USER-DEFINED - 6.61 0.30 0.975 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47120.43  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.19  
AVERAGE FLOW DEPTH(FEET) = 16.51 TRAVEL TIME(MIN.) = 0.63  
Tc(MIN.) = 116.47  
SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 3.34  
EFFECTIVE AREA(ACRES) = 52200.40 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68584.4 PEAK FLOW RATE(CFS) = 47118.76  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 16.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 16.51 FLOW VELOCITY(FEET/SEC.) = 17.19

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25379.43	23.39	1.988	0.30( 0.24)	0.81	5014.5	13810.00
2	26035.81	25.24	1.886	0.30( 0.24)	0.81	5443.5	10400.00
3	27970.45	29.24	1.732	0.30( 0.24)	0.81	6792.2	10360.00
4	30324.73	35.53	1.560	0.30( 0.24)	0.81	9140.2	13830.00
5	31941.63	40.10	1.442	0.30( 0.24)	0.80	10769.7	110.00
6	33888.64	46.44	1.340	0.30( 0.24)	0.81	13501.3	130.00
7	36551.89	55.59	1.219	0.30( 0.25)	0.82	17903.1	50260.00
8	38742.68	66.02	1.129	0.30( 0.25)	0.85	23275.3	390.00
9	40901.18	77.42	1.053	0.30( 0.26)	0.87	29097.4	13100.00
10	41598.94	84.32	1.006	0.30( 0.26)	0.88	32174.6	11801.00
11	44057.82	99.07	0.929	0.30( 0.27)	0.90	40243.6	11701.00
12	45799.47	107.67	0.891	0.30( 0.27)	0.91	46116.5	13500.00
13	46698.70	112.30	0.871	0.30( 0.27)	0.92	49255.1	10800.00
14	47118.76	116.47	0.853	0.30( 0.28)	0.92	52200.4	11130.00
15	46578.32	126.11	0.825	0.30( 0.28)	0.93	57241.6	12410.00
16	45861.91	134.46	0.808	0.30( 0.28)	0.93	60980.7	11201.00
17	45370.58	139.48	0.797	0.30( 0.28)	0.93	62712.4	12201.00
18	44280.99	146.65	0.782	0.30( 0.28)	0.93	64569.6	12231.00
19	42911.34	154.62	0.766	0.30( 0.28)	0.93	66203.9	10400.00
20	41490.91	162.72	0.749	0.30( 0.28)	0.94	67499.0	12010.00
21	40246.71	168.84	0.736	0.30( 0.28)	0.94	67845.9	10210.00
22	35852.49	197.62	0.694	0.30( 0.28)	0.94	68584.4	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 47118.76 Tc(MIN.) = 116.47

AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 52200.40

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 116.47  
RAINFALL INTENSITY(INCH/HR) = 0.85  
AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92  
EFFECTIVE STREAM AREA(ACRES) = 52200.40  
TOTAL STREAM AREA(ACRES) = 68584.36  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 47118.76

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 617.57  
ELEVATION DATA: UPSTREAM(FEET) = 646.95 DOWNSTREAM(FEET) = 490.10

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.137  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.051  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL,BROADLEAF"	-	4.95	0.30	1.000	65	12.14

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 12.25  
TOTAL AREA(ACRES) = 4.95 PEAK FLOW RATE(CFS) = 12.25

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 490.10 DOWNSTREAM(FEET) = 440.98  
CHANNEL LENGTH THRU SUBAREA(FEET) = 351.14 CHANNEL SLOPE = 0.1399  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.36  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.846  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	4.02	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.86  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.43  
AVERAGE FLOW DEPTH(FEET) = 0.36 TRAVEL TIME(MIN.) = 1.32  
Tc(MIN.) = 13.46  
SUBAREA AREA(ACRES) = 4.02 SUBAREA RUNOFF(CFS) = 9.21  
EFFECTIVE AREA(ACRES) = 8.97 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 20.55  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.40 FLOW VELOCITY(FEET/SEC.) = 4.74  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 440.98 DOWNSTREAM(FEET) = 395.76  
CHANNEL LENGTH THRU SUBAREA(FEET) = 512.91 CHANNEL SLOPE = 0.0882  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.56  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.578  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.17	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 27.91  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.55  
AVERAGE FLOW DEPTH(FEET) = 0.55 TRAVEL TIME(MIN.) = 1.88  
Tc(MIN.) = 15.34  
SUBAREA AREA(ACRES) = 7.17 SUBAREA RUNOFF(CFS) = 14.70  
EFFECTIVE AREA(ACRES) = 16.14 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 16.1 PEAK FLOW RATE(CFS) = 33.10  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.61 FLOW VELOCITY(FEET/SEC.) = 4.86  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 56  
-----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 395.76 DOWNSTREAM(FEET) = 354.94  
CHANNEL LENGTH THRU SUBAREA(FEET) = 443.69 CHANNEL SLOPE = 0.0920  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.67  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.459  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	6.76	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30



SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 39.67  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.23  
 AVERAGE FLOW DEPTH(FEET) = 0.67 TRAVEL TIME(MIN.) = 1.41  
 Tc(MIN.) = 16.75  
 SUBAREA AREA(ACRES) = 6.76 SUBAREA RUNOFF(CFS) = 13.14  
 EFFECTIVE AREA(ACRES) = 22.90 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 22.9 PEAK FLOW RATE(CFS) = 44.50  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.71 FLOW VELOCITY(FEET/SEC.) = 5.45  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13853.00 = 1925.31 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13853.00 TO NODE 13854.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 354.94 DOWNSTREAM(FEET) = 263.57  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 962.09 CHANNEL SLOPE = 0.0950  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.86  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.237  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	18.16	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 60.34  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.12  
 AVERAGE FLOW DEPTH(FEET) = 0.84 TRAVEL TIME(MIN.) = 2.62  
 Tc(MIN.) = 19.37  
 SUBAREA AREA(ACRES) = 18.16 SUBAREA RUNOFF(CFS) = 31.66  
 EFFECTIVE AREA(ACRES) = 41.06 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 41.1 PEAK FLOW RATE(CFS) = 71.59  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.93 FLOW VELOCITY(FEET/SEC.) = 6.46  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13854.00 = 2887.40 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13854.00 TO NODE 13855.00 IS CODE = 56  
 -----

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 263.57 DOWNSTREAM(FEET) = 188.74

CHANNEL LENGTH THRU SUBAREA(FEET) = 1228.77 CHANNEL SLOPE = 0.0609  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.32  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.031

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	38.75	0.30	0.879	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.879  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 102.43  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.25  
 AVERAGE FLOW DEPTH(FEET) = 1.30 TRAVEL TIME(MIN.) = 3.27  
 Tc(MIN.) = 22.65  
 SUBAREA AREA(ACRES) = 38.75 SUBAREA RUNOFF(CFS) = 61.64  
 EFFECTIVE AREA(ACRES) = 79.81 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
 TOTAL AREA(ACRES) = 79.8 PEAK FLOW RATE(CFS) = 125.61  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.46 FLOW VELOCITY(FEET/SEC.) = 6.66  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13855.00 = 4116.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 188.74 DOWNSTREAM(FEET) = 130.00  
 FLOW LENGTH(FEET) = 2092.67 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 39.0 INCH PIPE IS 30.6 INCHES  
 PIPE-FLOW VELOCITY(FEET/SEC.) = 18.01  
 ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1  
 PIPE-FLOW(CFS) = 125.61  
 PIPE TRAVEL TIME(MIN.) = 1.94 Tc(MIN.) = 24.58  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13860.00 = 6208.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 24.58  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.919  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.41	0.30	0.707	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707  
 SUBAREA AREA(ACRES) = 43.41 SUBAREA RUNOFF(CFS) = 66.69  
 EFFECTIVE AREA(ACRES) = 123.22 AREA-AVERAGED Fm(INCH/HR) = 0.26  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86

TOTAL AREA (ACRES) = 123.2 PEAK FLOW RATE (CFS) = 184.26

\*\*\*\*\*

FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION (MIN.) = 24.58
RAINFALL INTENSITY (INCH/HR) = 1.92
AREA-AVERAGED Fm (INCH/HR) = 0.26
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.86
EFFECTIVE STREAM AREA (ACRES) = 123.22
TOTAL STREAM AREA (ACRES) = 123.22
PEAK FLOW RATE (CFS) AT CONFLUENCE = 184.26

\*\* CONFLUENCE DATA \*\*

Table with columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp (Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 22 rows of data.

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

\*\* PEAK FLOW RATE TABLE \*\*

Table with columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp (Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 6 rows of data.

Table with columns: Node, Q, Tc, Intensity, Fp, Ap, Ae, Headwater. Contains 23 rows of data.

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 47184.83 Tc (MIN.) = 116.47
EFFECTIVE AREA (ACRES) = 52323.62 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA (ACRES) = 68707.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 130.00 DOWNSTREAM (FEET) = 120.57
CHANNEL LENGTH THRU SUBAREA (FEET) = 610.77 CHANNEL SLOPE = 0.0154
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.02
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.852
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 4.89 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 47186.05
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 26.51
AVERAGE FLOW DEPTH (FEET) = 12.02 TRAVEL TIME (MIN.) = 0.38
Tc (MIN.) = 116.85

SUBAREA AREA (ACRES) = 4.89 SUBAREA RUNOFF (CFS) = 2.43
EFFECTIVE AREA (ACRES) = 52328.51 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA (ACRES) = 68712.5 PEAK FLOW RATE (CFS) = 47184.83
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 12.02 FLOW VELOCITY (FEET/SEC.) = 26.51

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25562.02	23.85	1.962	0.30 ( 0.24)	0.81	5136.6	13810.00
2	25986.90	25.04	1.893	0.30 ( 0.24)	0.81	5419.2	13850.00
3	26216.37	25.70	1.868	0.30 ( 0.24)	0.81	5571.6	10400.00
4	28133.98	29.69	1.715	0.30 ( 0.24)	0.81	6920.3	10360.00
5	30469.14	35.97	1.548	0.30 ( 0.24)	0.81	9268.3	13830.00
6	32073.04	40.53	1.435	0.30 ( 0.24)	0.81	10897.8	110.00
7	34008.65	46.86	1.333	0.30 ( 0.24)	0.81	13629.4	130.00
8	36658.55	56.01	1.215	0.30 ( 0.25)	0.82	18031.2	50260.00
9	38839.38	66.42	1.127	0.30 ( 0.25)	0.85	23403.4	390.00
10	40989.35	77.82	1.050	0.30 ( 0.26)	0.87	29225.5	13100.00
11	41681.97	84.72	1.004	0.30 ( 0.26)	0.88	32302.7	11801.00
12	44132.25	99.46	0.927	0.30 ( 0.27)	0.90	40371.7	11701.00
13	45869.77	108.06	0.890	0.30 ( 0.27)	0.91	46244.7	13500.00
14	46766.77	112.68	0.870	0.30 ( 0.27)	0.91	49383.2	10800.00
15	47184.83	116.85	0.852	0.30 ( 0.28)	0.92	52328.5	11130.00
16	46641.28	126.49	0.824	0.30 ( 0.28)	0.93	57369.7	12410.00
17	45922.95	134.85	0.807	0.30 ( 0.28)	0.93	61108.8	11201.00
18	45430.45	139.87	0.797	0.30 ( 0.28)	0.93	62840.5	12201.00
19	44339.20	147.05	0.782	0.30 ( 0.28)	0.93	64697.7	12231.00
20	42967.71	155.01	0.765	0.30 ( 0.28)	0.93	66332.0	10400.00
21	41545.41	163.12	0.748	0.30 ( 0.28)	0.93	67627.1	12010.00
22	40299.79	169.25	0.735	0.30 ( 0.28)	0.94	67974.0	10210.00
23	35900.92	198.04	0.694	0.30 ( 0.28)	0.94	68712.5	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 47184.83 Tc(MIN.) = 116.85  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 52328.51

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

-----  
 TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 116.85  
 RAINFALL INTENSITY(INCH/HR) = 0.85  
 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA(ACRES) = 52328.51  
 TOTAL STREAM AREA(ACRES) = 68712.47  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 47184.83

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13870.00 TO NODE 13871.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

-----  
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 872.65  
 ELEVATION DATA: UPSTREAM(FEET) = 558.52 DOWNSTREAM(FEET) = 436.47

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 15.704

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.547

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
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NATURAL FAIR COVER

"GRASS" - 7.32 0.30 1.000 65 15.70

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF(CFS) = 14.81

TOTAL AREA(ACRES) = 7.32 PEAK FLOW RATE(CFS) = 14.81

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 436.47 DOWNSTREAM(FEET) = 337.62

CHANNEL LENGTH THRU SUBAREA(FEET) = 827.95 CHANNEL SLOPE = 0.1194

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.51

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.311

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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USER-DEFINED - 13.01 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 26.60

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.93

AVERAGE FLOW DEPTH(FEET) = 0.49 TRAVEL TIME(MIN.) = 2.80

Tc(MIN.) = 18.50

SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 23.54

EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 36.79

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.59 FLOW VELOCITY(FEET/SEC.) = 5.55

LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88

CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.94

\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.099  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	32.99	0.30	0.923	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.923  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 63.87  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.88  
 AVERAGE FLOW DEPTH (FEET) = 0.92 TRAVEL TIME (MIN.) = 2.98  
 Tc (MIN.) = 21.48  
 SUBAREA AREA (ACRES) = 32.99 SUBAREA RUNOFF (CFS) = 54.09  
 EFFECTIVE AREA (ACRES) = 53.32 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 53.3 PEAK FLOW RATE (CFS) = 87.00  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.10  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.10 FLOW VELOCITY (FEET/SEC.) = 6.51  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 56  
 -----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<<  
 -----  
 ELEVATION DATA: UPSTREAM (FEET) = 253.88 DOWNSTREAM (FEET) = 160.73  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1518.60 CHANNEL SLOPE = 0.0613  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.09  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.925  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	30.94	0.30	0.900	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.900  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 110.06  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.45  
 AVERAGE FLOW DEPTH (FEET) = 1.07 TRAVEL TIME (MIN.) = 3.00  
 Tc (MIN.) = 24.47  
 SUBAREA AREA (ACRES) = 30.94 SUBAREA RUNOFF (CFS) = 46.10  
 EFFECTIVE AREA (ACRES) = 84.26 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 84.3 PEAK FLOW RATE (CFS) = 124.79  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.15  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.15 FLOW VELOCITY (FEET/SEC.) = 8.78  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 56  
 -----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<<  
 -----  
 ELEVATION DATA: UPSTREAM (FEET) = 160.73 DOWNSTREAM (FEET) = 158.14  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 582.74 CHANNEL SLOPE = 0.0044  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.90  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.820  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	73.67	0.30	0.930	-

 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.930  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 175.88  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.90  
 AVERAGE FLOW DEPTH (FEET) = 2.87 TRAVEL TIME (MIN.) = 2.49  
 Tc (MIN.) = 26.96  
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 102.15  
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 218.91  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.21  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.21 FLOW VELOCITY (FEET/SEC.) = 4.14  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31  
 -----  
 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<<  
 -----  
 ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57  
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 51.0 INCH PIPE IS 40.1 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 18.30  
 ESTIMATED PIPE DIAMETER (INCH) = 51.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 218.91  
 PIPE TRAVEL TIME (MIN.) = 1.69 Tc (MIN.) = 28.65  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81  
 -----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 -----

MAINLINE Tc (MIN.) = 28.65  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.755  
 SUBAREA LOSS RATE DATA (AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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USER-DEFINED - 34.90 0.30 0.743 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743  
 SUBAREA AREA (ACRES) = 34.90 SUBAREA RUNOFF (CFS) = 48.11  
 EFFECTIVE AREA (ACRES) = 192.83 AREA-AVERAGED Fm (INCH/HR) = 0.27  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA (ACRES) = 192.8 PEAK FLOW RATE (CFS) = 257.80

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FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<<

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TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 28.65  
 RAINFALL INTENSITY (INCH/HR) = 1.75  
 AREA-AVERAGED Fm (INCH/HR) = 0.27  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.90  
 EFFECTIVE STREAM AREA (ACRES) = 192.83  
 TOTAL STREAM AREA (ACRES) = 192.83  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 257.80

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25562.02	23.85	1.962	0.30 ( 0.24)	0.81	5136.6	13810.00
1	25986.90	25.04	1.893	0.30 ( 0.24)	0.81	5419.2	13850.00
1	26216.37	25.70	1.868	0.30 ( 0.24)	0.81	5571.6	10400.00
1	28133.98	29.69	1.715	0.30 ( 0.24)	0.81	6920.3	10360.00
1	30469.14	35.97	1.548	0.30 ( 0.24)	0.81	9268.3	13830.00
1	32073.04	40.53	1.435	0.30 ( 0.24)	0.81	10897.8	110.00
1	34008.65	46.86	1.333	0.30 ( 0.24)	0.81	13629.4	130.00
1	36658.55	56.01	1.215	0.30 ( 0.25)	0.82	18031.2	50260.00
1	38839.38	66.42	1.127	0.30 ( 0.25)	0.85	23403.4	390.00
1	40989.35	77.82	1.050	0.30 ( 0.26)	0.87	29225.5	13100.00
1	41681.97	84.72	1.004	0.30 ( 0.26)	0.88	32302.7	11801.00
1	44132.25	99.46	0.927	0.30 ( 0.27)	0.90	40371.7	11701.00
1	45869.77	108.06	0.890	0.30 ( 0.27)	0.91	46244.7	13500.00
1	46766.77	112.68	0.870	0.30 ( 0.27)	0.91	49383.2	10800.00
1	47184.83	116.85	0.852	0.30 ( 0.28)	0.92	52328.5	11130.00
1	46641.28	126.49	0.824	0.30 ( 0.28)	0.93	57369.7	12410.00
1	45922.95	134.85	0.807	0.30 ( 0.28)	0.93	61108.8	11201.00
1	45430.45	139.87	0.797	0.30 ( 0.28)	0.93	62840.5	12201.00
1	44339.20	147.05	0.782	0.30 ( 0.28)	0.93	64697.7	12231.00
1	42967.71	155.01	0.765	0.30 ( 0.28)	0.93	66332.0	10400.00
1	41545.41	163.12	0.748	0.30 ( 0.28)	0.93	67627.1	12010.00
1	40299.79	169.25	0.735	0.30 ( 0.28)	0.94	67974.0	10210.00
1	35900.92	198.04	0.694	0.30 ( 0.28)	0.94	68712.5	10100.00
2	257.80	28.65	1.755	0.30 ( 0.27)	0.90	192.8	13870.00

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

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	25806.46	23.85	1.962	0.30 ( 0.24)	0.81	5297.1 13810.00
2	26233.24	25.04	1.893	0.30 ( 0.24)	0.81	5587.8 13850.00
3	26465.25	25.70	1.868	0.30 ( 0.24)	0.81	5744.6 10400.00
4	27894.08	28.65	1.755	0.30 ( 0.24)	0.81	6763.1 13870.00
5	28384.88	29.69	1.715	0.30 ( 0.24)	0.81	7113.2 10360.00
6	30691.15	35.97	1.548	0.30 ( 0.24)	0.81	9461.2 13830.00
7	32275.44	40.53	1.435	0.30 ( 0.24)	0.81	11090.6 110.00
8	34193.25	46.86	1.333	0.30 ( 0.24)	0.81	13822.2 130.00
9	36822.65	56.01	1.215	0.30 ( 0.25)	0.82	18224.0 50260.00
10	38988.20	66.42	1.127	0.30 ( 0.25)	0.85	23596.2 390.00
11	41124.86	77.82	1.050	0.30 ( 0.26)	0.87	29418.3 13100.00
12	41809.42	84.72	1.004	0.30 ( 0.26)	0.88	32495.6 11801.00
13	44246.41	99.46	0.927	0.30 ( 0.27)	0.90	40564.6 11701.00
14	45977.46	108.06	0.890	0.30 ( 0.27)	0.91	46437.5 13500.00
15	46870.98	112.68	0.870	0.30 ( 0.27)	0.91	49576.0 10800.00
16	47285.91	116.85	0.852	0.30 ( 0.28)	0.92	52521.3 11130.00
17	46737.64	126.49	0.824	0.30 ( 0.28)	0.93	57562.5 12410.00
18	46016.29	134.85	0.807	0.30 ( 0.28)	0.93	61301.7 11201.00
19	45521.98	139.87	0.797	0.30 ( 0.28)	0.93	63033.4 12201.00
20	44428.14	147.05	0.782	0.30 ( 0.28)	0.93	64890.5 12231.00
21	43053.77	155.01	0.765	0.30 ( 0.28)	0.93	66524.8 10400.00
22	41628.53	163.12	0.748	0.30 ( 0.28)	0.93	67819.9 12010.00
23	40380.70	169.25	0.735	0.30 ( 0.28)	0.94	68166.9 10210.00
24	35974.62	198.04	0.694	0.30 ( 0.28)	0.94	68905.3 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 47285.91 Tc (MIN.) = 116.85  
 EFFECTIVE AREA (ACRES) = 52521.34 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 68905.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

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FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56

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

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ELEVATION DATA: UPSTREAM (FEET) = 120.57 DOWNSTREAM (FEET) = 119.70  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1190.21 CHANNEL SLOPE = 0.0007  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 26.16  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.842  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 47319.00  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.84  
 AVERAGE FLOW DEPTH (FEET) = 26.16 TRAVEL TIME (MIN.) = 2.24  
 Tc (MIN.) = 119.09  
 SUBAREA AREA (ACRES) = 117.69 SUBAREA RUNOFF (CFS) = 66.18  
 EFFECTIVE AREA (ACRES) = 52639.03 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 69023.0 PEAK FLOW RATE (CFS) = 47285.91  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 26.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 26.15 FLOW VELOCITY (FEET/SEC.) = 8.84  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25806.46	26.49	1.838	0.30 ( 0.24)	0.81	5414.8	13810.00
2	26233.24	27.67	1.792	0.30 ( 0.24)	0.81	5705.5	13850.00
3	26465.25	28.33	1.767	0.30 ( 0.24)	0.81	5862.3	10400.00
4	27894.08	31.24	1.671	0.30 ( 0.24)	0.81	6880.8	13870.00
5	28384.88	32.27	1.644	0.30 ( 0.24)	0.81	7230.9	10360.00
6	30691.15	38.49	1.483	0.30 ( 0.24)	0.81	9578.9	13830.00
7	32275.44	43.01	1.395	0.30 ( 0.24)	0.81	11208.3	110.00
8	34193.25	49.31	1.293	0.30 ( 0.24)	0.81	13939.9	130.00
9	36822.65	58.41	1.188	0.30 ( 0.25)	0.82	18341.7	50260.00
10	38988.20	68.79	1.111	0.30 ( 0.25)	0.85	23713.9	390.00
11	41124.86	80.15	1.034	0.30 ( 0.26)	0.87	29536.0	13100.00
12	41809.42	87.04	0.988	0.30 ( 0.26)	0.88	32613.3	11801.00
13	44246.41	101.74	0.917	0.30 ( 0.27)	0.90	40682.3	11701.00
14	45977.46	110.32	0.880	0.30 ( 0.27)	0.91	46555.2	13500.00
15	46870.98	114.93	0.860	0.30 ( 0.27)	0.91	49693.7	10800.00
16	47285.91	119.09	0.842	0.30 ( 0.28)	0.92	52639.0	11130.00
17	46737.64	128.74	0.820	0.30 ( 0.28)	0.93	57680.2	12410.00
18	46016.29	137.11	0.802	0.30 ( 0.28)	0.93	61419.3	11201.00
19	45521.98	142.13	0.792	0.30 ( 0.28)	0.93	63151.0	12201.00
20	44428.14	149.33	0.777	0.30 ( 0.28)	0.93	65008.2	12231.00
21	43053.77	157.31	0.760	0.30 ( 0.28)	0.93	66642.5	10400.00
22	41628.53	165.45	0.743	0.30 ( 0.28)	0.93	67937.6	12010.00
23	40380.70	171.59	0.731	0.30 ( 0.28)	0.93	68284.5	10210.00
24	35974.62	200.45	0.691	0.30 ( 0.28)	0.94	69023.0	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 47285.91 Tc (MIN.) = 119.09  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 52639.03

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FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 119.09  
 RAINFALL INTENSITY (INCH/HR) = 0.84  
 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA (ACRES) = 52639.03  
 TOTAL STREAM AREA (ACRES) = 69022.98  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 47285.91

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FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 447.89  
 ELEVATION DATA: UPSTREAM (FEET) = 564.89 DOWNSTREAM (FEET) = 421.92

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 6.976  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 4.497  
 SUBAREA Tc AND LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
 PUBLIC PARK - 3.03 0.30 0.960 65 6.98  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.960  
 SUBAREA RUNOFF (CFS) = 11.48  
 TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 11.48

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FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.46  
 \* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.985  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 8.12 0.30 0.986 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.986  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 25.00  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.23  
 AVERAGE FLOW DEPTH (FEET) = 0.44 TRAVEL TIME (MIN.) = 1.39  
 Tc (MIN.) = 8.36  
 SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 26.96  
 EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 37.04  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.55 FLOW VELOCITY (FEET/SEC.) = 6.02  
 LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

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FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 392.64 DOWNSTREAM(FEET) = 324.46
CHANNEL LENGTH THRU SUBAREA(FEET) = 662.40 CHANNEL SLOPE = 0.1029
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.64
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.473
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 12.50 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54.93
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.95
AVERAGE FLOW DEPTH(FEET) = 0.62 TRAVEL TIME(MIN.) = 1.39
Tc(MIN.) = 9.75
SUBAREA AREA(ACRES) = 12.50 SUBAREA RUNOFF(CFS) = 35.70
EFFECTIVE AREA(ACRES) = 23.65 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 23.6 PEAK FLOW RATE(CFS) = 67.61
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.70 FLOW VELOCITY(FEET/SEC.) = 8.51
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

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FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 324.46 DOWNSTREAM(FEET) = 240.82
CHANNEL LENGTH THRU SUBAREA(FEET) = 980.03 CHANNEL SLOPE = 0.0853
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.87
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.131
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 15.87 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 87.84
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.75
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 1.87
Tc(MIN.) = 11.62
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 40.43
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 100.75
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

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"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.93 FLOW VELOCITY(FEET/SEC.) = 9.18
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

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FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 240.82 DOWNSTREAM(FEET) = 163.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1144.35 CHANNEL SLOPE = 0.0680
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.18
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.812
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 28.41 0.30 0.985 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 132.98
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.28
AVERAGE FLOW DEPTH(FEET) = 1.16 TRAVEL TIME(MIN.) = 2.05
Tc(MIN.) = 13.68
SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 64.36
EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 153.78
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.26

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.26 FLOW VELOCITY(FEET/SEC.) = 9.73
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

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FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013
DEPTH OF FLOW IN 45.0 INCH PIPE IS 33.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.73
ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 153.78
PIPE TRAVEL TIME(MIN.) = 1.79 Tc(MIN.) = 15.46
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

```

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*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81

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=====  
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
=====

MAINLINE Tc(MIN.) = 15.46

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.568

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	11.69	0.30	0.634	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.634  
SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 25.02  
EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 163.86

\*\*\*\*\*

FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1

=====  
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
=====

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<  
=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 15.46

RAINFALL INTENSITY(INCH/HR) = 2.57

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 79.62

TOTAL STREAM AREA(ACRES) = 79.62

PEAK FLOW RATE(CFS) AT CONFLUENCE = 163.86

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25806.46	26.49	1.838	0.30( 0.24)	0.81	5414.8	13810.00
1	26233.24	27.67	1.792	0.30( 0.24)	0.81	5705.5	13850.00
1	26465.25	28.33	1.767	0.30( 0.24)	0.81	5862.3	10400.00
1	27894.08	31.24	1.671	0.30( 0.24)	0.81	6880.8	13870.00
1	28384.88	32.27	1.644	0.30( 0.24)	0.81	7230.9	10360.00
1	30691.15	38.49	1.483	0.30( 0.24)	0.81	9578.9	13830.00
1	32275.44	43.01	1.395	0.30( 0.24)	0.81	11208.3	110.00
1	34193.25	49.31	1.293	0.30( 0.24)	0.81	13939.9	130.00
1	36822.65	58.41	1.188	0.30( 0.25)	0.82	18341.7	50260.00
1	38988.20	68.79	1.111	0.30( 0.25)	0.85	23713.9	390.00
1	41124.86	80.15	1.034	0.30( 0.26)	0.87	29536.0	13100.00
1	41809.42	87.04	0.988	0.30( 0.26)	0.88	32613.3	11801.00
1	44246.41	101.74	0.917	0.30( 0.27)	0.90	40682.3	11701.00
1	45977.46	110.32	0.880	0.30( 0.27)	0.91	46555.2	13500.00
1	46870.98	114.93	0.860	0.30( 0.27)	0.91	49693.7	10800.00
1	47285.91	119.09	0.842	0.30( 0.28)	0.92	52639.0	11130.00
1	46737.64	128.74	0.820	0.30( 0.28)	0.93	57680.2	12410.00
1	46016.29	137.11	0.802	0.30( 0.28)	0.93	61419.3	11201.00
1	45521.98	142.13	0.792	0.30( 0.28)	0.93	63151.0	12201.00
1	44428.14	149.33	0.777	0.30( 0.28)	0.93	65008.2	12231.00
1	43053.77	157.31	0.760	0.30( 0.28)	0.93	66642.5	10400.00
1	41628.53	165.45	0.743	0.30( 0.28)	0.93	67937.6	12010.00

1	40380.70	171.59	0.731	0.30( 0.28)	0.93	68284.5	10210.00
1	35974.62	200.45	0.691	0.30( 0.28)	0.94	69023.0	10100.00
2	163.86	15.46	2.568	0.30( 0.28)	0.94	79.6	13889.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22122.83	15.46	2.568	0.30( 0.24)	0.81	3239.8	13889.00
2	25917.99	26.49	1.838	0.30( 0.24)	0.81	5494.4	13810.00
3	26341.52	27.67	1.792	0.30( 0.24)	0.81	5785.1	13850.00
4	26571.73	28.33	1.767	0.30( 0.24)	0.81	5941.9	10400.00
5	27993.65	31.24	1.671	0.30( 0.24)	0.81	6960.4	13870.00
6	28482.55	32.27	1.644	0.30( 0.24)	0.81	7310.5	10360.00
7	30777.27	38.49	1.483	0.30( 0.24)	0.81	9658.5	13830.00
8	32355.26	43.01	1.395	0.30( 0.24)	0.81	11288.0	110.00
9	34265.77	49.31	1.293	0.30( 0.24)	0.81	14019.6	130.00
10	36887.61	58.41	1.188	0.30( 0.25)	0.82	18421.3	50260.00
11	39047.64	68.79	1.111	0.30( 0.25)	0.85	23793.5	390.00
12	41178.81	80.15	1.034	0.30( 0.26)	0.87	29615.6	13100.00
13	41860.05	87.04	0.988	0.30( 0.26)	0.88	32692.9	11801.00
14	44291.97	101.74	0.917	0.30( 0.27)	0.90	40761.9	11701.00
15	46020.36	110.32	0.880	0.30( 0.27)	0.91	46634.8	13500.00
16	46912.45	114.93	0.860	0.30( 0.27)	0.91	49773.3	10800.00
17	47326.09	119.09	0.842	0.30( 0.28)	0.92	52718.7	11130.00
18	46776.23	128.74	0.820	0.30( 0.28)	0.93	57759.9	12410.00
19	46053.63	137.11	0.802	0.30( 0.28)	0.93	61499.0	11201.00
20	45558.57	142.13	0.792	0.30( 0.28)	0.93	63230.7	12201.00
21	44463.65	149.33	0.777	0.30( 0.28)	0.93	65087.8	12231.00
22	43088.09	157.31	0.760	0.30( 0.28)	0.93	66722.1	10400.00
23	41661.63	165.45	0.743	0.30( 0.28)	0.93	68017.2	12010.00
24	40412.89	171.59	0.731	0.30( 0.28)	0.93	68364.2	10210.00
25	36004.00	200.45	0.691	0.30( 0.28)	0.94	69102.6	10100.00

=====  
COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 47326.09 Tc(MIN.) = 119.09

EFFECTIVE AREA(ACRES) = 52718.65 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 69102.6

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.  
=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69102.6 TC(MIN.) = 119.09

EFFECTIVE AREA(ACRES) = 52718.65 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.919

PEAK FLOW RATE(CFS) = 47326.09

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22122.83	15.46	2.568	0.30( 0.24)	0.81	3239.8	13889.00
2	25917.99	26.49	1.838	0.30( 0.24)	0.81	5494.4	13810.00
3	26341.52	27.67	1.792	0.30( 0.24)	0.81	5785.1	13850.00
4	26571.73	28.33	1.767	0.30( 0.24)	0.81	5941.9	10400.00
5	27993.65	31.24	1.671	0.30( 0.24)	0.81	6960.4	13870.00
6	28482.55	32.27	1.644	0.30( 0.24)	0.81	7310.5	10360.00



7	30777.27	38.49	1.483	0.30	( 0.24)	0.81	9658.5	13830.00
8	32355.26	43.01	1.395	0.30	( 0.24)	0.81	11288.0	110.00
9	34265.77	49.31	1.293	0.30	( 0.24)	0.81	14019.6	130.00
10	36887.61	58.41	1.188	0.30	( 0.25)	0.82	18421.3	50260.00
11	39047.64	68.79	1.111	0.30	( 0.25)	0.85	23793.5	390.00
12	41178.81	80.15	1.034	0.30	( 0.26)	0.87	29615.6	13100.00
13	41860.05	87.04	0.988	0.30	( 0.26)	0.88	32692.9	11801.00
14	44291.97	101.74	0.917	0.30	( 0.27)	0.90	40761.9	11701.00
15	46020.36	110.32	0.880	0.30	( 0.27)	0.91	46634.8	13500.00
16	46912.45	114.93	0.860	0.30	( 0.27)	0.91	49773.3	10800.00
17	47326.09	119.09	0.842	0.30	( 0.28)	0.92	52718.7	11130.00
18	46776.23	128.74	0.820	0.30	( 0.28)	0.93	57759.9	12410.00
19	46053.63	137.11	0.802	0.30	( 0.28)	0.93	61499.0	11201.00
20	45558.57	142.13	0.792	0.30	( 0.28)	0.93	63230.7	12201.00
21	44463.65	149.33	0.777	0.30	( 0.28)	0.93	65087.8	12231.00
22	43088.09	157.31	0.760	0.30	( 0.28)	0.93	66722.1	10400.00
23	41661.63	165.45	0.743	0.30	( 0.28)	0.93	68017.2	12010.00
24	40412.89	171.59	0.731	0.30	( 0.28)	0.93	68364.2	10210.00
25	36004.00	200.45	0.691	0.30	( 0.28)	0.94	69102.6	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====

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

Analysis prepared by:

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

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S39- FREE DRAINING - ULTIMATE CONDITION \*  
\* 50-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU50EV39.DAT  
TIME/DATE OF STUDY: 11:51 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 50.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.220
- 2) 10.00; 3.380
- 3) 15.00; 2.606
- 4) 20.00; 2.184
- 5) 25.00; 1.894
- 6) 30.00; 1.703
- 7) 40.00; 1.444
- 8) 50.00; 1.282
- 9) 60.00; 1.169
- 10) 90.00; 0.968
- 11) 120.00; 0.837
- 12) 180.00; 0.712
- 13) 360.00; 0.522
- 14) 1200.00; 0.227

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13900.00 TO NODE 13901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65  
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.247  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
AGRICULTURAL POOR COVER "FALLOW"	-	4.00	0.30	1.000	65	10.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 10.61  
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 10.61

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 56  
-----

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

ELEVATION DATA: UPSTREAM(FEET) = 385.16 DOWNSTREAM(FEET) = 288.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.42 CHANNEL SLOPE = 0.1497  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.32  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.983  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.47	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.86  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.34  
AVERAGE FLOW DEPTH(FEET) = 0.31 TRAVEL TIME(MIN.) = 1.70  
Tc(MIN.) = 12.56  
SUBAREA AREA(ACRES) = 8.47 SUBAREA RUNOFF(CFS) = 20.46  
EFFECTIVE AREA(ACRES) = 12.47 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) = 30.12  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.39 FLOW VELOCITY(FEET/SEC.) = 7.24  
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13902.00 = 1248.07 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13902.00 TO NODE 13903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.21 DOWNSTREAM(FEET) = 184.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 669.27 CHANNEL SLOPE = 0.1544  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.57

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.795

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.85	0.30	0.982	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.982

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 56.98

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.15

AVERAGE FLOW DEPTH(FEET) = 0.56 TRAVEL TIME(MIN.) = 1.22

Tc(MIN.) = 13.78

SUBAREA AREA(ACRES) = 23.85 SUBAREA RUNOFF(CFS) = 53.67

EFFECTIVE AREA(ACRES) = 36.32 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 36.3 PEAK FLOW RATE(CFS) = 81.67

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.69

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.69 FLOW VELOCITY(FEET/SEC.) = 10.38

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13903.00 = 1917.34 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 184.89 DOWNSTREAM(FEET) = 155.08

FLOW LENGTH(FEET) = 876.66 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000

DEPTH OF FLOW IN 36.0 INCH PIPE IS 22.2 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 17.86

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 81.67

PIPE TRAVEL TIME(MIN.) = 0.82 Tc(MIN.) = 14.60

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13904.00 = 2794.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 14.60

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.668

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	21.29	0.30	0.996	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996

SUBAREA AREA(ACRES) = 21.29 SUBAREA RUNOFF(CFS) = 45.40

EFFECTIVE AREA(ACRES) = 57.61 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 57.6 PEAK FLOW RATE(CFS) = 122.93

\*\*\*\*\*

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 155.08 DOWNSTREAM(FEET) = 118.00

FLOW LENGTH(FEET) = 1961.38 MANNING'S N = 0.013

DEPTH OF FLOW IN 42.0 INCH PIPE IS 32.3 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 15.50

ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 122.93

PIPE TRAVEL TIME(MIN.) = 2.11 Tc(MIN.) = 16.71

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 16.71

\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.462

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.53	0.30	0.649	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.649

SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 88.82

EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 201.06

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FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

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FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<

PEAK FLOWRATE TABLE FILE NAME: RU50EV38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22122.83	15.46	0.30 ( 0.24)	0.81	3239.8	13889.00
2	28482.55	32.27	0.30 ( 0.24)	0.81	7310.5	10360.00
3	30777.27	38.49	0.30 ( 0.24)	0.81	9658.5	13830.00
4	32355.26	43.01	0.30 ( 0.24)	0.81	11288.0	110.00
5	34265.77	49.31	0.30 ( 0.24)	0.81	14019.6	130.00
6	36887.61	58.41	0.30 ( 0.25)	0.82	18421.3	50260.00
7	39047.64	68.79	0.30 ( 0.25)	0.85	23793.5	390.00
8	41178.81	80.15	0.30 ( 0.26)	0.87	29615.6	13100.00
9	41860.05	87.04	0.30 ( 0.26)	0.88	32692.9	11801.00
10	44291.97	101.74	0.30 ( 0.27)	0.90	40761.9	11701.00
11	46020.36	110.32	0.30 ( 0.27)	0.91	46634.8	13500.00
12	47326.09	119.09	0.30 ( 0.28)	0.92	52718.7	11130.00
13	46776.23	128.74	0.30 ( 0.28)	0.93	57759.9	12410.00
14	46053.63	137.11	0.30 ( 0.28)	0.93	61499.0	11201.00
15	45558.57	142.13	0.30 ( 0.28)	0.93	63230.7	12201.00
16	44463.65	149.33	0.30 ( 0.28)	0.93	65087.8	12231.00
17	43088.09	157.31	0.30 ( 0.28)	0.93	66722.1	10400.00
18	41661.63	165.45	0.30 ( 0.28)	0.93	68017.2	12010.00
19	40412.89	171.59	0.30 ( 0.28)	0.93	68364.2	10210.00
20	36004.00	200.45	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =		69102.6				

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FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22122.83	15.46	0.30 ( 0.24)	0.81	3239.8	13889.00
2	28482.55	32.27	0.30 ( 0.24)	0.81	7310.5	10360.00
3	30777.27	38.49	0.30 ( 0.24)	0.81	9658.5	13830.00
4	32355.26	43.01	0.30 ( 0.24)	0.81	11288.0	110.00
5	34265.77	49.31	0.30 ( 0.24)	0.81	14019.6	130.00
6	36887.61	58.41	0.30 ( 0.25)	0.82	18421.3	50260.00
7	39047.64	68.79	0.30 ( 0.25)	0.85	23793.5	390.00
8	41178.81	80.15	0.30 ( 0.26)	0.87	29615.6	13100.00
9	41860.05	87.04	0.30 ( 0.26)	0.88	32692.9	11801.00
10	44291.97	101.74	0.30 ( 0.27)	0.90	40761.9	11701.00
11	46020.36	110.32	0.30 ( 0.27)	0.91	46634.8	13500.00
12	47326.09	119.09	0.30 ( 0.28)	0.92	52718.7	11130.00
13	46776.23	128.74	0.30 ( 0.28)	0.93	57759.9	12410.00
14	46053.63	137.11	0.30 ( 0.28)	0.93	61499.0	11201.00
15	45558.57	142.13	0.30 ( 0.28)	0.93	63230.7	12201.00
16	44463.65	149.33	0.30 ( 0.28)	0.93	65087.8	12231.00
17	43088.09	157.31	0.30 ( 0.28)	0.93	66722.1	10400.00
18	41661.63	165.45	0.30 ( 0.28)	0.93	68017.2	12010.00
19	40412.89	171.59	0.30 ( 0.28)	0.93	68364.2	10210.00
20	36004.00	200.45	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =		69102.6				

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FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1376.26 CHANNEL SLOPE = 0.0012  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 23.02  
\* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.834  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.09	0.30	0.535	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 47355.23  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.71  
AVERAGE FLOW DEPTH (FEET) = 23.02 TRAVEL TIME (MIN.) = 2.14  
Tc (MIN.) = 121.24  
SUBAREA AREA (ACRES) = 96.09 SUBAREA RUNOFF (CFS) = 58.29  
EFFECTIVE AREA (ACRES) = 52814.74 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 69198.7 PEAK FLOW RATE (CFS) = 47326.09  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 23.01

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 23.01 FLOW VELOCITY (FEET/SEC.) = 10.71  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22122.83	18.10	2.344	0.30 ( 0.24)	0.81	3335.9	13889.00
2	28482.55	34.73	1.581	0.30 ( 0.24)	0.81	7406.6	10360.00
3	30777.27	40.90	1.429	0.30 ( 0.24)	0.81	9754.6	13830.00
4	32355.26	45.39	1.357	0.30 ( 0.24)	0.80	11384.0	110.00
5	34265.77	51.65	1.263	0.30 ( 0.24)	0.81	14115.6	130.00
6	36887.61	60.70	1.164	0.30 ( 0.25)	0.82	18517.4	50260.00
7	39047.64	71.04	1.095	0.30 ( 0.25)	0.84	23889.6	390.00
8	41178.81	82.38	1.019	0.30 ( 0.26)	0.87	29711.7	13100.00
9	41860.05	89.25	0.973	0.30 ( 0.26)	0.88	32789.0	11801.00
10	44291.97	103.93	0.907	0.30 ( 0.27)	0.90	40858.0	11701.00
11	46020.36	112.48	0.870	0.30 ( 0.27)	0.91	46730.9	13500.00
12	47326.09	121.24	0.834	0.30 ( 0.28)	0.92	52814.7	11130.00
13	46776.23	130.89	0.814	0.30 ( 0.28)	0.92	57855.9	12410.00
14	46053.63	139.26	0.797	0.30 ( 0.28)	0.93	61595.1	11201.00
15	45558.57	144.30	0.786	0.30 ( 0.28)	0.93	63326.8	12201.00
16	44463.65	151.51	0.771	0.30 ( 0.28)	0.93	65183.9	12231.00
17	43088.09	159.51	0.755	0.30 ( 0.28)	0.93	66818.2	10400.00
18	41661.63	167.66	0.738	0.30 ( 0.28)	0.93	68113.3	12010.00
19	40412.89	173.82	0.725	0.30 ( 0.28)	0.93	68460.2	10210.00
20	36004.00	202.76	0.688	0.30 ( 0.28)	0.93	69198.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 47326.09 Tc (MIN.) = 121.24

AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 52814.74

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FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

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

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22122.83	18.10	2.344	0.30( 0.24)	0.81	3335.9	13889.00
2	28482.55	34.73	1.581	0.30( 0.24)	0.81	7406.6	10360.00
3	30777.27	40.90	1.429	0.30( 0.24)	0.81	9754.6	13830.00
4	32355.26	45.39	1.357	0.30( 0.24)	0.80	11384.0	110.00
5	34265.77	51.65	1.263	0.30( 0.24)	0.81	14115.6	130.00
6	36887.61	60.70	1.164	0.30( 0.25)	0.82	18517.4	50260.00
7	39047.64	71.04	1.095	0.30( 0.25)	0.84	23889.6	390.00
8	41178.81	82.38	1.019	0.30( 0.26)	0.87	29711.7	13100.00
9	41860.05	89.25	0.973	0.30( 0.26)	0.88	32789.0	11801.00
10	44291.97	103.93	0.907	0.30( 0.27)	0.90	40858.0	11701.00
11	46020.36	112.48	0.870	0.30( 0.27)	0.91	46730.9	13500.00
12	47326.09	121.24	0.834	0.30( 0.28)	0.92	52814.7	11130.00
13	46776.23	130.89	0.814	0.30( 0.28)	0.92	57855.9	12410.00
14	46053.63	139.26	0.797	0.30( 0.28)	0.93	61595.1	11201.00
15	45558.57	144.30	0.786	0.30( 0.28)	0.93	63326.8	12201.00
16	44463.65	151.51	0.771	0.30( 0.28)	0.93	65183.9	12231.00
17	43088.09	159.51	0.755	0.30( 0.28)	0.93	66818.2	10400.00
18	41661.63	167.66	0.738	0.30( 0.28)	0.93	68113.3	12010.00
19	40412.89	173.82	0.725	0.30( 0.28)	0.93	68460.2	10210.00
20	36004.00	202.76	0.688	0.30( 0.28)	0.93	69198.7	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	201.06	16.71	2.462	0.30( 0.25)	0.84	101.1	13900.00

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21762.81	16.71	2.462	0.30( 0.24)	0.81	3180.1	13900.00
2	22313.18	18.10	2.344	0.30( 0.24)	0.81	3437.0	13889.00
3	28603.39	34.73	1.581	0.30( 0.24)	0.81	7507.7	10360.00
4	30884.35	40.90	1.429	0.30( 0.24)	0.81	9855.7	13830.00
5	32455.71	45.39	1.357	0.30( 0.24)	0.81	11485.2	110.00
6	34357.73	51.65	1.263	0.30( 0.24)	0.81	14216.8	130.00
7	36970.55	60.70	1.164	0.30( 0.25)	0.82	18618.6	50260.00
8	39124.28	71.04	1.095	0.30( 0.25)	0.84	23990.7	390.00
9	41248.54	82.38	1.019	0.30( 0.26)	0.87	29812.9	13100.00
10	41925.59	89.25	0.973	0.30( 0.26)	0.88	32890.1	11801.00
11	44351.51	103.93	0.907	0.30( 0.27)	0.90	40959.1	11701.00
12	46076.50	112.48	0.870	0.30( 0.27)	0.91	46832.0	13500.00
13	47379.00	121.24	0.834	0.30( 0.28)	0.92	52915.9	11130.00
14	46827.32	130.89	0.814	0.30( 0.28)	0.92	57957.1	12410.00
15	46103.12	139.26	0.797	0.30( 0.28)	0.93	61696.2	11201.00

16	45607.11	144.30	0.786	0.30( 0.28)	0.93	63427.9	12201.00
17	44510.83	151.51	0.771	0.30( 0.28)	0.93	65285.1	12231.00
18	43133.75	159.51	0.755	0.30( 0.28)	0.93	66919.3	10400.00
19	41705.75	167.66	0.738	0.30( 0.28)	0.93	68214.4	12010.00
20	40455.84	173.82	0.725	0.30( 0.28)	0.93	68561.4	10210.00
21	36043.59	202.76	0.688	0.30( 0.28)	0.93	69299.8	10100.00

TOTAL AREA(ACRES) = 69299.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 47379.00 Tc(MIN.) = 121.235  
EFFECTIVE AREA(ACRES) = 52915.88 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA(ACRES) = 69299.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

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FLOW PROCESS FROM NODE 13920.00 TO NODE 13921.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 118.00 DOWNSTREAM(FEET) = 115.28  
CHANNEL LENGTH THRU SUBAREA(FEET) = 335.44 CHANNEL SLOPE = 0.0081  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 14.29  
\* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.834

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.30	0.30	0.658	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.658  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47417.47  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 21.12  
AVERAGE FLOW DEPTH(FEET) = 14.29 TRAVEL TIME(MIN.) = 0.26  
Tc(MIN.) = 121.50  
SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 76.94  
EFFECTIVE AREA(ACRES) = 53050.18 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 69434.1 PEAK FLOW RATE(CFS) = 47379.00

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 14.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 14.28 FLOW VELOCITY(FEET/SEC.) = 21.12  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13921.00 = 136971.41 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21762.81	17.04	2.434	0.30( 0.24)	0.80	3314.4	13900.00
2	22313.18	18.43	2.316	0.30( 0.24)	0.80	3571.3	13889.00
3	28603.39	35.03	1.573	0.30( 0.24)	0.81	7642.0	10360.00
4	30884.35	41.20	1.425	0.30( 0.24)	0.80	9990.0	13830.00
5	32455.71	45.68	1.352	0.30( 0.24)	0.80	11619.5	110.00

6	34357.73	51.94	1.260	0.30	( 0.24)	0.81	14351.1	130.00
7	36970.55	60.98	1.162	0.30	( 0.25)	0.82	18752.9	50260.00
8	39124.28	71.32	1.093	0.30	( 0.25)	0.84	24125.0	390.00
9	41248.54	82.65	1.017	0.30	( 0.26)	0.87	29947.2	13100.00
10	41925.59	89.52	0.971	0.30	( 0.26)	0.88	33024.4	11801.00
11	44351.51	104.20	0.906	0.30	( 0.27)	0.90	41093.4	11701.00
12	46076.50	112.74	0.869	0.30	( 0.27)	0.91	46966.3	13500.00
13	47379.00	121.50	0.834	0.30	( 0.28)	0.92	53050.2	11130.00
14	46827.32	131.16	0.814	0.30	( 0.28)	0.92	58091.4	12410.00
15	46103.12	139.53	0.796	0.30	( 0.28)	0.93	61830.5	11201.00
16	45607.11	144.57	0.786	0.30	( 0.28)	0.93	63562.2	12201.00
17	44510.83	151.77	0.771	0.30	( 0.28)	0.93	65419.4	12231.00
18	43133.75	159.78	0.754	0.30	( 0.28)	0.93	67053.6	10400.00
19	41705.75	167.94	0.737	0.30	( 0.28)	0.93	68348.7	12010.00
20	40455.84	174.10	0.724	0.30	( 0.28)	0.93	68695.7	10210.00
21	36043.59	203.04	0.688	0.30	( 0.28)	0.93	69434.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 47379.00 Tc(MIN.) = 121.50  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 53050.18

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FLOW PROCESS FROM NODE 13921.00 TO NODE 14010.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 115.28 DOWNSTREAM(FEET) = 100.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1396.08 CHANNEL SLOPE = 0.0109  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 13.20  
 \* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.832

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.27	0.30	0.723	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.723  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47405.64  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 23.50  
 AVERAGE FLOW DEPTH(FEET) = 13.20 TRAVEL TIME(MIN.) = 0.99  
 Tc(MIN.) = 122.49  
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 53.28  
 EFFECTIVE AREA(ACRES) = 53146.45 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69530.4 PEAK FLOW RATE(CFS) = 47379.00  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 13.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 13.20 FLOW VELOCITY(FEET/SEC.) = 23.50  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	21762.81	18.29	2.329	0.30( 0.24)	0.80	3410.7 13900.00
2	22313.18	19.67	2.212	0.30( 0.24)	0.80	3667.6 13889.00
3	28603.39	36.18	1.543	0.30( 0.24)	0.80	7738.3 10360.00
4	30884.35	42.32	1.406	0.30( 0.24)	0.80	10086.3 13830.00
5	32455.71	46.79	1.334	0.30( 0.24)	0.80	11715.8 110.00
6	34357.73	53.02	1.248	0.30( 0.24)	0.80	14447.4 130.00
7	36970.55	62.05	1.155	0.30( 0.25)	0.82	18849.1 50260.00
8	39124.28	72.37	1.086	0.30( 0.25)	0.84	24221.3 390.00
9	41248.54	83.68	1.010	0.30( 0.26)	0.87	30043.4 13100.00
10	41925.59	90.55	0.966	0.30( 0.26)	0.88	33120.7 11801.00
11	44351.51	105.20	0.902	0.30( 0.27)	0.90	41189.7 11701.00
12	46076.50	113.74	0.864	0.30( 0.27)	0.91	47062.6 13500.00
13	47379.00	122.49	0.832	0.30( 0.28)	0.92	53146.5 11130.00
14	46827.32	132.15	0.812	0.30( 0.28)	0.92	58187.7 12410.00
15	46103.12	140.53	0.794	0.30( 0.28)	0.93	61926.8 11201.00
16	45607.11	145.57	0.784	0.30( 0.28)	0.93	63658.5 12201.00
17	44510.83	152.78	0.769	0.30( 0.28)	0.93	65515.6 12231.00
18	43133.75	160.80	0.752	0.30( 0.28)	0.93	67149.9 10400.00
19	41705.75	168.96	0.735	0.30( 0.28)	0.93	68445.0 12010.00
20	40455.84	175.14	0.722	0.30( 0.28)	0.93	68792.0 10210.00
21	36043.59	204.12	0.687	0.30( 0.28)	0.93	69530.4 10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 47379.00 Tc(MIN.) = 122.49  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 53146.45

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69530.4 TC(MIN.) = 122.49  
 EFFECTIVE AREA(ACRES) = 53146.45 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.917  
 PEAK FLOW RATE(CFS) = 47379.00

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE	
1	21762.81	18.29	2.329	0.30( 0.24)	0.80	3410.7 13900.00	
2	22313.18	19.67	2.212	0.30( 0.24)	0.80	3667.6 13889.00	
3	28603.39	36.18	1.543	0.30( 0.24)	0.80	7738.3 10360.00	
4	30884.35	42.32	1.406	0.30( 0.24)	0.80	10086.3 13830.00	
5	32455.71	46.79	1.334	0.30( 0.24)	0.80	11715.8 110.00	
6	34357.73	53.02	1.248	0.30( 0.24)	0.80	14447.4 130.00	
7	36970.55	62.05	1.155	0.30( 0.25)	0.82	18849.1 50260.00	
8	39124.28	72.37	1.086	0.30( 0.25)	0.84	24221.3 390.00	
9	41248.54	83.68	1.010	0.30( 0.26)	0.87	30043.4 13100.00	
10	41925.59	90.55	0.966	0.30( 0.26)	0.88	33120.7 11801.00	
11	44351.51	105.20	0.902	0.30( 0.27)	0.90	41189.7 11701.00	
12	46076.50	113.74	0.864	0.30( 0.27)	0.91	47062.6 13500.00	
13	47379.00	122.49	0.832	0.30( 0.28)	0.92	53146.5 11130.00	
14	46827.32	132.15	0.812	0.30( 0.28)	0.92	58187.7 12410.00	
15	46103.12	140.53	0.794	0.30( 0.28)	0.93	61926.8 11201.00	
16	45607.11	145.57	0.784	0.30( 0.28)	0.93	63658.5 12201.00	
17	44510.83	152.78	0.769	0.30( 0.28)	0.93	65515.6 12231.00	
18	43133.75	160.80	0.752	0.30( 0.28)	0.93	67149.9 10400.00	
19	41705.75	168.96	0.735	0.30( 0.28)	0.93	68445.0 12010.00	
20	40455.84	175.14	0.722	0.30( 0.28)	0.93	68792.0 10210.00	
21	36043.59	204.12	0.687	0.30( 0.28)	0.93	69530.4 10100.00	

=====  
END OF RATIONAL METHOD ANALYSIS

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

Analysis prepared by:

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Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* SAN JUAN CREEK WATERSHED STUDY - RATIONAL METHOD \*  
\* REGIONAL WATERSHED S19- FREE DRAINING \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV19.DAT  
TIME/DATE OF STUDY: 11:52 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 6.126
- 2) 10.00; 3.913
- 3) 15.00; 3.013
- 4) 20.00; 2.470
- 5) 25.00; 2.132
- 6) 30.00; 1.903
- 7) 40.00; 1.647
- 8) 50.00; 1.421
- 9) 60.00; 1.323
- 10) 90.00; 1.122
- 11) 120.00; 0.987
- 12) 180.00; 0.829
- 13) 360.00; 0.620
- 14) 1200.00; 0.273

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

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

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 295.79  
ELEVATION DATA: UPSTREAM(FEET) = 2369.48 DOWNSTREAM(FEET) = 2332.92

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 7.203  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 5.151  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
RESIDENTIAL ".4 DWELLING/ACRE"	-	1.62	0.30	0.999	0	7.20

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
SUBAREA RUNOFF(CFS) = 7.07  
TOTAL AREA(ACRES) = 1.62 PEAK FLOW RATE(CFS) = 7.07

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11901.00 TO NODE 11902.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2332.92 DOWNSTREAM(FEET) = 2297.70  
CHANNEL LENGTH THRU SUBAREA(FEET) = 664.26 CHANNEL SLOPE = 0.0530  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.61  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.842  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.35	0.30	0.906	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.64  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.47  
AVERAGE FLOW DEPTH(FEET) = 0.54 TRAVEL TIME(MIN.) = 3.19  
Tc(MIN.) = 10.39  
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 26.83  
EFFECTIVE AREA(ACRES) = 9.97 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 32.00  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.69

END OF SUBAREA CHANNEL FLOW HYDRAULICS:



DEPTH(FEET) = 0.69 FLOW VELOCITY(FEET/SEC.) = 4.07  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.00 = 960.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.00 TO NODE 11902.50 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2297.70 DOWNSTREAM(FEET) = 2263.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 928.77 CHANNEL SLOPE = 0.0369  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.37  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.267

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.48	0.30	0.904	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 78.78  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.84  
AVERAGE FLOW DEPTH(FEET) = 1.29 TRAVEL TIME(MIN.) = 3.20  
Tc(MIN.) = 13.59

SUBAREA AREA(ACRES) = 34.48 SUBAREA RUNOFF(CFS) = 92.97  
EFFECTIVE AREA(ACRES) = 44.45 AREA-AVERAGED Fm(INCH/HR) = 0.27  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA(ACRES) = 44.5 PEAK FLOW RATE(CFS) = 119.81  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.64 FLOW VELOCITY(FEET/SEC.) = 5.52  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11902.50 = 1888.82 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11902.50 TO NODE 11903.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2263.40 DOWNSTREAM(FEET) = 2252.14  
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.50 CHANNEL SLOPE = 0.0126  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.49  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.763

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.65	0.30	0.958	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.958  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 146.20  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.02  
AVERAGE FLOW DEPTH(FEET) = 2.44 TRAVEL TIME(MIN.) = 3.71

Tc(MIN.) = 17.30  
SUBAREA AREA(ACRES) = 23.65 SUBAREA RUNOFF(CFS) = 52.69  
EFFECTIVE AREA(ACRES) = 68.10 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA(ACRES) = 68.1 PEAK FLOW RATE(CFS) = 152.33  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.50 FLOW VELOCITY(FEET/SEC.) = 4.06  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11903.00 = 2784.32 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11903.00 TO NODE 11904.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2252.14 DOWNSTREAM(FEET) = 2186.04  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1924.35 CHANNEL SLOPE = 0.0343  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.38  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.315

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	68.53	0.30	0.961	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 215.00  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.43  
AVERAGE FLOW DEPTH(FEET) = 2.29 TRAVEL TIME(MIN.) = 4.99  
Tc(MIN.) = 22.29

SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 125.00  
EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 249.87  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.49 FLOW VELOCITY(FEET/SEC.) = 6.70  
LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.99

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.122  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 63.15 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 301.67  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.98  
 AVERAGE FLOW DEPTH (FEET) = 1.97 TRAVEL TIME (MIN.) = 2.93  
 Tc (MIN.) = 25.22  
 SUBAREA AREA (ACRES) = 63.15 SUBAREA RUNOFF (CFS) = 103.55  
 EFFECTIVE AREA (ACRES) = 199.78 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 199.8 PEAK FLOW RATE (CFS) = 329.70  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.07  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.07 FLOW VELOCITY (FEET/SEC.) = 11.26  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 -----

ELEVATION DATA: UPSTREAM (FEET) = 1957.34 DOWNSTREAM (FEET) = 1244.16  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2498.96 CHANNEL SLOPE = 0.2854  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.81  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.004  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 84.87 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 394.80  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 16.18  
 AVERAGE FLOW DEPTH (FEET) = 1.80 TRAVEL TIME (MIN.) = 2.57  
 Tc (MIN.) = 27.79  
 SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 130.16  
 EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 438.66  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.90 FLOW VELOCITY (FEET/SEC.) = 16.70  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 -----

ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.89  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.848  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 199.43 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 577.66  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.91  
 AVERAGE FLOW DEPTH (FEET) = 2.85 TRAVEL TIME (MIN.) = 4.35  
 Tc (MIN.) = 32.15  
 SUBAREA AREA (ACRES) = 199.43 SUBAREA RUNOFF (CFS) = 277.86  
 EFFECTIVE AREA (ACRES) = 484.08 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 484.1 PEAK FLOW RATE (CFS) = 676.56  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.10 FLOW VELOCITY (FEET/SEC.) = 13.47  
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1

-----  
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 -----

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION (MIN.) = 32.15  
 RAINFALL INTENSITY (INCH/HR) = 1.85  
 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98  
 EFFECTIVE STREAM AREA (ACRES) = 484.08  
 TOTAL STREAM AREA (ACRES) = 484.08  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 676.56

\*\*\*\*\*

FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21

-----  
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----

INITIAL SUBAREA FLOW-LENGTH (FEET) = 517.62  
 ELEVATION DATA: UPSTREAM (FEET) = 2531.88 DOWNSTREAM (FEET) = 2441.33

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.185  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.520  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" - 3.46 0.30 1.000 0 12.19  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 10.03  
 TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 10.03

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2441.33 DOWNSTREAM(FEET) = 2382.20  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 397.30 CHANNEL SLOPE = 0.1488  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.37  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.259  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 5.79 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.75  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.58  
 AVERAGE FLOW DEPTH(FEET) = 0.36 TRAVEL TIME(MIN.) = 1.45  
 Tc(MIN.) = 13.63  
 SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 15.42  
 EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 24.64  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.44

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.44 FLOW VELOCITY(FEET/SEC.) = 5.18  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2382.20 DOWNSTREAM(FEET) = 2263.77  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.47 CHANNEL SLOPE = 0.0626  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.25

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.579  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 54.30 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 81.10  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.88  
 AVERAGE FLOW DEPTH(FEET) = 1.13 TRAVEL TIME(MIN.) = 5.36  
 Tc(MIN.) = 19.00  
 SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 111.38  
 EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 130.36  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.48 FLOW VELOCITY(FEET/SEC.) = 6.81  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 2263.77 DOWNSTREAM(FEET) = 1845.23  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1957.31 CHANNEL SLOPE = 0.2138  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.32  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.349  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 65.14 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 190.50  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.69  
 AVERAGE FLOW DEPTH(FEET) = 1.29 TRAVEL TIME(MIN.) = 2.79  
 Tc(MIN.) = 21.79  
 SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 120.15  
 EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 237.36  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 1.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.47 FLOW VELOCITY(FEET/SEC.) = 12.50  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.81
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.198

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.52 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 304.43

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.52

AVERAGE FLOW DEPTH(FEET) = 1.79 TRAVEL TIME(MIN.) = 2.24

Tc(MIN.) = 24.03

SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 134.10

EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 353.89

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.95 FLOW VELOCITY(FEET/SEC.) = 13.07

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.60
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.037

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 70.48 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 409.00

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.45

AVERAGE FLOW DEPTH(FEET) = 2.58 TRAVEL TIME(MIN.) = 3.05

Tc(MIN.) = 27.08

SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 110.18

EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 434.11
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.66 FLOW VELOCITY(FEET/SEC.) = 10.65

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.64
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.939

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 232.20 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 605.42

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.15

AVERAGE FLOW DEPTH(FEET) = 2.62 TRAVEL TIME(MIN.) = 2.14

Tc(MIN.) = 29.22

SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 342.51

EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 752.12

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 2.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.94 FLOW VELOCITY(FEET/SEC.) = 16.11

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

\*\*\*\*\*
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.74

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.837

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

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USER-DEFINED          -      110.82      0.30      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      828.79
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.74
AVERAGE FLOW DEPTH(FEET) = 3.73 TRAVEL TIME(MIN.) = 3.36
Tc(MIN.) = 32.57
SUBAREA AREA(ACRES) = 110.82 SUBAREA RUNOFF(CFS) = 153.32
EFFECTIVE AREA(ACRES) = 620.71 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 620.7 PEAK FLOW RATE(CFS) = 858.76
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.80 FLOW VELOCITY(FEET/SEC.) = 12.86
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

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*****
FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
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TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 32.57
RAINFALL INTENSITY(INCH/HR) = 1.84
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00
EFFECTIVE STREAM AREA(ACRES) = 620.71
TOTAL STREAM AREA(ACRES) = 620.71
PEAK FLOW RATE(CFS) AT CONFLUENCE = 858.76

```

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	676.56	32.15	1.848	0.30( 0.30)	0.98	484.1	11900.00
2	858.76	32.57	1.837	0.30( 0.30)	1.00	620.7	11910.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1530.12	32.15	1.848	0.30( 0.30)	0.99	1096.7	11900.00
2	1530.59	32.57	1.837	0.30( 0.30)	0.99	1104.8	11910.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

PEAK FLOW RATE(CFS) = 1530.59 Tc(MIN.) = 32.57
EFFECTIVE AREA(ACRES) = 1104.79 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 1104.8
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

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*****
FLOW PROCESS FROM NODE 11920.00 TO NODE 11921.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 873.95 DOWNSTREAM(FEET) = 827.94
CHANNEL LENGTH THRU SUBAREA(FEET) = 1417.25 CHANNEL SLOPE = 0.0325
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.45
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.782
SUBAREA LOSS RATE DATA(AMC II):

```

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	107.47	0.30	1.000	-

```

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1602.24
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.86
AVERAGE FLOW DEPTH(FEET) = 6.44 TRAVEL TIME(MIN.) = 2.17
Tc(MIN.) = 34.75

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SUBAREA AREA(ACRES) = 107.47 SUBAREA RUNOFF(CFS) = 143.30
EFFECTIVE AREA(ACRES) = 1212.26 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 1212.3 PEAK FLOW RATE(CFS) = 1618.54
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.47

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

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DEPTH(FEET) = 6.47 FLOW VELOCITY(FEET/SEC.) = 10.89
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

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\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1619.54	34.32	1.792	0.30( 0.30)	0.99	1204.2	11900.00
2	1618.54	34.75	1.782	0.30( 0.30)	0.99	1212.3	11910.00

NEW PEAK FLOW DATA ARE:

```

PEAK FLOW RATE(CFS) = 1619.54 Tc(MIN.) = 34.32
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 1204.17

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FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 827.94 DOWNSTREAM(FEET) = 753.55
CHANNEL LENGTH THRU SUBAREA(FEET) = 1886.43 CHANNEL SLOPE = 0.0394
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.59
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.726
SUBAREA LOSS RATE DATA(AMC II):

```

DEVELOPMENT TYPE/ LAND USE	SCS SOIL	AREA	Fp	Ap	SCS
USER-DEFINED	-	107.47	0.30	1.000	-

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 344.27 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1840.46  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.10  
 AVERAGE FLOW DEPTH(FEET) = 6.57 TRAVEL TIME(MIN.) = 2.60  
 Tc(MIN.) = 36.92  
 SUBAREA AREA(ACRES) = 344.27 SUBAREA RUNOFF(CFS) = 441.81  
 EFFECTIVE AREA(ACRES) = 1548.44 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 1556.5 PEAK FLOW RATE(CFS) = 1989.26  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 6.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 6.82 FLOW VELOCITY(FEET/SEC.) = 12.35  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

\*\* PEAK FLOW RATE TABLE \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1989.26	36.92	1.726	0.30( 0.30)	0.99	1548.4	11900.00
2	1984.41	37.34	1.715	0.30( 0.30)	1.00	1556.5	11910.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 1989.26 Tc(MIN.) = 36.92  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 1548.44

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 753.55 DOWNSTREAM(FEET) = 641.58  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.88 CHANNEL SLOPE = 0.0391  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.630  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	165.18	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2088.15  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.47  
 AVERAGE FLOW DEPTH(FEET) = 6.99 TRAVEL TIME(MIN.) = 3.82  
 Tc(MIN.) = 40.74  
 SUBAREA AREA(ACRES) = 165.18 SUBAREA RUNOFF(CFS) = 197.76  
 EFFECTIVE AREA(ACRES) = 1713.62 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 1721.7 PEAK FLOW RATE(CFS) = 2053.72  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 6.93 FLOW VELOCITY(FEET/SEC.) = 12.42  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11923.00 = 19034.16 FEET.

\*\* PEAK FLOW RATE TABLE \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2053.72	40.74	1.630	0.30( 0.30)	1.00	1713.6	11900.00
2	2048.46	41.17	1.621	0.30( 0.30)	1.00	1721.7	11910.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2053.72 Tc(MIN.) = 40.74  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 1713.62

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11923.00 TO NODE 11924.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 641.58 DOWNSTREAM(FEET) = 579.89  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1844.02 CHANNEL SLOPE = 0.0335  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.60  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.573  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	433.73	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2302.13  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.07  
 AVERAGE FLOW DEPTH(FEET) = 7.58 TRAVEL TIME(MIN.) = 2.55  
 Tc(MIN.) = 43.29  
 SUBAREA AREA(ACRES) = 433.73 SUBAREA RUNOFF(CFS) = 496.81  
 EFFECTIVE AREA(ACRES) = 2147.35 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 2155.4 PEAK FLOW RATE(CFS) = 2461.77  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 7.82 FLOW VELOCITY(FEET/SEC.) = 12.27  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11924.00 = 20878.18 FEET.

\*\* PEAK FLOW RATE TABLE \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2461.77	43.29	1.573	0.30( 0.30)	1.00	2147.4	11900.00
2	2452.21	43.72	1.563	0.30( 0.30)	1.00	2155.4	11910.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2461.77 Tc(MIN.) = 43.29  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 2147.35

\*\*\*\*\*

FLOW PROCESS FROM NODE 11924.00 TO NODE 11925.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 579.89 DOWNSTREAM(FEET) = 494.12
CHANNEL LENGTH THRU SUBAREA(FEET) = 2756.15 CHANNEL SLOPE = 0.0311
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.18
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.487

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 265.42 0.30 1.000 -

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2603.57
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.12
AVERAGE FLOW DEPTH(FEET) = 8.16 TRAVEL TIME(MIN.) = 3.79
Tc(MIN.) = 47.08

SUBAREA AREA(ACRES) = 265.42 SUBAREA RUNOFF(CFS) = 283.56
EFFECTIVE AREA(ACRES) = 2412.77 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 2420.9 PEAK FLOW RATE(CFS) = 2579.81
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.13 FLOW VELOCITY(FEET/SEC.) = 12.09
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11925.00 = 23634.33 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 2579.81 47.08 1.487 0.30( 0.30) 1.00 2412.8 11900.00
2 2567.11 47.51 1.477 0.30( 0.30) 1.00 2420.9 11910.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2579.81 Tc(MIN.) = 47.08
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 2412.77

\*\*\*\*\*

FLOW PROCESS FROM NODE 11925.00 TO NODE 11926.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 494.12 DOWNSTREAM(FEET) = 458.40
CHANNEL LENGTH THRU SUBAREA(FEET) = 1922.70 CHANNEL SLOPE = 0.0186
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.23
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.418

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 97.46 0.30 1.000 -

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2628.86
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.03
AVERAGE FLOW DEPTH(FEET) = 9.22 TRAVEL TIME(MIN.) = 3.20
Tc(MIN.) = 50.28

SUBAREA AREA(ACRES) = 97.46 SUBAREA RUNOFF(CFS) = 98.10
EFFECTIVE AREA(ACRES) = 2510.23 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 2518.3 PEAK FLOW RATE(CFS) = 2579.81
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.14

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.14 FLOW VELOCITY(FEET/SEC.) = 9.98
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11926.00 = 25557.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 2579.81 50.28 1.418 0.30( 0.30) 1.00 2510.2 11900.00
2 2567.11 50.71 1.414 0.30( 0.30) 1.00 2518.3 11910.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2579.81 Tc(MIN.) = 50.28
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 2510.23

\*\*\*\*\*

FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 458.40 DOWNSTREAM(FEET) = 399.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2170.13 CHANNEL SLOPE = 0.0274
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.41
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.388

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 53.83 0.30 1.000 -

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2606.16
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.55
AVERAGE FLOW DEPTH(FEET) = 8.41 TRAVEL TIME(MIN.) = 3.13
Tc(MIN.) = 53.41

SUBAREA AREA(ACRES) = 53.83 SUBAREA RUNOFF(CFS) = 52.70
EFFECTIVE AREA(ACRES) = 2564.06 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 2572.1 PEAK FLOW RATE (CFS) = 2579.81  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 8.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 8.37 FLOW VELOCITY (FEET/SEC.) = 11.52  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\* PEAK FLOW RATE TABLE \*\*  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2579.81	53.41	1.388	0.30 (0.30)	1.00	2564.1	11900.00
2	2567.11	53.85	1.383	0.30 (0.30)	1.00	2572.1	11910.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 2579.81 Tc (MIN.) = 53.41  
 AREA-AVERAGED Fm (INCH/HR) = 0.30 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA (ACRES) = 2564.06

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 10  
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>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: P401XXCE.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	944.38	25.32	0.30 (0.30)	1.00	624.3	40130.00
2	939.28	27.13	0.30 (0.30)	1.00	654.2	40100.00
TOTAL AREA (ACRES) = 654.2						

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<<  
 =====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2579.81	53.41	1.388	0.30 (0.30)	1.00	2564.1	11900.00
2	2567.11	53.85	1.383	0.30 (0.30)	1.00	2572.1	11910.00
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.							

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	944.38	25.32	2.118	0.30 (0.30)	1.00	624.3	40130.00
2	939.28	27.13	2.034	0.30 (0.30)	1.00	654.2	40100.00
LONGEST FLOWPATH FROM NODE 40100.00 TO NODE 11927.00 = 10245.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2987.26	25.32	2.118	0.30 (0.30)	1.00	1839.8	40130.00
2	3028.60	27.13	2.034	0.30 (0.30)	1.00	1956.9	40100.00
3	3168.88	53.41	1.388	0.30 (0.30)	1.00	3218.3	11900.00
4	3153.84	53.85	1.383	0.30 (0.30)	1.00	3226.4	11910.00
TOTAL AREA (ACRES) = 3226.4							

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE (CFS) = 3168.88 Tc (MIN.) = 53.406  
 EFFECTIVE AREA (ACRES) = 3218.26 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 3226.4  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.00 = 27727.16 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.50 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 399.00 DOWNSTREAM (FEET) = 384.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 986.26 CHANNEL SLOPE = 0.0152  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 10.49  
 CHANNEL FLOW THRU SUBAREA (CFS) = 3168.88  
 FLOW VELOCITY (FEET/SEC.) = 9.76 FLOW DEPTH (FEET) = 10.49  
 TRAVEL TIME (MIN.) = 1.68 Tc (MIN.) = 55.09  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11927.50 = 28713.42 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2987.26	27.03	2.039	0.30 (0.30)	1.00	1839.8	40130.00
2	3028.60	28.84	1.956	0.30 (0.30)	1.00	1956.9	40100.00
3	3168.88	55.09	1.371	0.30 (0.30)	1.00	3218.3	11900.00
4	3153.84	55.53	1.367	0.30 (0.30)	1.00	3226.4	11910.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 3168.88 Tc (MIN.) = 55.09  
 AREA-AVERAGED Fm (INCH/HR) = 0.30 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA (ACRES) = 3218.26

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<  
 =====

MAINLINE Tc (MIN.) = 55.09  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.371



SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.40	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.70	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.50	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.30	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.30	1.000	66
NATURAL FAIR COVER					
"GRASS"	B	0.60	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 8.40 SUBAREA RUNOFF (CFS) = 8.10  
EFFECTIVE AREA (ACRES) = 3226.66 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 3234.8 PEAK FLOW RATE (CFS) = 3168.88  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
=====

MAINLINE Tc (MIN.) = 55.09  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.371

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.30	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 0.50 SUBAREA RUNOFF (CFS) = 0.48  
EFFECTIVE AREA (ACRES) = 3227.16 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 3235.2 PEAK FLOW RATE (CFS) = 3168.88  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
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MAINLINE Tc (MIN.) = 55.09  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.371

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					

"WOODLAND, GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.70	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 2.00 SUBAREA RUNOFF (CFS) = 1.93  
EFFECTIVE AREA (ACRES) = 3229.16 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 3237.2 PEAK FLOW RATE (CFS) = 3168.88  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 11927.50 TO NODE 11928.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<  
=====

ELEVATION DATA: UPSTREAM (FEET) = 384.00 DOWNSTREAM (FEET) = 359.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 647.19 CHANNEL SLOPE = 0.0386  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.55  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.363

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	78.01	0.30	0.984	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.984  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3206.39  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.86  
AVERAGE FLOW DEPTH (FEET) = 8.54 TRAVEL TIME (MIN.) = 0.78  
Tc (MIN.) = 55.87

SUBAREA AREA (ACRES) = 78.01 SUBAREA RUNOFF (CFS) = 75.01  
EFFECTIVE AREA (ACRES) = 3307.17 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 3315.3 PEAK FLOW RATE (CFS) = 3168.88  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 8.50 FLOW VELOCITY (FEET/SEC.) = 13.82  
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29360.61 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	2987.26	27.82	2.003	0.30 ( 0.30)	1.00	1928.7	40130.00
2	3028.60	29.63	1.920	0.30 ( 0.30)	1.00	2045.8	40100.00
3	3168.88	55.87	1.363	0.30 ( 0.30)	1.00	3307.2	11900.00

4 3162.81 56.31 1.359 0.30( 0.30) 1.00 3315.3 11910.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 3168.88 Tc(MIN.) = 55.87  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 3307.17

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11928.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 55.87  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.363  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND,GRASS"	B	1.10	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.60	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 1.63  
 EFFECTIVE AREA(ACRES) = 3308.87 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 3317.0 PEAK FLOW RATE(CFS) = 3169.66

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 359.00 DOWNSTREAM(FEET) = 341.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1322.66 CHANNEL SLOPE = 0.0131  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.84  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.340  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.18	0.30	0.890	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3173.61  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.24  
 AVERAGE FLOW DEPTH(FEET) = 10.84 TRAVEL TIME(MIN.) = 2.38  
 Tc(MIN.) = 58.25  
 SUBAREA AREA(ACRES) = 8.18 SUBAREA RUNOFF(CFS) = 7.90  
 EFFECTIVE AREA(ACRES) = 3317.05 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 3325.1 PEAK FLOW RATE(CFS) = 3169.66  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.84

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 10.84 FLOW VELOCITY(FEET/SEC.) = 9.23  
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2987.26	30.24	1.897	0.30( 0.30)	1.00	1938.6	40130.00
2	3028.60	32.04	1.851	0.30( 0.30)	1.00	2055.7	40100.00
3	3169.66	58.25	1.340	0.30( 0.30)	1.00	3317.1	11900.00
4	3164.43	58.70	1.336	0.30( 0.30)	1.00	3325.1	11910.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 3169.66 Tc(MIN.) = 58.25  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 1.00 EFFECTIVE AREA(ACRES) = 3317.05

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 58.25  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.340  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	1.90	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.60	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 2.50 SUBAREA RUNOFF(CFS) = 2.34  
 EFFECTIVE AREA(ACRES) = 3319.55 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 3327.6 PEAK FLOW RATE(CFS) = 3169.66  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 10  
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>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: S18X00.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22054.84	36.58	0.30( 0.30)	1.00	7926.9	11831.00
2	22725.41	39.13	0.30( 0.30)	1.00	8505.3	11801.00
3	25134.97	47.53	0.30( 0.30)	1.00	10691.9	11500.00
4	25502.09	49.16	0.30( 0.30)	1.00	11329.9	11530.00
5	26360.19	53.71	0.30( 0.30)	1.00	13011.5	11701.00

6	26779.09	55.76	0.30	( 0.30)	1.00	13818.6	11000.00
7	29291.04	65.53	0.30	( 0.30)	1.00	18866.7	11330.00
8	30114.29	72.03	0.30	( 0.30)	1.00	22317.4	11130.00
9	29645.18	80.38	0.30	( 0.30)	1.00	25368.4	11620.00
10	29500.26	82.66	0.30	( 0.30)	1.00	26144.7	11600.00
11	29052.00	88.60	0.30	( 0.30)	1.00	27897.1	11111.00
12	28910.69	90.07	0.30	( 0.30)	1.00	28280.6	11101.00
13	28571.47	94.86	0.30	( 0.30)	1.00	29290.8	10710.00
14	28361.22	96.69	0.30	( 0.30)	1.00	29594.6	10410.00
15	27934.24	101.05	0.30	( 0.30)	1.00	30249.2	10700.00
16	27383.49	107.91	0.30	( 0.30)	1.00	31215.0	10400.00
17	27137.20	109.87	0.30	( 0.30)	1.00	31440.4	10200.00
18	26251.80	115.74	0.30	( 0.30)	1.00	32001.9	10300.00
19	25289.37	121.31	0.30	( 0.30)	1.00	32223.4	10210.00
20	23048.07	146.70	0.30	( 0.30)	1.00	32916.6	10100.00

TOTAL AREA (ACRES) = 32916.6

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FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: S25X00.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7548.90	65.18	0.30 ( 0.30)	0.99	6431.3	12500.00
2	8477.91	78.32	0.30 ( 0.30)	0.99	8413.1	12300.00
3	8593.88	79.61	0.30 ( 0.30)	0.98	8691.0	12330.00
4	8774.49	82.20	0.30 ( 0.30)	0.98	9202.6	12410.00
5	9008.69	86.22	0.30 ( 0.29)	0.98	9924.8	12400.00
6	9221.87	90.84	0.30 ( 0.29)	0.98	10622.1	12211.00
7	9347.17	94.81	0.30 ( 0.29)	0.98	11209.1	12201.00
8	9384.46	98.70	0.30 ( 0.29)	0.98	11677.0	12111.00
9	9366.85	101.16	0.30 ( 0.29)	0.98	11977.9	12231.00
10	9319.62	103.97	0.30 ( 0.29)	0.98	12282.5	12101.10
11	9299.62	104.81	0.30 ( 0.29)	0.98	12363.8	12261.00
12	8916.90	115.67	0.30 ( 0.29)	0.98	13112.3	12010.00
13	8576.29	123.92	0.30 ( 0.29)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

\*\*\*\*\*

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7548.90	65.18	0.30 ( 0.30)	0.99	6431.3	12500.00
2	8477.91	78.32	0.30 ( 0.30)	0.99	8413.1	12300.00
3	8593.88	79.61	0.30 ( 0.30)	0.98	8691.0	12330.00
4	8774.49	82.20	0.30 ( 0.30)	0.98	9202.6	12410.00
5	9008.69	86.22	0.30 ( 0.29)	0.98	9924.8	12400.00
6	9221.87	90.84	0.30 ( 0.29)	0.98	10622.1	12211.00
7	9347.17	94.81	0.30 ( 0.29)	0.98	11209.1	12201.00
8	9384.46	98.70	0.30 ( 0.29)	0.98	11677.0	12111.00

9	9366.85	101.16	0.30	( 0.29)	0.98	11977.9	12231.00
10	9319.62	103.97	0.30	( 0.29)	0.98	12282.5	12101.10
11	9299.62	104.81	0.30	( 0.29)	0.98	12363.8	12261.00
12	8916.90	115.67	0.30	( 0.29)	0.98	13112.3	12010.00
13	8576.29	123.92	0.30	( 0.29)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

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FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	7548.90	65.18	1.288	0.30 ( 0.30)	0.99	6431.3	12500.00
2	8477.91	78.32	1.200	0.30 ( 0.30)	0.99	8413.1	12300.00
3	8593.88	79.61	1.192	0.30 ( 0.30)	0.98	8691.0	12330.00
4	8774.49	82.20	1.174	0.30 ( 0.30)	0.98	9202.6	12410.00
5	9008.69	86.22	1.147	0.30 ( 0.29)	0.98	9924.8	12400.00
6	9221.87	90.84	1.118	0.30 ( 0.29)	0.98	10622.1	12211.00
7	9347.17	94.81	1.100	0.30 ( 0.29)	0.98	11209.1	12201.00
8	9384.46	98.70	1.083	0.30 ( 0.29)	0.98	11677.0	12111.00
9	9366.85	101.16	1.072	0.30 ( 0.29)	0.98	11977.9	12231.00
10	9319.62	103.97	1.059	0.30 ( 0.29)	0.98	12282.5	12101.10
11	9299.62	104.81	1.055	0.30 ( 0.29)	0.98	12363.8	12261.00
12	8916.90	115.67	1.006	0.30 ( 0.29)	0.98	13112.3	12010.00
13	8576.29	123.92	0.977	0.30 ( 0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22054.84	36.58	1.735	0.30 ( 0.30)	1.00	7926.9	11831.00
2	22725.41	39.13	1.669	0.30 ( 0.30)	1.00	8505.3	11801.00
3	25134.97	47.53	1.477	0.30 ( 0.30)	1.00	10691.9	11500.00
4	25502.09	49.16	1.440	0.30 ( 0.30)	1.00	11329.9	11530.00
5	26360.19	53.71	1.385	0.30 ( 0.30)	1.00	13011.5	11701.00
6	26779.09	55.76	1.365	0.30 ( 0.30)	1.00	13818.6	11000.00
7	29291.04	65.53	1.286	0.30 ( 0.30)	1.00	18866.7	11330.00
8	30114.29	72.03	1.242	0.30 ( 0.30)	1.00	22317.4	11130.00
9	29645.18	80.38	1.186	0.30 ( 0.30)	1.00	25368.4	11620.00
10	29500.26	82.66	1.171	0.30 ( 0.30)	1.00	26144.7	11600.00
11	29052.00	88.60	1.131	0.30 ( 0.30)	1.00	27897.1	11111.00
12	28910.69	90.07	1.122	0.30 ( 0.30)	1.00	28280.6	11101.00
13	28571.47	94.86	1.100	0.30 ( 0.30)	1.00	29290.8	10710.00
14	28361.22	96.69	1.092	0.30 ( 0.30)	1.00	29594.6	10410.00
15	27934.24	101.05	1.072	0.30 ( 0.30)	1.00	30249.2	10700.00
16	27383.49	107.91	1.041	0.30 ( 0.30)	1.00	31215.0	10400.00
17	27137.20	109.87	1.033	0.30 ( 0.30)	1.00	31440.4	10200.00
18	26251.80	115.74	1.006	0.30 ( 0.30)	1.00	32001.9	10300.00
19	25289.37	121.31	0.984	0.30 ( 0.30)	1.00	32223.4	10210.00
20	23048.07	146.70	0.917	0.30 ( 0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	28196.41	36.58	1.735	0.30( 0.30)	0.99	11536.0 11831.00
2	28997.24	39.13	1.669	0.30( 0.30)	0.99	12366.4 11801.00
3	31685.73	47.53	1.477	0.30( 0.30)	0.99	15382.2 11500.00
4	32066.13	49.16	1.440	0.30( 0.30)	0.99	16181.3 11530.00
5	33185.00	53.71	1.385	0.30( 0.30)	0.99	18311.7 11701.00
6	33733.33	55.76	1.365	0.30( 0.30)	0.99	19320.5 11000.00
7	36747.98	65.18	1.288	0.30( 0.30)	0.99	25113.1 12500.00
8	36865.25	65.53	1.286	0.30( 0.30)	0.99	25351.9 11330.00
9	38148.02	72.03	1.242	0.30( 0.30)	0.99	29783.0 11130.00
10	38239.23	78.32	1.200	0.30( 0.30)	0.99	33026.2 12300.00
11	38282.50	79.61	1.192	0.30( 0.30)	0.99	33776.9 12330.00
12	38292.96	80.38	1.186	0.30( 0.30)	0.99	34212.1 11620.00
13	38303.77	82.20	1.174	0.30( 0.30)	0.99	35191.7 12410.00
14	38301.27	82.66	1.171	0.30( 0.30)	0.99	35429.0 11600.00
15	38240.18	86.22	1.147	0.30( 0.30)	0.99	37120.1 12400.00
16	38170.52	88.60	1.131	0.30( 0.30)	0.99	38181.1 11111.00
17	38097.30	90.07	1.122	0.30( 0.30)	0.99	38787.4 11101.00
18	38078.45	90.84	1.118	0.30( 0.30)	0.99	39063.9 12211.00
19	37922.34	94.81	1.100	0.30( 0.30)	0.99	40488.9 12201.00
20	37919.14	94.86	1.100	0.30( 0.30)	0.99	40506.2 10710.00
21	37726.41	96.69	1.092	0.30( 0.30)	0.99	41029.8 10410.00
22	37548.75	98.70	1.083	0.30( 0.30)	0.99	41573.6 12111.00
23	37301.90	101.05	1.072	0.30( 0.30)	0.99	42213.4 10700.00
24	37292.05	101.16	1.072	0.30( 0.30)	0.99	42243.0 12231.00
25	37019.30	103.97	1.059	0.30( 0.30)	0.99	42943.0 12101.10
26	36931.54	104.81	1.055	0.30( 0.30)	0.99	43143.1 12261.00
27	36574.05	107.91	1.041	0.30( 0.30)	0.99	43792.1 10400.00
28	36258.75	109.87	1.033	0.30( 0.30)	0.99	44152.4 10200.00
29	35179.73	115.67	1.006	0.30( 0.30)	0.99	45107.2 12010.00
30	35165.68	115.74	1.006	0.30( 0.30)	0.99	45115.3 10300.00
31	33973.56	121.31	0.984	0.30( 0.30)	0.99	45420.9 10210.00
32	33634.95	123.92	0.977	0.30( 0.30)	0.99	45531.8 12000.00
33	30871.16	146.70	0.917	0.30( 0.30)	0.99	46153.7 10100.00
TOTAL AREA (ACRES) =		46153.7				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38303.77 Tc(MIN.) = 82.200  
EFFECTIVE AREA(ACRES) = 35191.74 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 46153.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

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FLOW PROCESS FROM NODE 12527.00 TO NODE 11929.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63  
CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.79  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.170  
SUBAREA LOSS RATE DATA(AMC II):  
DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

USER-DEFINED - 14.37 0.30 0.987 -  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38309.42  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.73  
AVERAGE FLOW DEPTH(FEET) = 9.79 TRAVEL TIME(MIN.) = 0.56  
Tc(MIN.) = 82.76  
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 11.31  
EFFECTIVE AREA(ACRES) = 35206.11 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 38303.77  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.79 FLOW VELOCITY(FEET/SEC.) = 15.72  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28196.41	37.20	1.719	0.30( 0.30)	0.99	11550.4	11831.00
2	28997.24	39.75	1.653	0.30( 0.30)	0.99	12380.8	11801.00
3	31685.73	48.13	1.463	0.30( 0.30)	0.99	15396.6	11500.00
4	32066.13	49.76	1.426	0.30( 0.30)	0.99	16195.7	11530.00
5	33185.00	54.30	1.379	0.30( 0.30)	0.99	18326.0	11701.00
6	33733.33	56.35	1.359	0.30( 0.30)	0.99	19334.9	11000.00
7	36747.98	65.75	1.284	0.30( 0.30)	0.99	25127.5	12500.00
8	36865.25	66.10	1.282	0.30( 0.30)	0.99	25366.3	11330.00
9	38148.02	72.60	1.239	0.30( 0.30)	0.99	29797.3	11130.00
10	38239.23	78.88	1.197	0.30( 0.30)	0.99	33040.6	12300.00
11	38282.50	80.17	1.188	0.30( 0.30)	0.99	33791.3	12330.00
12	38292.96	80.95	1.183	0.30( 0.30)	0.99	34226.1	11620.00
13	38303.77	82.76	1.170	0.30( 0.30)	0.99	35206.1	12410.00
14	38301.27	83.22	1.167	0.30( 0.30)	0.99	35443.4	11600.00
15	38240.18	86.78	1.144	0.30( 0.30)	0.99	37134.5	12400.00
16	38170.52	89.16	1.128	0.30( 0.30)	0.99	38195.5	11111.00
17	38097.30	90.64	1.119	0.30( 0.30)	0.99	38801.7	11101.00
18	38078.45	91.40	1.116	0.30( 0.30)	0.99	39078.2	12211.00
19	37922.34	95.38	1.098	0.30( 0.30)	0.99	40503.2	12201.00
20	37919.14	95.43	1.098	0.30( 0.30)	0.99	40520.6	10710.00
21	37726.41	97.26	1.089	0.30( 0.30)	0.99	41044.2	10410.00
22	37548.75	99.27	1.080	0.30( 0.30)	0.99	41587.9	12111.00
23	37301.90	101.62	1.070	0.30( 0.30)	0.99	42227.7	10700.00
24	37292.05	101.73	1.069	0.30( 0.30)	0.99	42257.4	12231.00
25	37019.30	104.54	1.057	0.30( 0.30)	0.99	42957.4	12101.10
26	36931.54	105.38	1.053	0.30( 0.30)	0.99	43157.5	12261.00
27	36574.05	108.48	1.039	0.30( 0.30)	0.99	43806.5	10400.00
28	36258.75	110.44	1.030	0.30( 0.30)	0.99	44166.8	10200.00
29	35179.73	116.25	1.004	0.30( 0.30)	0.99	45121.6	12010.00
30	35165.68	116.32	1.004	0.30( 0.30)	0.99	45129.7	10300.00
31	33973.56	121.90	0.982	0.30( 0.30)	0.99	45435.3	10210.00
32	33634.95	124.51	0.975	0.30( 0.30)	0.99	45546.2	12000.00
33	30871.16	147.31	0.915	0.30( 0.30)	0.99	46168.0	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 38303.77 Tc(MIN.) = 82.76

AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 35206.11

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28196.41	37.20	1.719	0.30( 0.30)	0.99	11550.4	11831.00
2	28997.24	39.75	1.653	0.30( 0.30)	0.99	12380.8	11801.00
3	31685.73	48.13	1.463	0.30( 0.30)	0.99	15396.6	11500.00
4	32066.13	49.76	1.426	0.30( 0.30)	0.99	16195.7	11530.00
5	33185.00	54.30	1.379	0.30( 0.30)	0.99	18326.0	11701.00
6	33733.33	56.35	1.359	0.30( 0.30)	0.99	19334.9	11000.00
7	36747.98	65.75	1.284	0.30( 0.30)	0.99	25127.5	12500.00
8	36865.25	66.10	1.282	0.30( 0.30)	0.99	25366.3	11330.00
9	38148.02	72.60	1.239	0.30( 0.30)	0.99	29797.3	11130.00
10	38239.23	78.88	1.197	0.30( 0.30)	0.99	33040.6	12300.00
11	38282.50	80.17	1.188	0.30( 0.30)	0.99	33791.3	12330.00
12	38292.96	80.95	1.183	0.30( 0.30)	0.99	34226.5	11620.00
13	38303.77	82.76	1.170	0.30( 0.30)	0.99	35206.1	12410.00
14	38301.27	83.22	1.167	0.30( 0.30)	0.99	35443.4	11600.00
15	38240.18	86.78	1.144	0.30( 0.30)	0.99	37134.5	12400.00
16	38170.52	89.16	1.128	0.30( 0.30)	0.99	38195.5	11111.00
17	38097.30	90.64	1.119	0.30( 0.30)	0.99	38801.7	11101.00
18	38078.45	91.40	1.116	0.30( 0.30)	0.99	39078.2	12211.00
19	37922.34	95.38	1.098	0.30( 0.30)	0.99	40503.2	12201.00
20	37919.14	95.43	1.098	0.30( 0.30)	0.99	40520.6	10710.00
21	37726.41	97.26	1.089	0.30( 0.30)	0.99	41044.2	10410.00
22	37548.75	99.27	1.080	0.30( 0.30)	0.99	41587.9	12111.00
23	37301.90	101.62	1.070	0.30( 0.30)	0.99	42227.7	10700.00
24	37292.05	101.73	1.069	0.30( 0.30)	0.99	42257.4	12231.00
25	37019.30	104.54	1.057	0.30( 0.30)	0.99	42957.4	12101.10
26	36931.54	105.38	1.053	0.30( 0.30)	0.99	43157.5	12261.00
27	36574.05	108.48	1.039	0.30( 0.30)	0.99	43806.5	10400.00
28	36258.75	110.44	1.030	0.30( 0.30)	0.99	44166.8	10200.00
29	35179.73	116.25	1.004	0.30( 0.30)	0.99	45121.6	12010.00
30	35165.68	116.32	1.004	0.30( 0.30)	0.99	45129.7	10300.00
31	33973.56	121.90	0.982	0.30( 0.30)	0.99	45435.3	10210.00
32	33634.95	124.51	0.975	0.30( 0.30)	0.99	45546.2	12000.00
33	30871.16	147.31	0.915	0.30( 0.30)	0.99	46168.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2987.26	30.24	1.897	0.30( 0.30)	1.00	1941.1	40130.00
2	3028.60	32.04	1.851	0.30( 0.30)	1.00	2058.2	40100.00
3	3169.66	58.25	1.340	0.30( 0.30)	1.00	3319.6	11900.00
4	3164.43	58.70	1.336	0.30( 0.30)	1.00	3327.6	11910.00

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	28781.04	30.24	1.897	0.30( 0.30)	0.99	11329.6 40130.00
2	29570.59	32.04	1.851	0.30( 0.30)	0.99	12005.8 40100.00
3	31252.79	37.20	1.719	0.30( 0.30)	0.99	13857.0 11831.00
4	32067.32	39.75	1.653	0.30( 0.30)	0.99	14809.9 11801.00
5	34800.94	48.13	1.463	0.30( 0.30)	0.99	18229.2 11500.00
6	35190.11	49.76	1.426	0.30( 0.30)	0.99	19106.7 11530.00
7	36333.41	54.30	1.379	0.30( 0.30)	0.99	21455.5 11701.00
8	36892.72	56.35	1.359	0.30( 0.30)	0.99	22562.6 11000.00
9	37514.99	58.25	1.340	0.30( 0.30)	0.99	23830.4 11900.00
10	37652.28	58.70	1.336	0.30( 0.30)	0.99	24112.3 11910.00
11	39755.94	65.75	1.284	0.30( 0.30)	0.99	28455.1 12500.00
12	39865.90	66.10	1.282	0.30( 0.30)	0.99	28694.0 11330.00
13	41015.88	72.60	1.239	0.30( 0.30)	0.99	33125.0 11130.00
14	40978.60	78.88	1.197	0.30( 0.30)	0.99	36368.2 12300.00
15	40995.41	80.17	1.188	0.30( 0.30)	0.99	37118.9 12330.00
16	40990.07	80.95	1.183	0.30( 0.30)	0.99	37554.1 11620.00
17	40963.71	82.76	1.170	0.30( 0.30)	0.99	38533.8 12410.00
18	40951.90	83.22	1.167	0.30( 0.30)	0.99	38771.0 11600.00
19	40817.93	86.78	1.144	0.30( 0.30)	0.99	40462.1 12400.00
20	40699.58	89.16	1.128	0.30( 0.30)	0.99	41523.1 11111.00
21	40600.48	90.64	1.119	0.30( 0.30)	0.99	42129.4 11101.00
22	40571.13	91.40	1.116	0.30( 0.30)	0.99	42405.9 12211.00
23	40360.44	95.38	1.098	0.30( 0.30)	0.99	43830.9 12201.00
24	40356.51	95.43	1.098	0.30( 0.30)	0.99	43848.2 10710.00
25	40138.69	97.26	1.089	0.30( 0.30)	0.99	44371.8 10410.00
26	39933.41	99.27	1.080	0.30( 0.30)	0.99	44915.6 12111.00
27	39654.30	101.62	1.070	0.30( 0.30)	0.99	45555.4 10700.00
28	39642.91	101.73	1.069	0.30( 0.30)	0.99	45585.0 12231.00
29	39331.55	104.54	1.057	0.30( 0.30)	0.99	46285.0 12101.10
30	39232.20	105.38	1.053	0.30( 0.30)	0.99	46485.2 12261.00
31	38832.19	108.48	1.039	0.30( 0.30)	0.99	47134.1 10400.00
32	38489.96	110.44	1.030	0.30( 0.30)	0.99	47494.5 10200.00
33	37331.12	116.25	1.004	0.30( 0.30)	0.99	48449.2 12010.00
34	37316.06	116.32	1.004	0.30( 0.30)	0.99	48457.4 10300.00
35	36058.22	121.90	0.982	0.30( 0.30)	0.99	48763.0 10210.00
36	35698.59	124.51	0.975	0.30( 0.30)	0.99	48873.8 12000.00
37	32751.58	147.31	0.915	0.30( 0.30)	0.99	49495.7 10100.00

TOTAL AREA(ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41015.88 Tc(MIN.) = 72.598  
 EFFECTIVE AREA(ACRES) = 33124.96 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49495.7

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 49495.7 TC(MIN.) = 72.60  
 EFFECTIVE AREA(ACRES) = 33124.96 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994  
 PEAK FLOW RATE(CFS) = 41015.88

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28781.04	30.24	1.897	0.30( 0.30)	0.99	11329.6	40130.00
2	29570.59	32.04	1.851	0.30( 0.30)	0.99	12005.8	40100.00

3	31252.79	37.20	1.719	0.30	( 0.30)	0.99	13857.0	11831.00
4	32067.32	39.75	1.653	0.30	( 0.30)	0.99	14809.9	11801.00
5	34800.94	48.13	1.463	0.30	( 0.30)	0.99	18229.2	11500.00
6	35190.11	49.76	1.426	0.30	( 0.30)	0.99	19106.7	11530.00
7	36333.41	54.30	1.379	0.30	( 0.30)	0.99	21455.5	11701.00
8	36892.72	56.35	1.359	0.30	( 0.30)	0.99	22562.6	11000.00
9	37514.99	58.25	1.340	0.30	( 0.30)	0.99	23830.4	11900.00
10	37652.28	58.70	1.336	0.30	( 0.30)	0.99	24112.3	11910.00
11	39755.94	65.75	1.284	0.30	( 0.30)	0.99	28455.1	12500.00
12	39865.90	66.10	1.282	0.30	( 0.30)	0.99	28694.0	11330.00
13	41015.88	72.60	1.239	0.30	( 0.30)	0.99	33125.0	11130.00
14	40978.60	78.88	1.197	0.30	( 0.30)	0.99	36368.2	12300.00
15	40995.41	80.17	1.188	0.30	( 0.30)	0.99	37118.9	12330.00
16	40990.07	80.95	1.183	0.30	( 0.30)	0.99	37554.1	11620.00
17	40963.71	82.76	1.170	0.30	( 0.30)	0.99	38533.8	12410.00
18	40951.90	83.22	1.167	0.30	( 0.30)	0.99	38771.0	11600.00
19	40817.93	86.78	1.144	0.30	( 0.30)	0.99	40462.1	12400.00
20	40699.58	89.16	1.128	0.30	( 0.30)	0.99	41523.1	11111.00
21	40600.48	90.64	1.119	0.30	( 0.30)	0.99	42129.4	11101.00
22	40571.13	91.40	1.116	0.30	( 0.30)	0.99	42405.9	12211.00
23	40360.44	95.38	1.098	0.30	( 0.30)	0.99	43830.9	12201.00
24	40356.51	95.43	1.098	0.30	( 0.30)	0.99	43848.2	10710.00
25	40138.69	97.26	1.089	0.30	( 0.30)	0.99	44371.8	10410.00
26	39933.41	99.27	1.080	0.30	( 0.30)	0.99	44915.6	12111.00
27	39654.30	101.62	1.070	0.30	( 0.30)	0.99	45555.4	10700.00
28	39642.91	101.73	1.069	0.30	( 0.30)	0.99	45585.0	12231.00
29	39331.55	104.54	1.057	0.30	( 0.30)	0.99	46285.0	12101.10
30	39232.20	105.38	1.053	0.30	( 0.30)	0.99	46485.2	12261.00
31	38832.19	108.48	1.039	0.30	( 0.30)	0.99	47134.1	10400.00
32	38489.96	110.44	1.030	0.30	( 0.30)	0.99	47494.5	10200.00
33	37331.12	116.25	1.004	0.30	( 0.30)	0.99	48449.2	12010.00
34	37316.06	116.32	1.004	0.30	( 0.30)	0.99	48457.4	10300.00
35	36058.22	121.90	0.982	0.30	( 0.30)	0.99	48763.0	10210.00
36	35698.59	124.51	0.975	0.30	( 0.30)	0.99	48873.8	12000.00
37	32751.58	147.31	0.915	0.30	( 0.30)	0.99	49495.7	10100.00

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 END OF RATIONAL METHOD ANALYSIS  
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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S26- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
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FILE NAME: RU00EV26.DAT  
TIME/DATE OF STUDY: 11:52 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 6.102
- 2) 10.00; 3.901
- 3) 15.00; 3.005
- 4) 20.00; 2.465
- 5) 25.00; 2.129
- 6) 30.00; 1.900
- 7) 40.00; 1.644
- 8) 50.00; 1.419
- 9) 60.00; 1.320
- 10) 90.00; 1.119
- 11) 120.00; 0.983
- 12) 180.00; 0.826
- 13) 360.00; 0.617
- 14) 1200.00; 0.271

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

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FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV19.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29570.59	32.04	0.30 ( 0.30)	0.99	12005.8	40100.00
2	31252.79	37.20	0.30 ( 0.30)	0.99	13857.0	11831.00
3	32067.32	39.75	0.30 ( 0.30)	0.99	14809.9	11801.00
4	35190.11	49.76	0.30 ( 0.30)	0.99	19106.7	11530.00
5	37652.28	58.70	0.30 ( 0.30)	0.99	24112.3	11910.00
6	39865.90	66.10	0.30 ( 0.30)	0.99	28694.0	11330.00
7	41015.88	72.60	0.30 ( 0.30)	0.99	33125.0	11130.00
8	40995.41	80.17	0.30 ( 0.30)	0.99	37118.9	12330.00
9	40963.71	82.76	0.30 ( 0.30)	0.99	38533.8	12410.00
10	40817.93	86.78	0.30 ( 0.30)	0.99	40462.1	12400.00
11	40699.58	89.16	0.30 ( 0.30)	0.99	41523.1	11111.00
12	40360.44	95.38	0.30 ( 0.30)	0.99	43830.9	12201.00
13	39933.41	99.27	0.30 ( 0.30)	0.99	44915.6	12111.00
14	39654.30	101.62	0.30 ( 0.30)	0.99	45555.4	10700.00
15	39331.55	104.54	0.30 ( 0.30)	0.99	46285.0	12101.10
16	38832.19	108.48	0.30 ( 0.30)	0.99	47134.1	10400.00
17	37331.12	116.25	0.30 ( 0.30)	0.99	48449.2	12010.00
18	36058.22	121.90	0.30 ( 0.30)	0.99	48763.0	10210.00
19	35698.59	124.51	0.30 ( 0.30)	0.99	48873.8	12000.00
20	32751.58	147.31	0.30 ( 0.30)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

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FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29570.59	32.04	0.30 ( 0.30)	0.99	12005.8	40100.00
2	31252.79	37.20	0.30 ( 0.30)	0.99	13857.0	11831.00
3	32067.32	39.75	0.30 ( 0.30)	0.99	14809.9	11801.00
4	35190.11	49.76	0.30 ( 0.30)	0.99	19106.7	11530.00
5	37652.28	58.70	0.30 ( 0.30)	0.99	24112.3	11910.00
6	39865.90	66.10	0.30 ( 0.30)	0.99	28694.0	11330.00
7	41015.88	72.60	0.30 ( 0.30)	0.99	33125.0	11130.00
8	40995.41	80.17	0.30 ( 0.30)	0.99	37118.9	12330.00
9	40963.71	82.76	0.30 ( 0.30)	0.99	38533.8	12410.00
10	40817.93	86.78	0.30 ( 0.30)	0.99	40462.1	12400.00
11	40699.58	89.16	0.30 ( 0.30)	0.99	41523.1	11111.00
12	40360.44	95.38	0.30 ( 0.30)	0.99	43830.9	12201.00
13	39933.41	99.27	0.30 ( 0.30)	0.99	44915.6	12111.00

14	39654.30	101.62	0.30	( 0.30)	0.99	45555.4	10700.00
15	39331.55	104.54	0.30	( 0.30)	0.99	46285.0	12101.10
16	38832.19	108.48	0.30	( 0.30)	0.99	47134.1	10400.00
17	37331.12	116.25	0.30	( 0.30)	0.99	48449.2	12010.00
18	36058.22	121.90	0.30	( 0.30)	0.99	48763.0	10210.00
19	35698.59	124.51	0.30	( 0.30)	0.99	48873.8	12000.00
20	32751.58	147.31	0.30	( 0.30)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =							49495.7

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FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 341.63 DOWNSTREAM(FEET) = 325.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1467.93 CHANNEL SLOPE = 0.0113  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.56

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.227

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.11	0.30	0.700	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.700

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41022.34

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 19.73

AVERAGE FLOW DEPTH(FEET) = 8.56 TRAVEL TIME(MIN.) = 1.24

Tc(MIN.) = 73.84

SUBAREA AREA(ACRES) = 14.11 SUBAREA RUNOFF(CFS) = 12.92

EFFECTIVE AREA(ACRES) = 33139.07 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 49509.8 PEAK FLOW RATE(CFS) = 41015.88

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.56 FLOW VELOCITY(FEET/SEC.) = 19.73

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29570.59	33.42	1.812	0.30( 0.30)	0.99	12019.9	40100.00
2	31252.79	38.56	1.681	0.30( 0.30)	0.99	13871.1	11831.00
3	32067.32	41.09	1.619	0.30( 0.30)	0.99	14824.0	11801.00
4	35190.11	51.07	1.408	0.30( 0.30)	0.99	19120.8	11530.00
5	37652.28	59.97	1.320	0.30( 0.30)	0.99	24126.4	11910.00
6	39865.90	67.36	1.271	0.30( 0.30)	0.99	28708.1	11330.00
7	41015.88	73.84	1.227	0.30( 0.30)	0.99	33139.1	11130.00
8	40995.41	81.41	1.177	0.30( 0.30)	0.99	37133.0	12330.00
9	40963.71	84.01	1.159	0.30( 0.30)	0.99	38547.9	12410.00
10	40817.93	88.03	1.132	0.30( 0.30)	0.99	40476.2	12400.00
11	40699.58	90.41	1.117	0.30( 0.30)	0.99	41537.2	11111.00

12	40360.44	96.63	1.089	0.30( 0.30)	0.99	43845.0	12201.00
13	39933.41	100.52	1.071	0.30( 0.30)	0.99	44929.7	12111.00
14	39654.30	102.87	1.061	0.30( 0.30)	0.99	45569.5	10700.00
15	39331.55	105.80	1.047	0.30( 0.30)	0.99	46299.1	12101.10
16	38832.19	109.74	1.029	0.30( 0.30)	0.99	47148.2	10400.00
17	37331.12	117.53	0.994	0.30( 0.30)	0.99	48463.4	12010.00
18	36058.22	123.19	0.975	0.30( 0.30)	0.99	48777.1	10210.00
19	35698.59	125.81	0.968	0.30( 0.30)	0.99	48887.9	12000.00
20	32751.58	148.64	0.908	0.30( 0.30)	0.99	49509.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41015.88 Tc(MIN.) = 73.84

AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33139.07

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FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3000EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	111.41	16.41	0.30( 0.30)	0.98	48.4	600.00
TOTAL AREA(ACRES) = 48.4						

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FLOW PROCESS FROM NODE 12601.00 TO NODE 12601.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29570.59	33.42	1.812	0.30( 0.30)	0.99	12019.9	40100.00
2	31252.79	38.56	1.681	0.30( 0.30)	0.99	13871.1	11831.00
3	32067.32	41.09	1.619	0.30( 0.30)	0.99	14824.0	11801.00
4	35190.11	51.07	1.408	0.30( 0.30)	0.99	19120.8	11530.00
5	37652.28	59.97	1.320	0.30( 0.30)	0.99	24126.4	11910.00
6	39865.90	67.36	1.271	0.30( 0.30)	0.99	28708.1	11330.00
7	41015.88	73.84	1.227	0.30( 0.30)	0.99	33139.1	11130.00
8	40995.41	81.41	1.177	0.30( 0.30)	0.99	37133.0	12330.00
9	40963.71	84.01	1.159	0.30( 0.30)	0.99	38547.9	12410.00
10	40817.93	88.03	1.132	0.30( 0.30)	0.99	40476.2	12400.00
11	40699.58	90.41	1.117	0.30( 0.30)	0.99	41537.2	11111.00
12	40360.44	96.63	1.089	0.30( 0.30)	0.99	43845.0	12201.00
13	39933.41	100.52	1.071	0.30( 0.30)	0.99	44929.7	12111.00
14	39654.30	102.87	1.061	0.30( 0.30)	0.99	45569.5	10700.00
15	39331.55	105.80	1.047	0.30( 0.30)	0.99	46299.1	12101.10
16	38832.19	109.74	1.029	0.30( 0.30)	0.99	47148.2	10400.00
17	37331.12	117.53	0.994	0.30( 0.30)	0.99	48463.4	12010.00
18	36058.22	123.19	0.975	0.30( 0.30)	0.99	48777.1	10210.00
19	35698.59	125.81	0.968	0.30( 0.30)	0.99	48887.9	12000.00
20	32751.58	148.64	0.908	0.30( 0.30)	0.99	49509.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*



STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	111.41	16.41	2.853	0.30 (0.30)	0.98	48.4	600.00

LONGEST FLOWPATH FROM NODE 600.00 TO NODE 12601.00 = 4850.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24603.29	16.41	2.853	0.30 (0.30)	0.99	5950.2	600.00
2	29636.68	33.42	1.812	0.30 (0.30)	0.99	12068.3	40100.00
3	31313.15	38.56	1.681	0.30 (0.30)	0.99	13919.5	11831.00
4	32125.01	41.09	1.619	0.30 (0.30)	0.99	14872.4	11801.00
5	35238.60	51.07	1.408	0.30 (0.30)	0.99	19169.2	11530.00
6	37696.93	59.97	1.320	0.30 (0.30)	0.99	24174.8	11910.00
7	39908.40	67.36	1.271	0.30 (0.30)	0.99	28756.5	11330.00
8	41056.48	73.84	1.227	0.30 (0.30)	0.99	33187.5	11130.00
9	41033.80	81.41	1.177	0.30 (0.30)	0.99	37181.4	12330.00
10	41001.34	84.01	1.159	0.30 (0.30)	0.99	38596.3	12410.00
11	40854.39	88.03	1.132	0.30 (0.30)	0.99	40524.6	12400.00
12	40735.38	90.41	1.117	0.30 (0.30)	0.99	41585.6	11111.00
13	40395.02	96.63	1.089	0.30 (0.30)	0.99	43893.4	12201.00
14	39967.22	100.52	1.071	0.30 (0.30)	0.99	44978.1	12111.00
15	39687.64	102.87	1.061	0.30 (0.30)	0.99	45617.9	10700.00
16	39364.32	105.80	1.047	0.30 (0.30)	0.99	46347.5	12101.10
17	38864.18	109.74	1.029	0.30 (0.30)	0.99	47196.6	10400.00
18	37361.57	117.53	0.994	0.30 (0.30)	0.99	48511.8	12010.00
19	36087.82	123.19	0.975	0.30 (0.30)	0.99	48825.5	10210.00
20	35727.89	125.81	0.968	0.30 (0.30)	0.99	48936.3	12000.00
21	32778.28	148.64	0.908	0.30 (0.30)	0.99	49558.2	10100.00

TOTAL AREA (ACRES) = 49558.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 41056.48 Tc (MIN.) = 73.838  
EFFECTIVE AREA (ACRES) = 33187.47 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 49558.2  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12601.00 = 99868.45 FEET.

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FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 325.00 DOWNSTREAM (FEET) = 313.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1377.46 CHANNEL SLOPE = 0.0087  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.23  
CHANNEL FLOW THRU SUBAREA (CFS) = 41056.48  
FLOW VELOCITY (FEET/SEC.) = 18.07 FLOW DEPTH (FEET) = 9.23  
TRAVEL TIME (MIN.) = 1.27 Tc (MIN.) = 75.11  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12602.00 = 101245.91 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24603.29	17.92	2.690	0.30 (0.30)	0.99	5950.2	600.00

2	29636.68	34.84	1.776	0.30 (0.30)	0.99	12068.3	40100.00
3	31313.15	39.95	1.645	0.30 (0.30)	0.99	13919.5	11831.00
4	32125.01	42.47	1.588	0.30 (0.30)	0.99	14872.4	11801.00
5	35238.60	52.40	1.395	0.30 (0.30)	0.99	19169.2	11530.00
6	37696.93	61.28	1.311	0.30 (0.30)	0.99	24174.8	11910.00
7	39908.40	68.64	1.262	0.30 (0.30)	0.99	28756.5	11330.00
8	41056.48	75.11	1.219	0.30 (0.30)	0.99	33187.5	11130.00
9	41033.80	82.69	1.168	0.30 (0.30)	0.99	37181.4	12330.00
10	41001.34	85.28	1.151	0.30 (0.30)	0.99	38596.3	12410.00
11	40854.39	89.30	1.124	0.30 (0.30)	0.99	40524.6	12400.00
12	40735.38	91.68	1.111	0.30 (0.30)	0.99	41585.6	11111.00
13	40395.02	97.90	1.083	0.30 (0.30)	0.99	43893.4	12201.00
14	39967.22	101.80	1.066	0.30 (0.30)	0.99	44978.1	12111.00
15	39687.64	104.16	1.055	0.30 (0.30)	0.99	45617.9	10700.00
16	39364.32	107.08	1.042	0.30 (0.30)	0.99	46347.5	12101.10
17	38864.18	111.04	1.024	0.30 (0.30)	0.99	47196.6	10400.00
18	37361.57	118.84	0.988	0.30 (0.30)	0.99	48511.8	12010.00
19	36087.82	124.52	0.971	0.30 (0.30)	0.99	48825.5	10210.00
20	35727.89	127.14	0.964	0.30 (0.30)	0.99	48936.3	12000.00
21	32778.28	150.01	0.904	0.30 (0.30)	0.99	49558.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 41056.48 Tc (MIN.) = 75.11  
AREA-AVERAGED Fm (INCH/HR) = 0.30 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA (ACRES) = 33187.47

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FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 313.00 DOWNSTREAM (FEET) = 310.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 312.40 CHANNEL SLOPE = 0.0096  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 8.98  
CHANNEL FLOW THRU SUBAREA (CFS) = 41056.48  
FLOW VELOCITY (FEET/SEC.) = 18.68 FLOW DEPTH (FEET) = 8.98  
TRAVEL TIME (MIN.) = 0.28 Tc (MIN.) = 75.39  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24603.29	18.25	2.654	0.30 (0.30)	0.99	5950.2	600.00
2	29636.68	35.15	1.768	0.30 (0.30)	0.99	12068.3	40100.00
3	31313.15	40.25	1.638	0.30 (0.30)	0.99	13919.5	11831.00
4	32125.01	42.77	1.582	0.30 (0.30)	0.99	14872.4	11801.00
5	35238.60	52.70	1.392	0.30 (0.30)	0.99	19169.2	11530.00
6	37696.93	61.57	1.309	0.30 (0.30)	0.99	24174.8	11910.00
7	39908.40	68.92	1.260	0.30 (0.30)	0.99	28756.5	11330.00
8	41056.48	75.39	1.217	0.30 (0.30)	0.99	33187.5	11130.00
9	41033.80	82.96	1.166	0.30 (0.30)	0.99	37181.4	12330.00
10	41001.34	85.56	1.149	0.30 (0.30)	0.99	38596.3	12410.00
11	40854.39	89.58	1.122	0.30 (0.30)	0.99	40524.6	12400.00
12	40735.38	91.96	1.110	0.30 (0.30)	0.99	41585.6	11111.00
13	40395.02	98.18	1.082	0.30 (0.30)	0.99	43893.4	12201.00
14	39967.22	102.08	1.064	0.30 (0.30)	0.99	44978.1	12111.00

15	39687.64	104.44	1.054	0.30	( 0.30)	0.99	45617.9	10700.00
16	39364.32	107.37	1.040	0.30	( 0.30)	0.99	46347.5	12101.10
17	38864.18	111.32	1.022	0.30	( 0.30)	0.99	47196.6	10400.00
18	37361.57	119.13	0.987	0.30	( 0.30)	0.99	48511.8	12010.00
19	36087.82	124.81	0.970	0.30	( 0.30)	0.99	48825.5	10210.00
20	35727.89	127.43	0.964	0.30	( 0.30)	0.99	48936.3	12000.00
21	32778.28	150.31	0.904	0.30	( 0.30)	0.99	49558.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41056.48 Tc(MIN.) = 75.39  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33187.47

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4E00EVRL.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	557.82	9.11	0.30( 0.16)	0.52	148.3	800.00
2	502.56	12.67	0.30( 0.17)	0.57	168.2	818.00
3	475.57	13.76	0.30( 0.17)	0.58	171.0	810.00
TOTAL AREA(ACRES) =						171.0

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24603.29	18.25	2.654	0.30( 0.30)	0.99	5950.2	600.00
2	29636.68	35.15	1.768	0.30( 0.30)	0.99	12068.3	40100.00
3	31313.15	40.25	1.638	0.30( 0.30)	0.99	13919.5	11831.00
4	32125.01	42.77	1.582	0.30( 0.30)	0.99	14872.4	11801.00
5	35238.60	52.70	1.392	0.30( 0.30)	0.99	19169.2	11530.00
6	37696.93	61.57	1.309	0.30( 0.30)	0.99	24174.8	11910.00
7	39908.40	68.92	1.260	0.30( 0.30)	0.99	28756.5	11330.00
8	41056.48	75.39	1.217	0.30( 0.30)	0.99	33187.5	11130.00
9	41033.80	82.96	1.166	0.30( 0.30)	0.99	37181.4	12330.00
10	41001.34	85.56	1.149	0.30( 0.30)	0.99	38596.3	12410.00
11	40854.39	89.58	1.122	0.30( 0.30)	0.99	40524.6	12400.00
12	40735.38	91.96	1.110	0.30( 0.30)	0.99	41585.6	11111.00
13	40395.02	98.18	1.082	0.30( 0.30)	0.99	43893.4	12201.00
14	39967.22	102.08	1.064	0.30( 0.30)	0.99	44978.1	12111.00
15	39687.64	104.44	1.054	0.30( 0.30)	0.99	45617.9	10700.00
16	39364.32	107.37	1.040	0.30( 0.30)	0.99	46347.5	12101.10
17	38864.18	111.32	1.022	0.30( 0.30)	0.99	47196.6	10400.00

18	37361.57	119.13	0.987	0.30	( 0.30)	0.99	48511.8	12010.00
19	36087.82	124.81	0.970	0.30	( 0.30)	0.99	48825.5	10210.00
20	35727.89	127.43	0.964	0.30	( 0.30)	0.99	48936.3	12000.00
21	32778.28	150.31	0.904	0.30	( 0.30)	0.99	49558.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	557.82	9.11	4.293	0.30( 0.16)	0.52	148.3	800.00
2	502.56	12.67	3.423	0.30( 0.17)	0.57	168.2	818.00
3	475.57	13.76	3.228	0.30( 0.17)	0.58	171.0	810.00

LONGEST FLOWPATH FROM NODE 810.00 TO NODE 12603.00 = 3814.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21381.36	9.11	4.293	0.30( 0.29)	0.97	3118.4	800.00
2	23153.61	12.67	3.423	0.30( 0.29)	0.98	4298.5	818.00
3	23538.32	13.76	3.228	0.30( 0.29)	0.98	4656.9	810.00
4	24989.56	18.25	2.654	0.30( 0.29)	0.98	6121.2	600.00
5	29884.97	35.15	1.768	0.30( 0.30)	0.99	12239.3	40100.00
6	31541.21	40.25	1.638	0.30( 0.30)	0.99	14090.5	11831.00
7	32344.24	42.77	1.582	0.30( 0.30)	0.99	15043.4	11801.00
8	35428.35	52.70	1.392	0.30( 0.30)	0.99	19340.2	11530.00
9	37873.79	61.57	1.309	0.30( 0.30)	0.99	24345.8	11910.00
10	40077.58	68.92	1.260	0.30( 0.30)	0.99	28927.5	11330.00
11	41218.91	75.39	1.217	0.30( 0.30)	0.99	33358.5	11130.00
12	41188.33	82.96	1.166	0.30( 0.30)	0.99	37352.4	12330.00
13	41153.16	85.56	1.149	0.30( 0.30)	0.99	38767.3	12410.00
14	41002.01	89.58	1.122	0.30( 0.30)	0.99	40695.6	12400.00
15	40881.18	91.96	1.110	0.30( 0.30)	0.99	41756.6	11111.00
16	40536.42	98.18	1.082	0.30( 0.30)	0.99	44064.4	12201.00
17	40105.87	102.08	1.064	0.30( 0.30)	0.99	45149.1	12111.00
18	39824.63	104.44	1.054	0.30( 0.30)	0.99	45788.9	10700.00
19	39499.24	107.37	1.040	0.30( 0.30)	0.99	46518.5	12101.10
20	38996.31	111.32	1.022	0.30( 0.30)	0.99	47367.6	10400.00
21	37488.19	119.13	0.987	0.30( 0.30)	0.99	48682.8	12010.00
22	36211.86	124.81	0.970	0.30( 0.30)	0.99	48996.5	10210.00
23	35850.87	127.43	0.964	0.30( 0.30)	0.99	49107.3	12000.00
24	32891.93	150.31	0.904	0.30( 0.30)	0.99	49729.2	10100.00
TOTAL AREA(ACRES) =						49729.2	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41218.91 Tc(MIN.) = 75.387  
 EFFECTIVE AREA(ACRES) = 33358.47 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49729.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12603.00 = 101558.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 75.39  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	1.30	0.30	1.000	66
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	12.00	0.30	1.000	66
AGRICULTURAL FAIR COVER "ORCHARDS"	B	1.40	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	26.90	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.60	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
SUBAREA AREA(ACRES) = 43.40 SUBAREA RUNOFF(CFS) = 35.86  
EFFECTIVE AREA(ACRES) = 33401.87 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49772.6 PEAK FLOW RATE(CFS) = 41218.91  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 75.39  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
SUBAREA AREA(ACRES) = 0.90 SUBAREA RUNOFF(CFS) = 0.78  
EFFECTIVE AREA(ACRES) = 33402.77 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49773.5 PEAK FLOW RATE(CFS) = 41218.91  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 75.39  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL "11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.40	0.30	0.900	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	1.00	0.30	0.900	56

NATURAL FAIR COVER

"GRASS"	B	0.60	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "WOODLAND,GRASS"	B	9.00	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.974  
SUBAREA AREA(ACRES) = 12.20 SUBAREA RUNOFF(CFS) = 10.15  
EFFECTIVE AREA(ACRES) = 33414.97 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49785.7 PEAK FLOW RATE(CFS) = 41218.91  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 75.39  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	5.60	0.30	1.000	65
NATURAL FAIR COVER "CHAPARRAL,NARROWLEAF"	B	0.10	0.30	1.000	72
NATURAL FAIR COVER "CHAPARRAL,NARROWLEAF"	B	2.90	0.30	1.000	72
NATURAL FAIR COVER "CHAPARRAL,NARROWLEAF"	B	0.70	0.30	1.000	72
NATURAL FAIR COVER "OPEN BRUSH"	B	1.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 8.91  
EFFECTIVE AREA(ACRES) = 33425.77 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA(ACRES) = 49796.5 PEAK FLOW RATE(CFS) = 41218.91  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 75.39  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.217  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	2.10	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	1.00	0.30	1.000	66

NATURAL FAIR COVER

"CHAPARRAL,BROADLEAF" B 0.80 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.20 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 4.10 SUBAREA RUNOFF (CFS) = 3.38  
 EFFECTIVE AREA (ACRES) = 33429.87 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA (ACRES) = 49800.6 PEAK FLOW RATE (CFS) = 41218.91  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12603.00 TO NODE 12604.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 310.00 DOWNSTREAM(FEET) = 307.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 459.69 CHANNEL SLOPE = 0.0065  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.04  
 CHANNEL FLOW THRU SUBAREA(CFS) = 41218.91  
 FLOW VELOCITY(FEET/SEC.) = 16.41 FLOW DEPTH(FEET) = 10.04  
 TRAVEL TIME(MIN.) = 0.47 Tc(MIN.) = 75.85  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12604.00 = 102017.99 FEET.

**\*\* PEAK FLOW RATE TABLE \*\***

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21381.36	9.69	4.038	0.30( 0.29)	0.97	3189.8	800.00
2	23153.61	13.23	3.322	0.30( 0.29)	0.98	4369.9	818.00
3	23538.32	14.32	3.127	0.30( 0.29)	0.98	4728.3	810.00
4	24989.56	18.80	2.595	0.30( 0.29)	0.98	6192.6	600.00
5	29884.97	35.67	1.755	0.30( 0.30)	0.99	12310.7	40100.00
6	31541.21	40.76	1.627	0.30( 0.30)	0.99	14161.9	11831.00
7	32344.24	43.28	1.570	0.30( 0.30)	0.99	15114.8	11801.00
8	35428.35	53.19	1.387	0.30( 0.30)	0.99	19411.6	11530.00
9	37873.79	62.05	1.306	0.30( 0.30)	0.99	24417.2	11910.00
10	40077.58	69.39	1.257	0.30( 0.30)	0.99	28998.9	11330.00
11	41218.91	75.85	1.214	0.30( 0.30)	0.99	33429.9	11130.00
12	41188.33	83.43	1.163	0.30( 0.30)	0.99	37423.8	12330.00
13	41153.16	86.02	1.146	0.30( 0.30)	0.99	38838.7	12410.00
14	41002.01	90.05	1.119	0.30( 0.30)	0.99	40767.0	12400.00
15	40881.18	92.43	1.108	0.30( 0.30)	0.99	41828.0	11111.00
16	40536.42	98.65	1.080	0.30( 0.30)	0.99	44135.8	12201.00
17	40105.87	102.55	1.062	0.30( 0.30)	0.99	45220.5	12111.00
18	39824.63	104.91	1.051	0.30( 0.30)	0.99	45860.3	10700.00
19	39499.24	107.84	1.038	0.30( 0.30)	0.99	46589.9	12101.10
20	38996.31	111.80	1.020	0.30( 0.30)	0.99	47439.0	10400.00
21	37488.19	119.61	0.985	0.30( 0.30)	0.99	48754.2	12010.00
22	36211.86	125.29	0.969	0.30( 0.30)	0.99	49067.9	10210.00
23	35850.87	127.92	0.962	0.30( 0.30)	0.99	49178.7	12000.00
24	32891.93	150.81	0.902	0.30( 0.30)	0.99	49800.6	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41218.91 Tc(MIN.) = 75.85  
 AREA-AVERAGED Fm (INCH/HR) = 0.30 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA (ACRES) = 33429.87

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12604.00 TO NODE 12604.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 75.85  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.214  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.20	0.30	1.000	65
PUBLIC PARK	B	0.10	0.30	0.850	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.991					
SUBAREA AREA (ACRES) = 1.60 SUBAREA RUNOFF (CFS) = 1.32					
EFFECTIVE AREA (ACRES) = 33431.47 AREA-AVERAGED Fm (INCH/HR) = 0.30					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA (ACRES) = 49802.2 PEAK FLOW RATE (CFS) = 41218.91					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12604.00 TO NODE 12605.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 307.00 DOWNSTREAM(FEET) = 305.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 427.54 CHANNEL SLOPE = 0.0047  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 11.02  
 CHANNEL FLOW THRU SUBAREA(CFS) = 41218.91  
 FLOW VELOCITY(FEET/SEC.) = 14.66 FLOW DEPTH(FEET) = 11.02  
 TRAVEL TIME(MIN.) = 0.49 Tc(MIN.) = 76.34  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12605.00 = 102445.53 FEET.

**\*\* PEAK FLOW RATE TABLE \*\***

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21381.36	10.29	3.849	0.30( 0.29)	0.97	3191.4	800.00
2	23153.61	13.82	3.217	0.30( 0.29)	0.98	4371.5	818.00
3	23538.32	14.90	3.022	0.30( 0.29)	0.98	4729.9	810.00
4	24989.56	19.37	2.533	0.30( 0.29)	0.98	6194.2	600.00
5	29884.97	36.21	1.741	0.30( 0.30)	0.99	12312.3	40100.00
6	31541.21	41.29	1.615	0.30( 0.30)	0.99	14163.5	11831.00
7	32344.24	43.81	1.558	0.30( 0.30)	0.99	15116.4	11801.00
8	35428.35	53.70	1.382	0.30( 0.30)	0.99	19413.2	11530.00
9	37873.79	62.55	1.303	0.30( 0.30)	0.99	24418.8	11910.00
10	40077.58	69.88	1.254	0.30( 0.30)	0.99	29000.5	11330.00
11	41218.91	76.34	1.211	0.30( 0.30)	0.99	33431.5	11130.00
12	41188.33	83.92	1.160	0.30( 0.30)	0.99	37425.4	12330.00
13	41153.16	86.51	1.142	0.30( 0.30)	0.99	38840.3	12410.00

14	41002.01	90.53	1.117	0.30	( 0.30)	0.99	40768.6	12400.00
15	40881.18	92.92	1.106	0.30	( 0.30)	0.99	41829.6	11111.00
16	40536.42	99.14	1.078	0.30	( 0.30)	0.99	44137.4	12201.00
17	40105.87	103.04	1.060	0.30	( 0.30)	0.99	45222.1	12111.00
18	39824.63	105.40	1.049	0.30	( 0.30)	0.99	45861.9	10700.00
19	39499.24	108.33	1.036	0.30	( 0.30)	0.99	46591.5	12101.10
20	38996.31	112.29	1.018	0.30	( 0.30)	0.99	47440.6	10400.00
21	37488.19	120.11	0.983	0.30	( 0.30)	0.99	48755.8	12010.00
22	36211.86	125.80	0.968	0.30	( 0.30)	0.99	49069.5	10210.00
23	35850.87	128.43	0.961	0.30	( 0.30)	0.99	49180.3	12000.00
24	32891.93	151.34	0.901	0.30	( 0.30)	0.99	49802.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41218.91 Tc(MIN.) = 76.34  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33431.47

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 76.34  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.211  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
RESIDENTIAL					
"4 DWELLING/ACRE"	B	1.30	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.90	0.30	1.000	79
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	0.50	0.30	1.000	79
PUBLIC PARK	B	6.60	0.30	0.850	56
PUBLIC PARK	B	0.20	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.891  
 SUBAREA AREA(ACRES) = 10.60 SUBAREA RUNOFF(CFS) = 9.00  
 EFFECTIVE AREA(ACRES) = 33442.07 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49812.8 PEAK FLOW RATE(CFS) = 41218.91  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 76.34  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.211  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.10	0.30	1.000	65
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.30	0.30	0.500	56

NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.40 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.969  
 SUBAREA AREA(ACRES) = 4.80 SUBAREA RUNOFF(CFS) = 3.97  
 EFFECTIVE AREA(ACRES) = 33446.88 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 49817.6 PEAK FLOW RATE(CFS) = 41218.91  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.23  
 CHANNEL FLOW THRU SUBAREA(CFS) = 41218.91  
 FLOW VELOCITY(FEET/SEC.) = 18.15 FLOW DEPTH(FEET) = 9.23  
 TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 78.32  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21381.36	12.76	3.406	0.30( 0.29)	0.97	3206.8	800.00
2	23153.61	16.22	2.873	0.30( 0.29)	0.98	4386.9	818.00
3	23538.32	17.29	2.757	0.30( 0.29)	0.98	4745.3	810.00
4	24989.56	21.71	2.350	0.30( 0.29)	0.98	6209.6	600.00
5	29884.97	38.41	1.685	0.30( 0.30)	0.99	12327.7	40100.00
6	31541.21	43.46	1.566	0.30( 0.30)	0.99	14178.9	11831.00
7	32344.24	45.95	1.510	0.30( 0.30)	0.99	15131.8	11801.00
8	35428.35	55.78	1.362	0.30( 0.30)	0.99	19428.6	11530.00
9	37873.79	64.59	1.289	0.30( 0.30)	0.99	24434.2	11910.00
10	40077.58	71.88	1.240	0.30( 0.30)	0.99	29015.9	11330.00
11	41218.91	78.32	1.197	0.30( 0.30)	0.99	33446.9	11130.00
12	41188.33	85.90	1.146	0.30( 0.30)	0.99	37440.8	12330.00
13	41153.16	88.49	1.129	0.30( 0.30)	0.99	38855.7	12410.00
14	41002.01	92.52	1.108	0.30( 0.30)	0.99	40784.0	12400.00
15	40881.18	94.90	1.097	0.30( 0.30)	0.99	41845.0	11111.00
16	40536.42	101.13	1.069	0.30( 0.30)	0.99	44152.8	12201.00
17	40105.87	105.04	1.051	0.30( 0.30)	0.99	45237.5	12111.00
18	39824.63	107.41	1.040	0.30( 0.30)	0.99	45877.3	10700.00
19	39499.24	110.34	1.027	0.30( 0.30)	0.99	46606.9	12101.10
20	38996.31	114.31	1.009	0.30( 0.30)	0.99	47456.0	10400.00
21	37488.19	122.16	0.977	0.30( 0.30)	0.99	48771.2	12010.00
22	36211.86	127.87	0.962	0.30( 0.30)	0.99	49084.9	10210.00
23	35850.87	130.51	0.956	0.30( 0.30)	0.99	49195.7	12000.00
24	32891.93	153.47	0.895	0.30( 0.30)	0.99	49817.6	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41218.91 Tc(MIN.) = 78.32  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33446.88

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 4F00EVRL.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1276.69	9.90	0.30 ( 0.24)	0.79		382.4	940.00
2	1276.79	10.13	0.30 ( 0.24)	0.79		389.7	930.00
3	1319.92	12.80	0.30 ( 0.25)	0.82		465.1	910.00
4	1295.16	16.15	0.30 ( 0.25)	0.85		547.9	920.00
5	1265.10	16.96	0.30 ( 0.25)	0.85		553.7	950.00
6	1224.21	17.72	0.30 ( 0.25)	0.85		553.8	900.00
TOTAL AREA (ACRES) =							553.8

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21381.36	12.76	3.406	0.30 ( 0.29)	0.97	3206.8	800.00
2	23153.61	16.22	2.873	0.30 ( 0.29)	0.98	4386.9	818.00
3	23538.32	17.29	2.757	0.30 ( 0.29)	0.98	4745.3	810.00
4	24989.56	21.71	2.350	0.30 ( 0.29)	0.98	6209.6	600.00
5	29884.97	38.41	1.685	0.30 ( 0.30)	0.99	12327.7	40100.00
6	31541.21	43.46	1.566	0.30 ( 0.30)	0.99	14178.9	11831.00
7	32344.24	45.95	1.510	0.30 ( 0.30)	0.99	15131.8	11801.00
8	35428.35	55.78	1.362	0.30 ( 0.30)	0.99	19428.6	11530.00
9	37873.79	64.59	1.289	0.30 ( 0.30)	0.99	24434.2	11910.00
10	40077.58	71.88	1.240	0.30 ( 0.30)	0.99	29015.9	11330.00
11	41218.91	78.32	1.197	0.30 ( 0.30)	0.99	33446.9	11130.00
12	41188.33	85.90	1.146	0.30 ( 0.30)	0.99	37440.8	12330.00
13	41153.16	88.49	1.129	0.30 ( 0.30)	0.99	38855.7	12410.00
14	41002.01	92.52	1.108	0.30 ( 0.30)	0.99	40784.0	12400.00
15	40881.18	94.90	1.097	0.30 ( 0.30)	0.99	41845.0	11111.00
16	40536.42	101.13	1.069	0.30 ( 0.30)	0.99	44152.8	12201.00
17	40105.87	105.04	1.051	0.30 ( 0.30)	0.99	45237.5	12111.00
18	39824.63	107.41	1.040	0.30 ( 0.30)	0.99	45877.3	10700.00
19	39499.24	110.34	1.027	0.30 ( 0.30)	0.99	46606.9	12101.10
20	38996.31	114.31	1.009	0.30 ( 0.30)	0.99	47456.0	10400.00
21	37488.19	122.16	0.977	0.30 ( 0.30)	0.99	48771.2	12010.00
22	36211.86	127.87	0.962	0.30 ( 0.30)	0.99	49084.9	10210.00
23	35850.87	130.51	0.956	0.30 ( 0.30)	0.99	49195.7	12000.00
24	32891.93	153.47	0.895	0.30 ( 0.30)	0.99	49817.6	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 =							104605.00 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1276.69	9.90	3.946	0.30 ( 0.24)	0.79	382.4	940.00
2	1276.79	10.13	3.878	0.30 ( 0.24)	0.79	389.7	930.00
3	1319.92	12.80	3.400	0.30 ( 0.25)	0.82	465.1	910.00

4	1295.16	16.15	2.881	0.30 ( 0.25)	0.85	547.9	920.00
5	1265.10	16.96	2.793	0.30 ( 0.25)	0.85	553.7	950.00
6	1224.21	17.72	2.711	0.30 ( 0.25)	0.85	553.8	900.00
LONGEST FLOWPATH FROM NODE 920.00 TO NODE 12606.00 =							6933.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20733.10	9.90	3.946	0.30 ( 0.28)	0.95	2869.0	940.00
2	20818.27	10.13	3.878	0.30 ( 0.28)	0.95	2934.9	930.00
3	22700.73	12.76	3.406	0.30 ( 0.29)	0.95	3670.9	800.00
4	22718.58	12.80	3.400	0.30 ( 0.29)	0.95	3683.4	910.00
5	24411.65	16.15	2.881	0.30 ( 0.29)	0.96	4910.1	920.00
6	24446.08	16.22	2.873	0.30 ( 0.29)	0.96	4935.4	818.00
7	24683.80	16.96	2.793	0.30 ( 0.29)	0.96	5187.6	950.00
8	24785.56	17.29	2.757	0.30 ( 0.29)	0.96	5299.1	810.00
9	24903.39	17.72	2.711	0.30 ( 0.29)	0.96	5441.2	900.00
10	26033.77	21.71	2.350	0.30 ( 0.29)	0.97	6763.4	600.00
11	30597.69	38.41	1.685	0.30 ( 0.29)	0.98	12881.5	40100.00
12	32194.87	43.46	1.566	0.30 ( 0.29)	0.98	14732.7	11831.00
13	32969.92	45.95	1.510	0.30 ( 0.29)	0.98	15685.6	11801.00
14	35980.13	55.78	1.362	0.30 ( 0.30)	0.99	19982.4	11530.00
15	38389.43	64.59	1.289	0.30 ( 0.30)	0.99	24988.1	11910.00
16	40568.86	71.88	1.240	0.30 ( 0.30)	0.99	29569.7	11330.00
17	41688.68	78.32	1.197	0.30 ( 0.30)	0.99	34000.7	11130.00
18	41632.80	85.90	1.146	0.30 ( 0.30)	0.99	37994.6	12330.00
19	41588.98	88.49	1.129	0.30 ( 0.30)	0.99	39409.5	12410.00
20	41427.10	92.52	1.108	0.30 ( 0.30)	0.99	41337.8	12400.00
21	41300.88	94.90	1.097	0.30 ( 0.30)	0.99	42398.8	11111.00
22	40942.05	101.13	1.069	0.30 ( 0.30)	0.99	44706.6	12201.00
23	40502.66	105.04	1.051	0.30 ( 0.30)	0.99	45791.3	12111.00
24	40216.09	107.41	1.040	0.30 ( 0.30)	0.99	46431.1	10700.00
25	39884.05	110.34	1.027	0.30 ( 0.30)	0.99	47160.7	12101.10
26	39372.16	114.31	1.009	0.30 ( 0.30)	0.99	48009.8	10400.00
27	37848.38	122.16	0.977	0.30 ( 0.30)	0.99	49325.0	12010.00
28	36564.59	127.87	0.962	0.30 ( 0.30)	0.99	49638.7	10210.00
29	36200.16	130.51	0.956	0.30 ( 0.30)	0.99	49749.5	12000.00
30	33211.27	153.47	0.895	0.30 ( 0.30)	0.99	50371.4	10100.00
TOTAL AREA (ACRES) =							50371.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 41688.68 Tc (MIN.) = 78.323  
EFFECTIVE AREA (ACRES) = 34000.68 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 50371.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12606.00 = 104605.00 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 78.32

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.197

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					

"CHAPARRAL,BROADLEAF" B 0.30 0.30 1.000 63  
 COMMERCIAL B 0.70 0.30 0.100 56  
 NATURAL FAIR COVER  
 "GRASS" B 0.80 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 11.90 0.30 1.000 66  
 PUBLIC PARK B 0.80 0.30 0.850 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.50 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.953  
 SUBAREA AREA(ACRES) = 16.00 SUBAREA RUNOFF(CFS) = 13.12  
 EFFECTIVE AREA(ACRES) = 34016.68 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50387.4 PEAK FLOW RATE(CFS) = 41688.68  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 78.32  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 0.40 0.30 0.100 56  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 8.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 3.90 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.60 0.30 1.000 66  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 1.90 0.30 1.000 65  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978  
 SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 13.50  
 EFFECTIVE AREA(ACRES) = 34033.28 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50404.0 PEAK FLOW RATE(CFS) = 41688.68  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 78.32  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197  
 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 1.80 0.30 1.000 66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 1.45  
 EFFECTIVE AREA(ACRES) = 34035.08 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50405.8 PEAK FLOW RATE(CFS) = 41688.68  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 78.32  
 EFFECTIVE AREA(ACRES) = 34035.08 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.990  
 PEAK FLOW RATE(CFS) = 41688.68

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20733.10	9.90	3.946	0.30( 0.28)	0.95	2903.4	940.00
2	20818.27	10.13	3.878	0.30( 0.28)	0.95	2969.3	930.00
3	22700.73	12.76	3.406	0.30( 0.29)	0.95	3705.3	800.00
4	22718.58	12.80	3.400	0.30( 0.29)	0.95	3717.8	910.00
5	24411.65	16.15	2.881	0.30( 0.29)	0.96	4944.5	920.00
6	24446.08	16.22	2.873	0.30( 0.29)	0.96	4969.8	818.00
7	24683.80	16.96	2.793	0.30( 0.29)	0.96	5222.0	950.00
8	24785.56	17.29	2.757	0.30( 0.29)	0.96	5333.5	810.00
9	24903.39	17.72	2.711	0.30( 0.29)	0.96	5475.6	900.00
10	26033.77	21.71	2.350	0.30( 0.29)	0.97	6797.8	600.00
11	30597.69	38.41	1.685	0.30( 0.29)	0.98	12915.9	40100.00
12	32194.87	43.46	1.566	0.30( 0.29)	0.98	14767.1	11831.00
13	32969.92	45.95	1.510	0.30( 0.29)	0.98	15720.0	11801.00
14	35980.13	55.78	1.362	0.30( 0.30)	0.99	20016.8	11530.00
15	38389.43	64.59	1.289	0.30( 0.30)	0.99	25022.5	11910.00
16	40568.86	71.88	1.240	0.30( 0.30)	0.99	29604.1	11330.00
17	41688.68	78.32	1.197	0.30( 0.30)	0.99	34035.1	11130.00
18	41632.80	85.90	1.146	0.30( 0.30)	0.99	38029.0	12330.00
19	41588.98	88.49	1.129	0.30( 0.30)	0.99	39443.9	12410.00
20	41427.10	92.52	1.108	0.30( 0.30)	0.99	41372.2	12400.00
21	41300.88	94.90	1.097	0.30( 0.30)	0.99	42433.2	11111.00
22	40942.05	101.13	1.069	0.30( 0.30)	0.99	44741.0	12201.00
23	40502.66	105.04	1.051	0.30( 0.30)	0.99	45825.7	12111.00
24	40216.09	107.41	1.040	0.30( 0.30)	0.99	46465.5	10700.00
25	39884.05	110.34	1.027	0.30( 0.30)	0.99	47195.1	12101.10
26	39372.16	114.31	1.009	0.30( 0.30)	0.99	48044.2	10400.00
27	37848.38	122.16	0.977	0.30( 0.30)	0.99	49359.4	12010.00
28	36564.59	127.87	0.962	0.30( 0.30)	0.99	49673.1	10210.00
29	36200.16	130.51	0.956	0.30( 0.30)	0.99	49783.9	12000.00
30	33211.27	153.47	0.895	0.30( 0.30)	0.99	50405.8	10100.00

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END OF RATIONAL METHOD ANALYSIS





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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
15 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S27- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV27.DAT  
TIME/DATE OF STUDY: 11:52 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 6.046
- 2) 10.00; 3.873
- 3) 15.00; 2.987
- 4) 20.00; 2.453
- 5) 25.00; 2.121
- 6) 30.00; 1.894
- 7) 40.00; 1.637
- 8) 50.00; 1.414
- 9) 60.00; 1.313
- 10) 90.00; 1.111
- 11) 120.00; 0.975
- 12) 180.00; 0.818
- 13) 360.00; 0.610
- 14) 1200.00; 0.267

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN CROSSFALL (FT)	TO STREET / SIDE (FT)	CROSSFALL IN- / SIDE (FT)	STREET-CROSSFALL (FT)	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES LIP (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150	

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV26.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22718.58	12.80	0.30 ( 0.29)	0.95	3717.8	910.00
2	24903.39	17.72	0.30 ( 0.29)	0.96	5475.6	900.00
3	26033.77	21.71	0.30 ( 0.29)	0.97	6797.8	600.00
4	30597.69	38.41	0.30 ( 0.29)	0.98	12915.9	40100.00
5	32969.92	45.95	0.30 ( 0.29)	0.98	15720.0	11801.00
6	35980.13	55.78	0.30 ( 0.30)	0.99	20016.8	11530.00
7	38389.43	64.59	0.30 ( 0.30)	0.99	25022.5	11910.00
8	40568.86	71.88	0.30 ( 0.30)	0.99	29604.1	11330.00
9	41688.68	78.32	0.30 ( 0.30)	0.99	34035.1	11130.00
10	41632.80	85.90	0.30 ( 0.30)	0.99	38029.0	12330.00
11	41588.98	88.49	0.30 ( 0.30)	0.99	39443.9	12410.00
12	41427.10	92.52	0.30 ( 0.30)	0.99	41372.2	12400.00
13	40942.05	101.13	0.30 ( 0.30)	0.99	44741.0	12201.00
14	40502.66	105.04	0.30 ( 0.30)	0.99	45825.7	12111.00
15	39884.05	110.34	0.30 ( 0.30)	0.99	47195.1	12101.10
16	39372.16	114.31	0.30 ( 0.30)	0.99	48044.2	10400.00
17	37848.38	122.16	0.30 ( 0.30)	0.99	49359.4	12010.00
18	36564.59	127.87	0.30 ( 0.30)	0.99	49673.1	10210.00
19	36200.16	130.51	0.30 ( 0.30)	0.99	49783.9	12000.00
20	33211.27	153.47	0.30 ( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =						50405.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22718.58	12.80	0.30 ( 0.29)	0.95	3717.8	910.00
2	24903.39	17.72	0.30 ( 0.29)	0.96	5475.6	900.00
3	26033.77	21.71	0.30 ( 0.29)	0.97	6797.8	600.00
4	30597.69	38.41	0.30 ( 0.29)	0.98	12915.9	40100.00
5	32969.92	45.95	0.30 ( 0.29)	0.98	15720.0	11801.00
6	35980.13	55.78	0.30 ( 0.30)	0.99	20016.8	11530.00
7	38389.43	64.59	0.30 ( 0.30)	0.99	25022.5	11910.00
8	40568.86	71.88	0.30 ( 0.30)	0.99	29604.1	11330.00
9	41688.68	78.32	0.30 ( 0.30)	0.99	34035.1	11130.00
10	41632.80	85.90	0.30 ( 0.30)	0.99	38029.0	12330.00
11	41588.98	88.49	0.30 ( 0.30)	0.99	39443.9	12410.00
12	41427.10	92.52	0.30 ( 0.30)	0.99	41372.2	12400.00
13	40942.05	101.13	0.30 ( 0.30)	0.99	44741.0	12201.00

14	40502.66	105.04	0.30	( 0.30)	0.99	45825.7	12111.00
15	39884.05	110.34	0.30	( 0.30)	0.99	47195.1	12101.10
16	39372.16	114.31	0.30	( 0.30)	0.99	48044.2	10400.00
17	37848.38	122.16	0.30	( 0.30)	0.99	49359.4	12010.00
18	36564.59	127.87	0.30	( 0.30)	0.99	49673.1	10210.00
19	36200.16	130.51	0.30	( 0.30)	0.99	49783.9	12000.00
20	33211.27	153.47	0.30	( 0.30)	0.99	50405.8	10100.00
TOTAL AREA (ACRES) =							50405.8

\*\*\*\*\*

FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 286.00 DOWNSTREAM(FEET) = 276.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.19 CHANNEL SLOPE = 0.0079  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.56

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.182

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	7.55	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41692.60

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.59

AVERAGE FLOW DEPTH(FEET) = 9.56 TRAVEL TIME(MIN.) = 1.19

Tc(MIN.) = 79.52

SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 7.83

EFFECTIVE AREA(ACRES) = 34042.63 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50413.3 PEAK FLOW RATE(CFS) = 41688.68

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.56 FLOW VELOCITY(FEET/SEC.) = 17.59

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 105865.19 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22718.58	14.26	3.118	0.30( 0.28)	0.95	3725.3	910.00
2	24903.39	19.14	2.545	0.30( 0.29)	0.96	5483.2	900.00
3	26033.77	23.11	2.246	0.30( 0.29)	0.97	6805.4	600.00
4	30597.69	39.73	1.644	0.30( 0.29)	0.98	12923.5	40100.00
5	32969.92	47.24	1.475	0.30( 0.29)	0.98	15727.6	11801.00
6	35980.13	57.03	1.343	0.30( 0.30)	0.99	20024.3	11530.00
7	38389.43	65.81	1.274	0.30( 0.30)	0.99	25030.0	11910.00
8	40568.86	73.09	1.225	0.30( 0.30)	0.99	29611.6	11330.00
9	41688.68	79.52	1.182	0.30( 0.30)	0.99	34042.6	11130.00
10	41632.80	87.10	1.131	0.30( 0.30)	0.99	38036.6	12330.00
11	41588.98	89.69	1.113	0.30( 0.30)	0.99	39451.4	12410.00

12	41427.10	93.71	1.094	0.30( 0.30)	0.99	41379.8	12400.00
13	40942.05	102.33	1.055	0.30( 0.30)	0.99	44748.6	12201.00
14	40502.66	106.25	1.037	0.30( 0.30)	0.99	45833.2	12111.00
15	39884.05	111.56	1.013	0.30( 0.30)	0.99	47202.7	12101.10
16	39372.16	115.53	0.995	0.30( 0.30)	0.99	48051.8	10400.00
17	37848.38	123.39	0.966	0.30( 0.30)	0.99	49366.9	12010.00
18	36564.59	129.12	0.951	0.30( 0.30)	0.99	49680.6	10210.00
19	36200.16	131.76	0.944	0.30( 0.30)	0.99	49791.5	12000.00
20	33211.27	154.76	0.884	0.30( 0.30)	0.99	50413.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41688.68 Tc(MIN.) = 79.52

AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 34042.63

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 79.52

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.182

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.90	0.30	0.850	56

NATURAL FAIR COVER

"WOODLAND,GRASS"

RESIDENTIAL

"5-7 DWELLINGS/ACRE"

NATURAL FAIR COVER

"OPEN BRUSH"

NATURAL FAIR COVER

"OPEN BRUSH"

NATURAL FAIR COVER

"GRASS"

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.989

SUBAREA AREA(ACRES) = 31.40 SUBAREA RUNOFF(CFS) = 25.00

EFFECTIVE AREA(ACRES) = 34074.03 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50444.7 PEAK FLOW RATE(CFS) = 41688.68

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12701.00 TO NODE 12701.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 79.52

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.182

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.70	0.30	1.000	65

NATURAL FAIR COVER

"WOODLAND,GRASS"

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 1.70 SUBAREA RUNOFF(CFS) = 1.35

EFFECTIVE AREA(ACRES) = 34075.73 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50446.4 PEAK FLOW RATE(CFS) = 41688.68  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 276.00 DOWNSTREAM(FEET) = 275.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 147.65 CHANNEL SLOPE = 0.0068  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.181  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	1.49	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41689.30  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.68  
 AVERAGE FLOW DEPTH(FEET) = 10.00 TRAVEL TIME(MIN.) = 0.15  
 Tc(MIN.) = 79.66  
 SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 1.24  
 EFFECTIVE AREA(ACRES) = 34077.21 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
 TOTAL AREA(ACRES) = 50447.9 PEAK FLOW RATE(CFS) = 41688.68  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 10.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 10.00 FLOW VELOCITY(FEET/SEC.) = 16.68  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22718.58	14.44	3.086	0.30( 0.29)	0.95	3759.9	910.00
2	24903.39	19.31	2.526	0.30( 0.29)	0.96	5517.8	900.00
3	26033.77	23.28	2.235	0.30( 0.29)	0.97	6839.9	600.00
4	30597.69	39.90	1.640	0.30( 0.29)	0.98	12958.0	40100.00
5	32969.92	47.40	1.472	0.30( 0.29)	0.98	15762.2	11801.00
6	35980.13	57.19	1.341	0.30( 0.30)	0.99	20058.9	11530.00
7	38389.43	65.96	1.273	0.30( 0.30)	0.99	25064.6	11910.00
8	40568.86	73.24	1.224	0.30( 0.30)	0.99	29646.2	11330.00
9	41688.68	79.66	1.181	0.30( 0.30)	0.99	34077.2	11130.00
10	41632.80	87.24	1.130	0.30( 0.30)	0.99	38071.2	12330.00
11	41588.98	89.84	1.112	0.30( 0.30)	0.99	39486.0	12410.00
12	41427.10	93.86	1.093	0.30( 0.30)	0.99	41414.4	12400.00
13	40942.05	102.48	1.054	0.30( 0.30)	0.99	44783.1	12201.00
14	40502.66	106.40	1.037	0.30( 0.30)	0.99	45867.8	12111.00
15	39884.05	111.71	1.013	0.30( 0.30)	0.99	47237.3	12101.10

16	39372.16	115.68	0.995	0.30( 0.30)	0.99	48086.4	10400.00
17	37848.38	123.54	0.966	0.30( 0.30)	0.99	49401.5	12010.00
18	36564.59	129.27	0.951	0.30( 0.30)	0.99	49715.2	10210.00
19	36200.16	131.91	0.944	0.30( 0.30)	0.99	49826.1	12000.00
20	33211.27	154.92	0.884	0.30( 0.30)	0.99	50447.9	10100.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 41688.68 Tc(MIN.) = 79.66  
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 34077.21

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12701.00 TO NODE 12720.00 IS CODE = 1  
 -----

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 79.66  
 RAINFALL INTENSITY(INCH/HR) = 1.18  
 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.99  
 EFFECTIVE STREAM AREA(ACRES) = 34077.21  
 TOTAL STREAM AREA(ACRES) = 50447.93  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 41688.68

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12710.00 TO NODE 12711.00 IS CODE = 21  
 -----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 943.56  
 ELEVATION DATA: UPSTREAM(FEET) = 940.78 DOWNSTREAM(FEET) = 657.79

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.910  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.180  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "GRASS"	B	6.56	0.30	1.000	69	13.91

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 17.00  
 TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 17.00

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12711.00 TO NODE 12712.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 657.79 DOWNSTREAM(FEET) = 585.63  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 766.00 CHANNEL SLOPE = 0.0942  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.78  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.862  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	26.94	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 48.14  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.64  
 AVERAGE FLOW DEPTH (FEET) = 0.74 TRAVEL TIME (MIN.) = 2.26  
 Tc (MIN.) = 16.17  
 SUBAREA AREA (ACRES) = 26.94 SUBAREA RUNOFF (CFS) = 62.11  
 EFFECTIVE AREA (ACRES) = 33.50 AREA-AVERAGED Fm (INCH/HR) = 0.30  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA (ACRES) = 33.5 PEAK FLOW RATE (CFS) = 77.24  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 0.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 0.97 FLOW VELOCITY (FEET/SEC.) = 6.64  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12712.00 = 1709.56 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12712.00 TO NODE 12713.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 585.63 DOWNSTREAM (FEET) = 463.75  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1025.79 CHANNEL SLOPE = 0.1188  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.03  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.623  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	14.73	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 94.42  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.64  
 AVERAGE FLOW DEPTH (FEET) = 1.03 TRAVEL TIME (MIN.) = 2.24  
 Tc (MIN.) = 18.41  
 SUBAREA AREA (ACRES) = 14.73 SUBAREA RUNOFF (CFS) = 34.37  
 EFFECTIVE AREA (ACRES) = 48.23 AREA-AVERAGED Fm (INCH/HR) = 0.22  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73  
 TOTAL AREA (ACRES) = 48.2 PEAK FLOW RATE (CFS) = 104.41  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.09 FLOW VELOCITY (FEET/SEC.) = 7.90  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12713.00 = 2735.35 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12713.00 TO NODE 12714.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 463.75 DOWNSTREAM (FEET) = 360.30  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1148.54 CHANNEL SLOPE = 0.0901  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.78  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.418  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	105.64	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 217.94  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.06  
 AVERAGE FLOW DEPTH (FEET) = 1.77 TRAVEL TIME (MIN.) = 2.11  
 Tc (MIN.) = 20.52  
 SUBAREA AREA (ACRES) = 105.64 SUBAREA RUNOFF (CFS) = 227.08  
 EFFECTIVE AREA (ACRES) = 153.87 AREA-AVERAGED Fm (INCH/HR) = 0.09  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.30  
 TOTAL AREA (ACRES) = 153.9 PEAK FLOW RATE (CFS) = 322.61  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 2.20 FLOW VELOCITY (FEET/SEC.) = 10.17  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12714.00 = 3883.89 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12714.00 TO NODE 12720.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 360.30 DOWNSTREAM (FEET) = 275.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1314.99 CHANNEL SLOPE = 0.0649  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 2.89  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.272  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	127.13	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 450.90  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.97  
 AVERAGE FLOW DEPTH (FEET) = 2.87 TRAVEL TIME (MIN.) = 2.20  
 Tc (MIN.) = 22.72  
 SUBAREA AREA (ACRES) = 127.13 SUBAREA RUNOFF (CFS) = 256.56

EFFECTIVE AREA(ACRES) = 281.00 AREA-AVERAGED Fm(INCH/HR) = 0.06  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.21  
 TOTAL AREA(ACRES) = 281.0 PEAK FLOW RATE(CFS) = 558.95  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 3.22

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 3.22 FLOW VELOCITY(FEET/SEC.) = 10.57  
 LONGEST FLOWPATH FROM NODE 12710.00 TO NODE 12720.00 = 5198.88 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION(MIN.) = 22.72  
 RAINFALL INTENSITY(INCH/HR) = 2.27  
 AREA-AVERAGED Fm(INCH/HR) = 0.06  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.21  
 EFFECTIVE STREAM AREA(ACRES) = 281.00  
 TOTAL STREAM AREA(ACRES) = 281.00  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 558.95

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22718.58	14.44	3.086	0.30( 0.29)	0.95	3759.9	910.00
1	24903.39	19.31	2.526	0.30( 0.29)	0.96	5517.8	900.00
1	26033.77	23.28	2.235	0.30( 0.29)	0.97	6839.9	600.00
1	30597.69	39.90	1.640	0.30( 0.29)	0.98	12958.0	40100.00
1	32969.92	47.40	1.472	0.30( 0.29)	0.98	15762.2	11801.00
1	35980.13	57.19	1.341	0.30( 0.30)	0.99	20058.9	11530.00
1	38389.43	65.96	1.273	0.30( 0.30)	0.99	25064.6	11910.00
1	40568.86	73.24	1.224	0.30( 0.30)	0.99	29646.2	11330.00
1	41688.68	79.66	1.181	0.30( 0.30)	0.99	34077.2	11130.00
1	41632.80	87.24	1.130	0.30( 0.30)	0.99	38071.2	12330.00
1	41588.98	89.84	1.112	0.30( 0.30)	0.99	39486.0	12410.00
1	41427.10	93.86	1.093	0.30( 0.30)	0.99	41414.4	12400.00
1	40942.05	102.48	1.054	0.30( 0.30)	0.99	44783.1	12201.00
1	40502.66	106.40	1.037	0.30( 0.30)	0.99	45867.8	12111.00
1	39884.05	111.71	1.013	0.30( 0.30)	0.99	47237.3	12101.10
1	39372.16	115.68	0.995	0.30( 0.30)	0.99	48086.4	10400.00
1	37848.38	123.54	0.966	0.30( 0.30)	0.99	49401.5	12010.00
1	36564.59	129.27	0.951	0.30( 0.30)	0.99	49715.2	10210.00
1	36200.16	131.91	0.944	0.30( 0.30)	0.99	49826.1	12000.00
1	33211.27	154.92	0.884	0.30( 0.30)	0.99	50447.9	10100.00
2	558.95	22.72	2.272	0.30( 0.06)	0.21	281.0	12710.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	23204.62	14.44	3.086	0.30( 0.27)	0.92	3938.5 910.00
2	25433.12	19.31	2.526	0.30( 0.28)	0.93	5756.7 900.00
3	26432.67	22.72	2.272	0.30( 0.28)	0.94	6933.7 12710.00
4	26583.29	23.28	2.235	0.30( 0.28)	0.94	7120.9 600.00
5	30996.62	39.90	1.640	0.30( 0.29)	0.96	13239.0 40100.00
6	33326.45	47.40	1.472	0.30( 0.29)	0.97	16043.2 11801.00
7	36303.64	57.19	1.341	0.30( 0.29)	0.97	20339.9 11530.00
8	38695.61	65.96	1.273	0.30( 0.29)	0.98	25345.6 11910.00
9	40862.64	73.24	1.224	0.30( 0.29)	0.98	29927.2 11330.00
10	41971.53	79.66	1.181	0.30( 0.29)	0.98	34358.2 11130.00
11	41902.74	87.24	1.130	0.30( 0.30)	0.98	38352.2 12330.00
12	41854.50	89.84	1.112	0.30( 0.30)	0.98	39767.0 12410.00
13	41687.91	93.86	1.093	0.30( 0.30)	0.98	41695.4 12400.00
14	41192.98	102.48	1.054	0.30( 0.30)	0.98	45064.1 12201.00
15	40749.10	106.40	1.037	0.30( 0.30)	0.98	46148.8 12111.00
16	40124.41	111.71	1.013	0.30( 0.30)	0.98	47518.3 12101.10
17	39607.97	115.68	0.995	0.30( 0.30)	0.98	48367.4 10400.00
18	38076.88	123.54	0.966	0.30( 0.30)	0.98	49682.5 12010.00
19	36789.31	129.27	0.951	0.30( 0.30)	0.98	49996.2 10210.00
20	36423.13	131.91	0.944	0.30( 0.30)	0.98	50107.1 12000.00
21	33419.01	154.92	0.884	0.30( 0.30)	0.98	50728.9 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41971.53 Tc(MIN.) = 79.66  
 EFFECTIVE AREA(ACRES) = 34358.21 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50728.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.00 = 106012.84 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 79.66  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.181  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.40	0.30	0.850	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.10	0.30	1.000	65
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.20	0.30	0.500	56
NATURAL FAIR COVER "OPEN BRUSH"	B	3.80	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.964  
 SUBAREA AREA(ACRES) = 4.50 SUBAREA RUNOFF(CFS) = 3.61  
 EFFECTIVE AREA(ACRES) = 34362.71 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA(ACRES) = 50733.4 PEAK FLOW RATE(CFS) = 41971.53  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12720.00 TO NODE 12720.50 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 275.00 DOWNSTREAM(FEET) = 258.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2669.21 CHANNEL SLOPE = 0.0064
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.22

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.162

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 62.15 0.30 0.100 56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42003.20

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.38

AVERAGE FLOW DEPTH(FEET) = 10.21 TRAVEL TIME(MIN.) = 2.72

Tc(MIN.) = 82.38

SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 63.34

EFFECTIVE AREA(ACRES) = 34424.86 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98

TOTAL AREA(ACRES) = 50795.6 PEAK FLOW RATE(CFS) = 41971.53

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 10.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 10.21 FLOW VELOCITY(FEET/SEC.) = 16.37

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 21 rows of data.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41971.53 Tc(MIN.) = 82.38

AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34424.86

\*\*\*\*\*
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 82.38

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.162

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 0.10 0.30 0.100 56

NATURAL FAIR COVER

"MEADOWS" B 0.30 0.30 1.000 70

NATURAL FAIR COVER

"OPEN BRUSH" B 17.90 0.30 1.000 66

NATURAL FAIR COVER

"OPEN BRUSH" B 0.20 0.30 1.000 66

PUBLIC PARK B 0.30 0.30 0.850 56

NATURAL POOR COVER

"BARREN" B 0.70 0.30 1.000 86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.993

SUBAREA AREA(ACRES) = 19.50 SUBAREA RUNOFF(CFS) = 15.17

EFFECTIVE AREA(ACRES) = 34444.36 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98

TOTAL AREA(ACRES) = 50815.1 PEAK FLOW RATE(CFS) = 41971.53

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*
FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 82.38

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.162

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL

"5-7 DWELLINGS/ACRE" B 0.10 0.30 0.500 56

NATURAL FAIR COVER

"WOODLAND,GRASS" B 1.10 0.30 1.000 65

NATURAL FAIR COVER

"WOODLAND,GRASS" B 0.90 0.30 1.000 65

RESIDENTIAL

".4 DWELLING/ACRE" B 0.60 0.30 0.900 56

RESIDENTIAL

".4 DWELLING/ACRE" B 0.30 0.30 0.900 56

NATURAL POOR COVER

"BARREN" B 0.50 0.30 1.000 86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960

SUBAREA AREA(ACRES) = 3.50 SUBAREA RUNOFF(CFS) = 2.75

EFFECTIVE AREA(ACRES) = 34447.86 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98

TOTAL AREA (ACRES) = 50818.6 PEAK FLOW RATE (CFS) = 41971.53

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3D00EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	951.01	18.66	2.596	0.30 ( 0.14)	0.48	352.5	413.00
2	937.06	25.10	2.117	0.30 ( 0.14)	0.48	432.7	430.00
3	904.51	26.58	2.049	0.30 ( 0.14)	0.48	439.5	400.00
TOTAL AREA (ACRES) =							439.5

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23204.62	17.74	2.694	0.30 ( 0.27)	0.90	4028.1	910.00
2	25433.12	22.52	2.286	0.30 ( 0.28)	0.92	5846.3	900.00
3	26432.67	25.88	2.081	0.30 ( 0.28)	0.93	7023.4	12710.00
4	26583.29	26.44	2.056	0.30 ( 0.28)	0.93	7210.6	600.00
5	30996.62	42.90	1.572	0.30 ( 0.29)	0.96	13328.7	40100.00
6	33326.45	50.33	1.411	0.30 ( 0.29)	0.97	16132.8	11801.00
7	36303.64	60.03	1.313	0.30 ( 0.29)	0.97	20429.6	11530.00
8	38695.61	68.75	1.254	0.30 ( 0.29)	0.98	25435.2	11910.00
9	40862.64	75.98	1.205	0.30 ( 0.29)	0.98	30016.9	11330.00
10	41971.53	82.38	1.162	0.30 ( 0.29)	0.98	34447.9	11130.00
11	41902.74	89.96	1.111	0.30 ( 0.29)	0.98	38441.8	12330.00
12	41854.50	92.55	1.099	0.30 ( 0.29)	0.98	39856.7	12410.00
13	41687.91	96.58	1.081	0.30 ( 0.29)	0.98	41785.0	12400.00
14	41192.98	105.22	1.042	0.30 ( 0.29)	0.98	45153.8	12201.00
15	40749.10	109.14	1.024	0.30 ( 0.29)	0.98	46238.5	12111.00
16	40124.41	114.46	1.000	0.30 ( 0.29)	0.98	47607.9	12101.10
17	39607.97	118.44	0.982	0.30 ( 0.29)	0.98	48457.0	10400.00
18	38076.88	126.34	0.958	0.30 ( 0.29)	0.98	49772.1	12010.00
19	36789.31	132.10	0.943	0.30 ( 0.30)	0.98	50085.9	10210.00
20	36423.13	134.75	0.936	0.30 ( 0.30)	0.98	50196.7	12000.00
21	33419.01	157.85	0.876	0.30 ( 0.30)	0.98	50818.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	951.01	18.66	2.596	0.30 ( 0.14)	0.48	352.5	413.00
2	937.06	25.10	2.117	0.30 ( 0.14)	0.48	432.7	430.00
3	904.51	26.58	2.049	0.30 ( 0.14)	0.48	439.5	400.00

LONGEST FLOWPATH FROM NODE 430.00 TO NODE 12720.50 = 11352.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24145.00	17.74	2.694	0.30 ( 0.26)	0.87	4363.3	910.00
2	24582.88	18.66	2.596	0.30 ( 0.26)	0.88	4729.2	413.00
3	26375.77	22.52	2.286	0.30 ( 0.27)	0.90	6246.9	900.00
4	27136.74	25.10	2.117	0.30 ( 0.27)	0.90	7181.8	430.00
5	27352.57	25.88	2.081	0.30 ( 0.27)	0.90	7459.7	12710.00
6	27490.99	26.44	2.056	0.30 ( 0.27)	0.91	7649.4	600.00
7	27526.94	26.58	2.049	0.30 ( 0.27)	0.91	7704.4	400.00
8	31674.88	42.90	1.572	0.30 ( 0.28)	0.94	13768.2	40100.00
9	33927.93	50.33	1.411	0.30 ( 0.29)	0.95	16572.3	11801.00
10	36858.65	60.03	1.313	0.30 ( 0.29)	0.96	20869.1	11530.00
11	39222.75	68.75	1.254	0.30 ( 0.29)	0.97	25874.7	11910.00
12	41366.70	75.98	1.205	0.30 ( 0.29)	0.97	30456.4	11330.00
13	42455.12	82.38	1.162	0.30 ( 0.29)	0.98	34887.4	11130.00
14	42362.10	89.96	1.111	0.30 ( 0.29)	0.98	38881.3	12330.00
15	42308.24	92.55	1.099	0.30 ( 0.29)	0.98	40296.2	12410.00
16	42132.98	96.58	1.081	0.30 ( 0.29)	0.98	42224.5	12400.00
17	41619.47	105.22	1.042	0.30 ( 0.29)	0.98	45593.3	12201.00
18	41167.15	109.14	1.024	0.30 ( 0.29)	0.98	46678.0	12111.00
19	40531.01	114.46	1.000	0.30 ( 0.29)	0.98	48047.4	12101.10
20	40006.00	118.44	0.982	0.30 ( 0.29)	0.98	48896.5	10400.00
21	38463.68	126.34	0.958	0.30 ( 0.29)	0.98	50211.6	12010.00
22	37168.95	132.10	0.943	0.30 ( 0.29)	0.98	50525.4	10210.00
23	36799.48	134.75	0.936	0.30 ( 0.29)	0.98	50636.2	12000.00
24	33766.68	157.85	0.876	0.30 ( 0.29)	0.98	51258.1	10100.00

TOTAL AREA (ACRES) = 51258.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 42455.12 Tc (MIN.) = 82.380

EFFECTIVE AREA (ACRES) = 34887.36 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96

TOTAL AREA (ACRES) = 51258.1

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<

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FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 258.00 DOWNSTREAM (FEET) = 256.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 438.77 CHANNEL SLOPE = 0.0046

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT (FEET) = 11.29

CHANNEL FLOW THRU SUBAREA (CFS) = 42455.12

FLOW VELOCITY (FEET/SEC.) = 14.67 FLOW DEPTH (FEET) = 11.29

TRAVEL TIME (MIN.) = 0.50 Tc (MIN.) = 82.88

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24145.00	18.34	2.630	0.30( 0.26)	0.87	4363.3	910.00
2	24582.88	19.25	2.533	0.30( 0.26)	0.88	4729.2	413.00
3	26375.77	23.10	2.247	0.30( 0.27)	0.90	6246.9	900.00
4	27136.74	25.67	2.090	0.30( 0.27)	0.90	7181.8	430.00
5	27352.57	26.46	2.055	0.30( 0.27)	0.90	7459.7	12710.00
6	27490.99	27.01	2.030	0.30( 0.27)	0.91	7649.4	600.00
7	27526.94	27.16	2.023	0.30( 0.27)	0.91	7704.4	400.00
8	31674.88	43.44	1.560	0.30( 0.28)	0.94	13768.2	40100.00
9	33927.93	50.87	1.405	0.30( 0.29)	0.95	16572.3	11801.00
10	36858.65	60.56	1.309	0.30( 0.29)	0.96	20869.1	11530.00
11	39222.75	69.26	1.251	0.30( 0.29)	0.97	25874.7	11910.00
12	41366.70	76.48	1.202	0.30( 0.29)	0.97	30456.4	11330.00
13	42455.12	82.88	1.159	0.30( 0.29)	0.98	34887.4	11130.00
14	42362.10	90.46	1.109	0.30( 0.29)	0.98	38881.3	12330.00
15	42308.24	93.05	1.097	0.30( 0.29)	0.98	40296.2	12410.00
16	42132.98	97.08	1.079	0.30( 0.29)	0.98	42224.5	12400.00
17	41619.47	105.72	1.040	0.30( 0.29)	0.98	45593.3	12201.00
18	41167.15	109.64	1.022	0.30( 0.29)	0.98	46678.0	12111.00
19	40531.01	114.97	0.998	0.30( 0.29)	0.98	48047.4	12101.10
20	40006.00	118.95	0.980	0.30( 0.29)	0.98	48896.5	10400.00
21	38463.68	126.86	0.957	0.30( 0.29)	0.98	50211.6	12010.00
22	37168.95	132.62	0.942	0.30( 0.29)	0.98	50525.4	10210.00
23	36799.48	135.28	0.935	0.30( 0.29)	0.98	50636.2	12000.00
24	33766.68	158.38	0.875	0.30( 0.29)	0.98	51258.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 42455.12 Tc(MIN.) = 82.88  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34887.36

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12721.00 TO NODE 12722.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 256.00 DOWNSTREAM(FEET) = 255.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 830.42 CHANNEL SLOPE = 0.0012  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 16.28

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.149

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	11.24	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42460.78  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.27  
 AVERAGE FLOW DEPTH(FEET) = 16.28 TRAVEL TIME(MIN.) = 1.49  
 Tc(MIN.) = 84.37  
 SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 11.32  
 EFFECTIVE AREA(ACRES) = 34898.60 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51269.3 PEAK FLOW RATE(CFS) = 42455.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 16.28  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 16.28 FLOW VELOCITY(FEET/SEC.) = 9.27  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24145.00	20.12	2.445	0.30( 0.26)	0.87	4374.5	910.00
2	24582.88	21.02	2.385	0.30( 0.26)	0.87	4740.4	413.00
3	26375.77	24.83	2.132	0.30( 0.27)	0.89	6258.1	900.00
4	27136.74	27.39	2.013	0.30( 0.27)	0.90	7193.0	430.00
5	27352.57	28.16	1.977	0.30( 0.27)	0.90	7470.9	12710.00
6	27490.99	28.72	1.952	0.30( 0.27)	0.91	7660.7	600.00
7	27526.94	28.86	1.946	0.30( 0.27)	0.91	7715.6	400.00
8	31674.88	45.08	1.524	0.30( 0.28)	0.94	13779.4	40100.00
9	33927.93	52.46	1.389	0.30( 0.29)	0.95	16583.5	11801.00
10	36858.65	62.12	1.299	0.30( 0.29)	0.96	20880.3	11530.00
11	39222.75	70.79	1.240	0.30( 0.29)	0.97	25886.0	11910.00
12	41366.70	77.98	1.192	0.30( 0.29)	0.97	30467.6	11330.00
13	42455.12	84.37	1.149	0.30( 0.29)	0.97	34898.6	11130.00
14	42362.10	91.95	1.102	0.30( 0.29)	0.98	38892.6	12330.00
15	42308.24	94.55	1.090	0.30( 0.29)	0.98	40307.4	12410.00
16	42132.98	98.58	1.072	0.30( 0.29)	0.98	42235.8	12400.00
17	41619.47	107.22	1.033	0.30( 0.29)	0.98	45604.5	12201.00
18	41167.15	111.15	1.015	0.30( 0.29)	0.98	46689.2	12111.00
19	40531.01	116.48	0.991	0.30( 0.29)	0.98	48058.7	12101.10
20	40006.00	120.47	0.974	0.30( 0.29)	0.98	48907.7	10400.00
21	38463.68	128.40	0.953	0.30( 0.29)	0.98	50222.9	12010.00
22	37168.95	134.18	0.938	0.30( 0.29)	0.98	50536.6	10210.00
23	36799.48	136.84	0.931	0.30( 0.29)	0.98	50647.5	12000.00
24	33766.68	159.98	0.870	0.30( 0.29)	0.98	51269.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 42455.12 Tc(MIN.) = 84.37  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 34898.60

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 84.37  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.149

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	2.10	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER "MEADOWS"	B	3.60	0.30	1.000	70
NATURAL FAIR COVER "OPEN BRUSH"	B	4.10	0.30	1.000	66



SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 7.56  
 EFFECTIVE AREA(ACRES) = 34908.50 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51279.2 PEAK FLOW RATE(CFS) = 42455.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 84.37  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.149  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND,GRASS"	B	1.90	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977  
 SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 2.00  
 EFFECTIVE AREA(ACRES) = 34911.10 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51281.8 PEAK FLOW RATE(CFS) = 42455.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 11.23  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.144  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.50	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	2.50	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	0.50	0.30	1.000	69
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.70	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	6.20	0.30	1.000	65
NATURAL FAIR COVER "WOODLAND,GRASS"	B	6.50	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.925  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 42462.10  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.77  
 AVERAGE FLOW DEPTH(FEET) = 11.23 TRAVEL TIME(MIN.) = 0.70  
 Tc(MIN.) = 85.08  
 SUBAREA AREA(ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 13.96  
 EFFECTIVE AREA(ACRES) = 34929.00 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 51299.7 PEAK FLOW RATE(CFS) = 42455.12  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 11.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 11.23 FLOW VELOCITY(FEET/SEC.) = 14.77  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24145.00	20.96	2.389	0.30( 0.26)	0.87	4404.9	910.00
2	24582.88	21.86	2.329	0.30( 0.26)	0.87	4770.8	413.00
3	26375.77	25.65	2.092	0.30( 0.27)	0.89	6288.5	900.00
4	27136.74	28.20	1.976	0.30( 0.27)	0.90	7223.4	430.00
5	27352.57	28.98	1.940	0.30( 0.27)	0.90	7501.3	12710.00
6	27490.99	29.53	1.915	0.30( 0.27)	0.91	7691.1	600.00
7	27526.94	29.67	1.909	0.30( 0.27)	0.91	7746.0	400.00
8	31674.88	45.85	1.507	0.30( 0.28)	0.94	13809.8	40100.00
9	33927.93	53.22	1.381	0.30( 0.29)	0.95	16613.9	11801.00
10	36858.65	62.85	1.294	0.30( 0.29)	0.96	20910.7	11530.00
11	39222.75	71.52	1.235	0.30( 0.29)	0.97	25916.4	11910.00
12	41366.70	78.69	1.187	0.30( 0.29)	0.97	30498.0	11330.00
13	42455.12	85.08	1.144	0.30( 0.29)	0.97	34929.0	11130.00
14	42362.10	92.66	1.099	0.30( 0.29)	0.98	38923.0	12330.00
15	42308.24	95.25	1.087	0.30( 0.29)	0.98	40337.8	12410.00
16	42132.98	99.29	1.069	0.30( 0.29)	0.98	42266.1	12400.00
17	41619.47	107.93	1.030	0.30( 0.29)	0.98	45634.9	12201.00
18	41167.15	111.86	1.012	0.30( 0.29)	0.98	46719.6	12111.00
19	40531.01	117.20	0.988	0.30( 0.29)	0.98	48089.1	12101.10
20	40006.00	121.19	0.972	0.30( 0.29)	0.98	48938.1	10400.00
21	38463.68	129.12	0.951	0.30( 0.29)	0.98	50253.3	12010.00
22	37168.95	134.91	0.936	0.30( 0.29)	0.98	50567.0	10210.00
23	36799.48	137.57	0.929	0.30( 0.29)	0.98	50677.9	12000.00
24	33766.68	160.74	0.868	0.30( 0.29)	0.98	51299.7	10100.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 42455.12 Tc(MIN.) = 85.08  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 34929.00

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 85.08  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.144

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	4.70	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	6.70	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	12.00	0.30	1.000	66
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.80	0.30	1.000	63
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	20.20	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 44.40 SUBAREA RUNOFF(CFS) = 33.73  
EFFECTIVE AREA(ACRES) = 34973.40 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
TOTAL AREA(ACRES) = 51344.1 PEAK FLOW RATE(CFS) = 42455.12  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 85.08  
RAINFALL INTENSITY(INCH/HR) = 1.14  
AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.97  
EFFECTIVE STREAM AREA(ACRES) = 34973.40  
TOTAL STREAM AREA(ACRES) = 51344.12  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 42455.12

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12730.00 TO NODE 12731.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 561.54  
ELEVATION DATA: UPSTREAM(FEET) = 613.29 DOWNSTREAM(FEET) = 551.75

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.823  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.196  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	6.33	0.30	1.000	63	13.82

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 16.50  
TOTAL AREA(ACRES) = 6.33 PEAK FLOW RATE(CFS) = 16.50

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40  
CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.98  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.780  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	34.62	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 59.39  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.20  
AVERAGE FLOW DEPTH(FEET) = 0.96 TRAVEL TIME(MIN.) = 3.12  
Tc(MIN.) = 16.94  
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 85.68  
EFFECTIVE AREA(ACRES) = 40.95 AREA-AVERAGED Fm(INCH/HR) = 0.07  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.24  
TOTAL AREA(ACRES) = 40.9 PEAK FLOW RATE(CFS) = 99.81  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 1.29 FLOW VELOCITY(FEET/SEC.) = 6.14  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.79  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.486  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	59.52	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 165.69  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.00  
AVERAGE FLOW DEPTH(FEET) = 1.75 TRAVEL TIME(MIN.) = 2.75  
Tc(MIN.) = 19.69  
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 131.57

EFFECTIVE AREA (ACRES) = 100.47 AREA-AVERAGED Fm (INCH/HR) = 0.05  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.16  
TOTAL AREA (ACRES) = 100.5 PEAK FLOW RATE (CFS) = 220.55  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 2.05 FLOW VELOCITY (FEET/SEC.) = 7.63  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12733.00 = 2689.86 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12733.00 TO NODE 12734.00 IS CODE = 56

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>> TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 431.00 DOWNSTREAM (FEET) = 367.10  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1654.48 CHANNEL SLOPE = 0.0386  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.61  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.221  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	64.05	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 283.75  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.25  
AVERAGE FLOW DEPTH (FEET) = 2.58 TRAVEL TIME (MIN.) = 3.80  
Tc (MIN.) = 23.49

SUBAREA AREA (ACRES) = 64.05 SUBAREA RUNOFF (CFS) = 126.30  
EFFECTIVE AREA (ACRES) = 164.52 AREA-AVERAGED Fm (INCH/HR) = 0.04  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
TOTAL AREA (ACRES) = 164.5 PEAK FLOW RATE (CFS) = 322.88  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 2.76 FLOW VELOCITY (FEET/SEC.) = 7.52  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12734.00 = 4344.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12734.00 TO NODE 12740.00 IS CODE = 56

>>>> COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>> TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 367.11 DOWNSTREAM (FEET) = 252.10  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1880.98 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.55  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.032  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/  
LAND USE

SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	
COMMERCIAL	B	26.02	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 346.32  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.05  
AVERAGE FLOW DEPTH (FEET) = 2.54 TRAVEL TIME (MIN.) = 3.46  
Tc (MIN.) = 26.96

SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 46.89  
EFFECTIVE AREA (ACRES) = 190.54 AREA-AVERAGED Fm (INCH/HR) = 0.04  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.13  
TOTAL AREA (ACRES) = 190.5 PEAK FLOW RATE (CFS) = 341.80  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 2.52 FLOW VELOCITY (FEET/SEC.) = 9.01  
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

>>>> DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<  
>>>> AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
TIME OF CONCENTRATION (MIN.) = 26.96  
RAINFALL INTENSITY (INCH/HR) = 2.03  
AREA-AVERAGED Fm (INCH/HR) = 0.04  
AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.13  
EFFECTIVE STREAM AREA (ACRES) = 190.54  
TOTAL STREAM AREA (ACRES) = 190.54  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 341.80

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24145.00	20.96	2.389	0.30 ( 0.26)	0.87	4449.3	910.00
1	24582.88	21.86	2.329	0.30 ( 0.26)	0.88	4815.2	413.00
1	26375.77	25.65	2.092	0.30 ( 0.27)	0.89	6332.9	900.00
1	27136.74	28.20	1.976	0.30 ( 0.27)	0.90	7267.8	430.00
1	27352.57	28.98	1.940	0.30 ( 0.27)	0.90	7545.7	12710.00
1	27490.99	29.53	1.915	0.30 ( 0.27)	0.91	7735.5	600.00
1	27526.94	29.67	1.909	0.30 ( 0.27)	0.91	7790.4	400.00
1	31674.88	45.85	1.507	0.30 ( 0.28)	0.94	13854.2	40100.00
1	33927.93	53.22	1.381	0.30 ( 0.29)	0.95	16658.3	11801.00
1	36858.65	62.85	1.294	0.30 ( 0.29)	0.96	20955.1	11530.00
1	39222.75	71.52	1.235	0.30 ( 0.29)	0.97	25960.8	11910.00
1	41366.70	78.69	1.187	0.30 ( 0.29)	0.97	30542.4	11330.00
1	42455.12	85.08	1.144	0.30 ( 0.29)	0.97	34973.4	11130.00
1	42362.10	92.66	1.099	0.30 ( 0.29)	0.98	38967.4	12330.00
1	42308.24	95.25	1.087	0.30 ( 0.29)	0.98	40382.2	12410.00
1	42132.98	99.29	1.069	0.30 ( 0.29)	0.98	42310.5	12400.00
1	41619.47	107.93	1.030	0.30 ( 0.29)	0.98	45679.3	12201.00

1	41167.15	111.86	1.012	0.30	( 0.29)	0.98	46764.0	12111.00
1	40531.01	117.20	0.988	0.30	( 0.29)	0.98	48133.5	12101.10
1	40006.00	121.19	0.972	0.30	( 0.29)	0.98	48982.5	10400.00
1	38463.68	129.12	0.951	0.30	( 0.29)	0.98	50297.7	12010.00
1	37168.95	134.91	0.936	0.30	( 0.29)	0.98	50611.4	10210.00
1	36799.48	137.57	0.929	0.30	( 0.29)	0.98	50722.3	12000.00
1	33766.68	160.74	0.868	0.30	( 0.29)	0.98	51344.1	10100.00
2	341.80	26.96	2.032	0.30	( 0.04)	0.13	190.5	12730.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24458.40	20.96	2.389	0.30 ( 0.25)	0.85	4597.5	910.00
2	24901.40	21.86	2.329	0.30 ( 0.26)	0.85	4969.7	413.00
3	26710.67	25.65	2.092	0.30 ( 0.26)	0.87	6514.2	900.00
4	27107.77	26.96	2.032	0.30 ( 0.26)	0.88	7002.8	12730.00
5	27468.86	28.20	1.976	0.30 ( 0.26)	0.88	7458.3	430.00
6	27678.65	28.98	1.940	0.30 ( 0.27)	0.88	7736.3	12710.00
7	27812.76	29.53	1.915	0.30 ( 0.27)	0.89	7926.0	600.00
8	27847.59	29.67	1.909	0.30 ( 0.27)	0.89	7980.9	400.00
9	31926.55	45.85	1.507	0.30 ( 0.28)	0.93	14044.8	40100.00
10	34158.15	53.22	1.381	0.30 ( 0.28)	0.94	16848.9	11801.00
11	37073.83	62.85	1.294	0.30 ( 0.29)	0.95	21145.7	11530.00
12	39427.93	71.52	1.235	0.30 ( 0.29)	0.96	26151.3	11910.00
13	41563.59	78.69	1.187	0.30 ( 0.29)	0.97	30732.9	11330.00
14	42644.64	85.08	1.144	0.30 ( 0.29)	0.97	35163.9	11130.00
15	42543.87	92.66	1.099	0.30 ( 0.29)	0.97	39157.9	12330.00
16	42487.99	95.25	1.087	0.30 ( 0.29)	0.97	40572.7	12410.00
17	42309.60	99.29	1.069	0.30 ( 0.29)	0.97	42501.1	12400.00
18	41789.38	107.93	1.030	0.30 ( 0.29)	0.97	45869.9	12201.00
19	41333.99	111.86	1.012	0.30 ( 0.29)	0.97	46954.5	12111.00
20	40693.70	117.20	0.988	0.30 ( 0.29)	0.97	48324.0	12101.10
21	40165.98	121.19	0.972	0.30 ( 0.29)	0.98	49173.1	10400.00
22	38620.11	129.12	0.951	0.30 ( 0.29)	0.98	50488.2	12010.00
23	37322.78	134.91	0.936	0.30 ( 0.29)	0.98	50801.9	10210.00
24	36952.11	137.57	0.929	0.30 ( 0.29)	0.98	50912.8	12000.00
25	33908.91	160.74	0.868	0.30 ( 0.29)	0.98	51534.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 42644.64 Tc(MIN.) = 85.08  
EFFECTIVE AREA(ACRES) = 35163.94 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
TOTAL AREA(ACRES) = 51534.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12740.00 = 110575.24 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12741.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 252.10 DOWNSTREAM(FEET) = 247.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 401.47 CHANNEL SLOPE = 0.0127  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 8.47  
CHANNEL FLOW THRU SUBAREA(CFS) = 42644.64  
FLOW VELOCITY(FEET/SEC.) = 20.77 FLOW DEPTH(FEET) = 8.47  
TRAVEL TIME(MIN.) = 0.32 Tc(MIN.) = 85.40  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24458.40	21.35	2.363	0.30 ( 0.25)	0.85	4597.5	910.00
2	24901.40	22.25	2.304	0.30 ( 0.26)	0.85	4969.7	413.00
3	26710.67	26.03	2.074	0.30 ( 0.26)	0.87	6514.2	900.00
4	27107.77	27.33	2.015	0.30 ( 0.26)	0.88	7002.8	12730.00
5	27468.86	28.57	1.959	0.30 ( 0.26)	0.88	7458.3	430.00
6	27678.65	29.35	1.924	0.30 ( 0.27)	0.88	7736.3	12710.00
7	27812.76	29.90	1.898	0.30 ( 0.27)	0.89	7926.0	600.00
8	27847.59	30.05	1.893	0.30 ( 0.27)	0.89	7980.9	400.00
9	31926.55	46.21	1.499	0.30 ( 0.28)	0.93	14044.8	40100.00
10	34158.15	53.57	1.378	0.30 ( 0.28)	0.94	16848.9	11801.00
11	37073.83	63.19	1.292	0.30 ( 0.29)	0.95	21145.7	11530.00
12	39427.93	71.85	1.233	0.30 ( 0.29)	0.96	26151.3	11910.00
13	41563.59	79.02	1.185	0.30 ( 0.29)	0.97	30732.9	11330.00
14	42644.64	85.40	1.142	0.30 ( 0.29)	0.97	35163.9	11130.00
15	42543.87	92.98	1.097	0.30 ( 0.29)	0.97	39157.9	12330.00
16	42487.99	95.58	1.086	0.30 ( 0.29)	0.97	40572.7	12410.00
17	42309.60	99.61	1.067	0.30 ( 0.29)	0.97	42501.1	12400.00
18	41789.38	108.25	1.028	0.30 ( 0.29)	0.97	45869.9	12201.00
19	41333.99	112.19	1.010	0.30 ( 0.29)	0.97	46954.5	12111.00
20	40693.70	117.52	0.986	0.30 ( 0.29)	0.97	48324.0	12101.10
21	40165.98	121.52	0.971	0.30 ( 0.29)	0.98	49173.1	10400.00
22	38620.11	129.46	0.950	0.30 ( 0.29)	0.98	50488.2	12010.00
23	37322.78	135.25	0.935	0.30 ( 0.29)	0.98	50801.9	10210.00
24	36952.11	137.91	0.928	0.30 ( 0.29)	0.98	50912.8	12000.00
25	33908.91	161.09	0.867	0.30 ( 0.29)	0.98	51534.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 42644.64 Tc(MIN.) = 85.40  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 35163.94

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FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 85.40  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.142  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.10	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	7.50	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.30	1.000	66
PUBLIC PARK	B	1.90	0.30	0.850	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.40	0.30	0.900	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED" B 0.50 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.833  
 SUBAREA AREA (ACRES) = 13.30 SUBAREA RUNOFF (CFS) = 10.68  
 EFFECTIVE AREA (ACRES) = 35177.24 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 51548.0 PEAK FLOW RATE (CFS) = 42644.64  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 85.40

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.142

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL FAIR COVER

"WOODLAND, GRASS" B 0.90 0.30 1.000 65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 0.90 SUBAREA RUNOFF (CFS) = 0.68

EFFECTIVE AREA (ACRES) = 35178.14 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA (ACRES) = 51548.9 PEAK FLOW RATE (CFS) = 42644.64

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3C00EVRL.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1554.25	17.30	0.30 ( 0.14)	0.47	637.6	300.00
2	1556.03	22.45	0.30 ( 0.14)	0.48	778.6	327.00
3	1529.77	23.57	0.30 ( 0.14)	0.48	793.1	350.00
4	1499.60	24.65	0.30 ( 0.14)	0.48	804.7	320.00
5	1392.51	28.82	0.30 ( 0.15)	0.49	834.1	306.00
6	1290.47	35.30	0.30 ( 0.15)	0.50	870.6	390.00
TOTAL AREA (ACRES) =						870.6

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FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24458.40	21.35	2.363	0.30 ( 0.25)	0.85	4611.7	910.00
2	24901.40	22.25	2.304	0.30 ( 0.26)	0.85	4983.9	413.00
3	26710.67	26.03	2.074	0.30 ( 0.26)	0.87	6528.4	900.00

4	27107.77	27.33	2.015	0.30 ( 0.26)	0.88	7017.0	12730.00
5	27468.86	28.57	1.959	0.30 ( 0.26)	0.88	7472.5	430.00
6	27678.65	29.35	1.924	0.30 ( 0.27)	0.88	7750.5	12710.00
7	27812.76	29.90	1.898	0.30 ( 0.27)	0.89	7940.2	600.00
8	27847.59	30.05	1.893	0.30 ( 0.27)	0.89	7995.1	400.00
9	31926.55	46.21	1.499	0.30 ( 0.28)	0.93	14059.0	40100.00
10	34158.15	53.57	1.378	0.30 ( 0.28)	0.94	16863.1	11801.00
11	37073.83	63.19	1.292	0.30 ( 0.29)	0.95	21159.9	11530.00
12	39427.93	71.85	1.233	0.30 ( 0.29)	0.96	26165.5	11910.00
13	41563.59	79.02	1.185	0.30 ( 0.29)	0.97	30747.1	11330.00
14	42644.64	85.40	1.142	0.30 ( 0.29)	0.97	35178.1	11130.00
15	42543.87	92.98	1.097	0.30 ( 0.29)	0.97	39172.1	12330.00
16	42487.99	95.58	1.086	0.30 ( 0.29)	0.97	40586.9	12410.00
17	42309.60	99.61	1.067	0.30 ( 0.29)	0.97	42515.3	12400.00
18	41789.38	108.25	1.028	0.30 ( 0.29)	0.97	45884.1	12201.00
19	41333.99	112.19	1.010	0.30 ( 0.29)	0.97	46968.7	12111.00
20	40693.70	117.52	0.986	0.30 ( 0.29)	0.97	48338.2	12101.10
21	40165.98	121.52	0.971	0.30 ( 0.29)	0.97	49187.3	10400.00
22	38620.11	129.46	0.950	0.30 ( 0.29)	0.98	50502.4	12010.00
23	37322.78	135.25	0.935	0.30 ( 0.29)	0.98	50816.1	10210.00
24	36952.11	137.91	0.928	0.30 ( 0.29)	0.98	50927.0	12000.00
25	33908.91	161.09	0.867	0.30 ( 0.29)	0.98	51548.9	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1554.25	17.30	2.741	0.30 ( 0.14)	0.47	637.6	300.00
2	1556.03	22.45	2.291	0.30 ( 0.14)	0.48	778.6	327.00
3	1529.77	23.57	2.216	0.30 ( 0.14)	0.48	793.1	350.00
4	1499.60	24.65	2.144	0.30 ( 0.14)	0.48	804.7	320.00
5	1392.51	28.82	1.948	0.30 ( 0.15)	0.49	834.1	306.00
6	1290.47	35.30	1.758	0.30 ( 0.15)	0.50	870.6	390.00

LONGEST FLOWPATH FROM NODE 390.00 TO NODE 12741.00 = 15238.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24925.15	17.30	2.741	0.30 ( 0.24)	0.79	4374.7	300.00
2	26014.05	21.35	2.363	0.30 ( 0.24)	0.80	5360.3	910.00
3	26457.37	22.25	2.304	0.30 ( 0.24)	0.80	5757.0	413.00
4	26552.74	22.45	2.291	0.30 ( 0.24)	0.80	5843.8	327.00
5	27066.66	23.57	2.216	0.30 ( 0.24)	0.81	6319.6	350.00
6	27553.29	24.65	2.144	0.30 ( 0.25)	0.82	6772.3	320.00
7	28174.97	26.03	2.074	0.30 ( 0.25)	0.83	7342.8	900.00
8	28538.46	27.33	2.015	0.30 ( 0.25)	0.84	7840.6	12730.00
9	28867.62	28.57	1.959	0.30 ( 0.25)	0.84	8304.9	430.00
10	28927.06	28.82	1.948	0.30 ( 0.25)	0.84	8393.7	306.00
11	29062.77	29.35	1.924	0.30 ( 0.25)	0.85	8587.6	12710.00
12	29188.19	29.90	1.898	0.30 ( 0.25)	0.85	8780.4	600.00
13	29220.75	30.05	1.893	0.30 ( 0.25)	0.85	8836.2	400.00
14	30463.38	35.30	1.758	0.30 ( 0.26)	0.87	10836.0	390.00
15	33008.86	46.21	1.499	0.30 ( 0.27)	0.91	14929.6	40100.00
16	35143.59	53.57	1.378	0.30 ( 0.28)	0.92	17733.7	11801.00
17	37989.87	63.19	1.292	0.30 ( 0.28)	0.94	22030.5	11530.00
18	40297.16	71.85	1.233	0.30 ( 0.28)	0.95	27036.1	11910.00
19	42394.05	79.02	1.185	0.30 ( 0.29)	0.95	31617.7	11330.00
20	43440.62	85.40	1.142	0.30 ( 0.29)	0.96	36048.7	11130.00

21	43304.12	92.98	1.097	0.30	( 0.29)	0.96	40042.7	12330.00
22	43238.80	95.58	1.086	0.30	( 0.29)	0.96	41457.5	12410.00
23	43045.73	99.61	1.067	0.30	( 0.29)	0.96	43385.9	12400.00
24	42494.05	108.25	1.028	0.30	( 0.29)	0.97	46754.7	12201.00
25	42024.34	112.19	1.010	0.30	( 0.29)	0.97	47839.3	12111.00
26	41364.63	117.52	0.986	0.30	( 0.29)	0.97	49208.8	12101.10
27	40824.71	121.52	0.971	0.30	( 0.29)	0.97	50057.9	10400.00
28	39262.15	129.46	0.950	0.30	( 0.29)	0.97	51373.0	12010.00
29	37952.65	135.25	0.935	0.30	( 0.29)	0.97	51686.7	10210.00
30	37576.40	137.91	0.928	0.30	( 0.29)	0.97	51797.6	12000.00
31	34484.51	161.09	0.867	0.30	( 0.29)	0.97	52419.5	10100.00

TOTAL AREA (ACRES) = 52419.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43440.62 Tc (MIN.) = 85.399  
EFFECTIVE AREA (ACRES) = 36048.74 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
TOTAL AREA (ACRES) = 52419.5  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 247.00 DOWNSTREAM (FEET) = 240.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 819.00 CHANNEL SLOPE = 0.0085  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.58  
CHANNEL FLOW THRU SUBAREA (CFS) = 43440.62  
FLOW VELOCITY (FEET/SEC.) = 18.29 FLOW DEPTH (FEET) = 9.58  
TRAVEL TIME (MIN.) = 0.75 Tc (MIN.) = 86.14  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24925.15	18.20	2.645	0.30 ( 0.24)	0.79	4374.7	300.00
2	26014.05	22.24	2.304	0.30 ( 0.24)	0.80	5360.3	910.00
3	26457.37	23.13	2.245	0.30 ( 0.24)	0.80	5757.0	413.00
4	26552.74	23.33	2.232	0.30 ( 0.24)	0.80	5843.8	327.00
5	27066.66	24.45	2.158	0.30 ( 0.24)	0.81	6319.6	350.00
6	27553.29	25.52	2.097	0.30 ( 0.25)	0.82	6772.3	320.00
7	28174.97	26.89	2.035	0.30 ( 0.25)	0.83	7342.8	900.00
8	28538.46	28.19	1.976	0.30 ( 0.25)	0.84	7840.6	12730.00
9	28867.62	29.43	1.920	0.30 ( 0.25)	0.84	8304.9	430.00
10	28927.06	29.67	1.909	0.30 ( 0.25)	0.84	8393.7	306.00
11	29062.77	30.20	1.889	0.30 ( 0.25)	0.85	8587.6	12710.00
12	29188.19	30.75	1.875	0.30 ( 0.25)	0.85	8780.4	600.00
13	29220.75	30.90	1.871	0.30 ( 0.25)	0.85	8836.2	400.00

14	30463.38	36.14	1.736	0.30	( 0.26)	0.87	10836.0	390.00
15	33008.86	47.02	1.480	0.30	( 0.27)	0.91	14929.6	40100.00
16	35143.59	54.37	1.370	0.30	( 0.28)	0.92	17733.7	11801.00
17	37989.87	63.97	1.286	0.30	( 0.28)	0.94	22030.5	11530.00
18	40297.16	72.61	1.228	0.30	( 0.28)	0.95	27036.1	11910.00
19	42394.05	79.77	1.180	0.30	( 0.29)	0.95	31617.7	11330.00
20	43440.62	86.14	1.137	0.30	( 0.29)	0.96	36048.7	11130.00
21	43304.12	93.73	1.094	0.30	( 0.29)	0.96	40042.7	12330.00
22	43238.80	96.32	1.082	0.30	( 0.29)	0.96	41457.5	12410.00
23	43045.73	100.36	1.064	0.30	( 0.29)	0.96	43385.9	12400.00
24	42494.05	109.00	1.025	0.30	( 0.29)	0.97	46754.7	12201.00
25	42024.34	112.94	1.007	0.30	( 0.29)	0.97	47839.3	12111.00
26	41364.63	118.28	0.983	0.30	( 0.29)	0.97	49208.8	12101.10
27	40824.71	122.28	0.969	0.30	( 0.29)	0.97	50057.9	10400.00
28	39262.15	130.23	0.948	0.30	( 0.29)	0.97	51373.0	12010.00
29	37952.65	136.03	0.933	0.30	( 0.29)	0.97	51686.7	10210.00
30	37576.40	138.69	0.926	0.30	( 0.29)	0.97	51797.6	12000.00
31	34484.51	161.89	0.865	0.30	( 0.29)	0.97	52419.5	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 43440.62 Tc (MIN.) = 86.14  
AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA (ACRES) = 36048.74

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc (MIN.) = 86.14  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.137  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"GRASS" B 17.31 0.30 1.000 69  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 17.31 SUBAREA RUNOFF (CFS) = 13.04  
EFFECTIVE AREA (ACRES) = 36066.05 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA (ACRES) = 52436.8 PEAK FLOW RATE (CFS) = 43440.62  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52436.8 TC (MIN.) = 86.14  
EFFECTIVE AREA (ACRES) = 36066.05 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.959  
PEAK FLOW RATE (CFS) = 43440.62

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24925.15	18.20	2.645	0.30 ( 0.24)	0.79	4392.1	300.00
2	26014.05	22.24	2.304	0.30 ( 0.24)	0.80	5377.6	910.00
3	26457.37	23.13	2.245	0.30 ( 0.24)	0.80	5774.3	413.00
4	26552.74	23.33	2.232	0.30 ( 0.24)	0.80	5861.2	327.00
5	27066.66	24.45	2.158	0.30 ( 0.24)	0.81	6336.9	350.00
6	27553.29	25.52	2.097	0.30 ( 0.25)	0.82	6789.6	320.00

7	28174.97	26.89	2.035	0.30	( 0.25)	0.83	7360.1	900.00
8	28538.46	28.19	1.976	0.30	( 0.25)	0.84	7858.0	12730.00
9	28867.62	29.43	1.920	0.30	( 0.25)	0.84	8322.2	430.00
10	28927.06	29.67	1.909	0.30	( 0.25)	0.84	8411.0	306.00
11	29062.77	30.20	1.889	0.30	( 0.25)	0.85	8604.9	12710.00
12	29188.19	30.75	1.875	0.30	( 0.25)	0.85	8797.7	600.00
13	29220.75	30.90	1.871	0.30	( 0.26)	0.85	8853.5	400.00
14	30463.38	36.14	1.736	0.30	( 0.26)	0.87	10853.3	390.00
15	33008.86	47.02	1.480	0.30	( 0.27)	0.91	14946.9	40100.00
16	35143.59	54.37	1.370	0.30	( 0.28)	0.92	17751.0	11801.00
17	37989.87	63.97	1.286	0.30	( 0.28)	0.94	22047.8	11530.00
18	40297.16	72.61	1.228	0.30	( 0.28)	0.95	27053.4	11910.00
19	42394.05	79.77	1.180	0.30	( 0.29)	0.95	31635.0	11330.00
20	43440.62	86.14	1.137	0.30	( 0.29)	0.96	36066.0	11130.00
21	43304.12	93.73	1.094	0.30	( 0.29)	0.96	40060.0	12330.00
22	43238.80	96.32	1.082	0.30	( 0.29)	0.96	41474.8	12410.00
23	43045.73	100.36	1.064	0.30	( 0.29)	0.96	43403.2	12400.00
24	42494.05	109.00	1.025	0.30	( 0.29)	0.97	46772.0	12201.00
25	42024.34	112.94	1.007	0.30	( 0.29)	0.97	47856.6	12111.00
26	41364.63	118.28	0.983	0.30	( 0.29)	0.97	49226.1	12101.10
27	40824.71	122.28	0.969	0.30	( 0.29)	0.97	50075.2	10400.00
28	39262.15	130.23	0.948	0.30	( 0.29)	0.97	51390.3	12010.00
29	37952.65	136.03	0.933	0.30	( 0.29)	0.97	51704.0	10210.00
30	37576.40	138.69	0.926	0.30	( 0.29)	0.97	51814.9	12000.00
31	34484.51	161.89	0.865	0.30	( 0.29)	0.97	52436.8	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S28- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV28.DAT  
TIME/DATE OF STUDY: 11:52 03/29/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 6.046
- 2) 10.00; 3.873
- 3) 15.00; 2.987
- 4) 20.00; 2.453
- 5) 25.00; 2.121
- 6) 30.00; 1.894
- 7) 40.00; 1.637
- 8) 50.00; 1.414
- 9) 60.00; 1.313
- 10) 90.00; 1.111
- 11) 120.00; 0.975
- 12) 180.00; 0.818
- 13) 360.00; 0.610
- 14) 1200.00; 0.267

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV27.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24925.15	18.20	0.30 ( 0.24)	0.79	4392.1	300.00
2	29220.75	30.90	0.30 ( 0.26)	0.85	8853.5	400.00
3	30463.38	36.14	0.30 ( 0.26)	0.87	10853.3	390.00
4	33008.86	47.02	0.30 ( 0.27)	0.91	14946.9	40100.00
5	35143.59	54.37	0.30 ( 0.28)	0.92	17751.0	11801.00
6	37989.87	63.97	0.30 ( 0.28)	0.94	22047.8	11530.00
7	40297.16	72.61	0.30 ( 0.28)	0.95	27053.4	11910.00
8	42394.05	79.77	0.30 ( 0.29)	0.95	31635.0	11330.00
9	43440.62	86.14	0.30 ( 0.29)	0.96	36066.0	11130.00
10	43304.12	93.73	0.30 ( 0.29)	0.96	40060.0	12330.00
11	43238.80	96.32	0.30 ( 0.29)	0.96	41474.8	12410.00
12	43045.73	100.36	0.30 ( 0.29)	0.96	43403.2	12400.00
13	42494.05	109.00	0.30 ( 0.29)	0.97	46772.0	12201.00
14	42024.34	112.94	0.30 ( 0.29)	0.97	47856.6	12111.00
15	41364.63	118.28	0.30 ( 0.29)	0.97	49226.1	12101.10
16	40824.71	122.28	0.30 ( 0.29)	0.97	50075.2	10400.00
17	39262.15	130.23	0.30 ( 0.29)	0.97	51390.3	12010.00
18	37952.65	136.03	0.30 ( 0.29)	0.97	51704.0	10210.00
19	37576.40	138.69	0.30 ( 0.29)	0.97	51814.9	12000.00
20	34484.51	161.89	0.30 ( 0.29)	0.97	52436.8	10100.00
TOTAL AREA (ACRES) =						52436.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: P501XXCE.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	411.92	13.14	0.30 ( 0.25)	0.84	174.7	50110.00
2	436.73	17.51	0.30 ( 0.26)	0.85	223.2	50100.00
TOTAL AREA (ACRES) =						223.2

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1 411.92 13.14 0.30( 0.25) 0.84 174.7 50110.00  
 2 436.73 17.51 0.30( 0.26) 0.85 223.2 50100.00  
 TOTAL AREA (ACRES) = 223.2

\*\*\*\*\*

FLOW PROCESS FROM NODE 12740.00 TO NODE 12800.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	411.92	13.14	3.317	0.30( 0.25)	0.84	174.7	50110.00
2	436.73	17.51	2.719	0.30( 0.26)	0.85	223.2	50100.00

LONGEST FLOWPATH FROM NODE 50100.00 TO NODE 12800.00 = 4170.00 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24925.15	18.20	2.645	0.30( 0.24)	0.79	4392.1	300.00
2	29220.75	30.90	1.871	0.30( 0.26)	0.85	8853.5	400.00
3	30463.38	36.14	1.736	0.30( 0.26)	0.87	10853.3	390.00
4	33008.86	47.02	1.480	0.30( 0.27)	0.91	14946.9	40100.00
5	35143.59	54.37	1.370	0.30( 0.28)	0.92	17751.0	11801.00
6	37989.87	63.97	1.286	0.30( 0.28)	0.94	22047.8	11530.00
7	40297.16	72.61	1.228	0.30( 0.28)	0.95	27053.4	11910.00
8	42394.05	79.77	1.180	0.30( 0.29)	0.95	31635.0	11330.00
9	43440.62	86.14	1.137	0.30( 0.29)	0.96	36066.0	11130.00
10	43304.12	93.73	1.094	0.30( 0.29)	0.96	40060.0	12330.00
11	43238.80	96.32	1.082	0.30( 0.29)	0.96	41474.8	12410.00
12	43045.73	100.36	1.064	0.30( 0.29)	0.96	43403.2	12400.00
13	42494.05	109.00	1.025	0.30( 0.29)	0.97	46772.0	12201.00
14	42024.34	112.94	1.007	0.30( 0.29)	0.97	47856.6	12111.00
15	41364.63	118.28	0.983	0.30( 0.29)	0.97	49226.1	12101.10
16	40824.71	122.28	0.969	0.30( 0.29)	0.97	50075.2	10400.00
17	39262.15	130.23	0.948	0.30( 0.29)	0.97	51390.3	12010.00
18	37952.65	136.03	0.933	0.30( 0.29)	0.97	51704.0	10210.00
19	37576.40	138.69	0.926	0.30( 0.29)	0.97	51814.9	12000.00
20	34484.51	161.89	0.865	0.30( 0.29)	0.97	52436.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	13.14	3.317	0.30( 0.24)	0.80	3345.3	50110.00
2	25151.54	17.51	2.719	0.30( 0.24)	0.80	4449.1	50100.00
3	25348.84	18.20	2.645	0.30( 0.24)	0.80	4615.3	300.00
4	29507.20	30.90	1.871	0.30( 0.26)	0.85	9076.7	400.00
5	30725.96	36.14	1.736	0.30( 0.26)	0.87	11076.5	390.00
6	33226.08	47.02	1.480	0.30( 0.27)	0.91	15170.1	40100.00
7	35341.21	54.37	1.370	0.30( 0.28)	0.92	17974.2	11801.00
8	38172.67	63.97	1.286	0.30( 0.28)	0.93	22271.0	11530.00
9	40469.65	72.61	1.228	0.30( 0.28)	0.95	27276.6	11910.00
10	42557.99	79.77	1.180	0.30( 0.29)	0.95	31858.2	11330.00
11	43596.95	86.14	1.137	0.30( 0.29)	0.96	36289.2	11130.00
12	43452.86	93.73	1.094	0.30( 0.29)	0.96	40283.2	12330.00
13	43385.45	96.32	1.082	0.30( 0.29)	0.96	41698.0	12410.00

14	43189.13	100.36	1.064	0.30( 0.29)	0.96	43626.4	12400.00
15	42630.50	109.00	1.025	0.30( 0.29)	0.97	46995.2	12201.00
16	42157.63	112.94	1.007	0.30( 0.29)	0.97	48079.8	12111.00
17	41493.63	118.28	0.983	0.30( 0.29)	0.97	49449.3	12101.10
18	40951.27	122.28	0.969	0.30( 0.29)	0.97	50298.4	10400.00
19	39385.03	130.23	0.948	0.30( 0.29)	0.97	51613.5	12010.00
20	38072.84	136.03	0.933	0.30( 0.29)	0.97	51927.2	10210.00
21	37695.35	138.69	0.926	0.30( 0.29)	0.97	52038.1	12000.00
22	34592.70	161.89	0.865	0.30( 0.29)	0.97	52660.0	10100.00

TOTAL AREA (ACRES) = 52660.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43596.95 Tc (MIN.) = 86.145  
 EFFECTIVE AREA (ACRES) = 36289.25 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA (ACRES) = 52660.0  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52660.0 TC (MIN.) = 86.14  
 EFFECTIVE AREA (ACRES) = 36289.25 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.958  
 PEAK FLOW RATE (CFS) = 43596.95

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	13.14	3.317	0.30( 0.24)	0.80	3345.3	50110.00
2	25151.54	17.51	2.719	0.30( 0.24)	0.80	4449.1	50100.00
3	25348.84	18.20	2.645	0.30( 0.24)	0.80	4615.3	300.00
4	29507.20	30.90	1.871	0.30( 0.26)	0.85	9076.7	400.00
5	30725.96	36.14	1.736	0.30( 0.26)	0.87	11076.5	390.00
6	33226.08	47.02	1.480	0.30( 0.27)	0.91	15170.1	40100.00
7	35341.21	54.37	1.370	0.30( 0.28)	0.92	17974.2	11801.00
8	38172.67	63.97	1.286	0.30( 0.28)	0.93	22271.0	11530.00
9	40469.65	72.61	1.228	0.30( 0.28)	0.95	27276.6	11910.00
10	42557.99	79.77	1.180	0.30( 0.29)	0.95	31858.2	11330.00
11	43596.95	86.14	1.137	0.30( 0.29)	0.96	36289.2	11130.00
12	43452.86	93.73	1.094	0.30( 0.29)	0.96	40283.2	12330.00
13	43385.45	96.32	1.082	0.30( 0.29)	0.96	41698.0	12410.00
14	43189.13	100.36	1.064	0.30( 0.29)	0.96	43626.4	12400.00
15	42630.50	109.00	1.025	0.30( 0.29)	0.97	46995.2	12201.00
16	42157.63	112.94	1.007	0.30( 0.29)	0.97	48079.8	12111.00
17	41493.63	118.28	0.983	0.30( 0.29)	0.97	49449.3	12101.10
18	40951.27	122.28	0.969	0.30( 0.29)	0.97	50298.4	10400.00
19	39385.03	130.23	0.948	0.30( 0.29)	0.97	51613.5	12010.00
20	38072.84	136.03	0.933	0.30( 0.29)	0.97	51927.2	10210.00
21	37695.35	138.69	0.926	0.30( 0.29)	0.97	52038.1	12000.00
22	34592.70	161.89	0.865	0.30( 0.29)	0.97	52660.0	10100.00

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S29- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV29.DAT  
TIME/DATE OF STUDY: 11:53 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 6.006
- 2) 10.00; 3.853
- 3) 15.00; 2.975
- 4) 20.00; 2.445
- 5) 25.00; 2.115
- 6) 30.00; 1.889
- 7) 40.00; 1.632
- 8) 50.00; 1.411
- 9) 60.00; 1.307
- 10) 90.00; 1.106
- 11) 120.00; 0.969
- 12) 180.00; 0.813
- 13) 360.00; 0.605
- 14) 1200.00; 0.265

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV28.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	13.14	0.30 ( 0.24)	0.80	3345.3	50110.00
2	25348.84	18.20	0.30 ( 0.24)	0.80	4615.3	300.00
3	29507.20	30.90	0.30 ( 0.26)	0.85	9076.7	400.00
4	30725.96	36.14	0.30 ( 0.26)	0.87	11076.5	390.00
5	33226.08	47.02	0.30 ( 0.27)	0.91	15170.1	40100.00
6	35341.21	54.37	0.30 ( 0.28)	0.92	17974.2	11801.00
7	38172.67	63.97	0.30 ( 0.28)	0.93	22271.0	11530.00
8	40469.65	72.61	0.30 ( 0.28)	0.95	27276.6	11910.00
9	42557.99	79.77	0.30 ( 0.29)	0.95	31858.2	11330.00
10	43596.95	86.14	0.30 ( 0.29)	0.96	36289.2	11130.00
11	43452.86	93.73	0.30 ( 0.29)	0.96	40283.2	12330.00
12	43189.13	100.36	0.30 ( 0.29)	0.96	43626.4	12400.00
13	42630.50	109.00	0.30 ( 0.29)	0.97	46995.2	12010.00
14	42157.63	112.94	0.30 ( 0.29)	0.97	48079.8	12111.00
15	41493.63	118.28	0.30 ( 0.29)	0.97	49449.3	12101.10
16	40951.27	122.28	0.30 ( 0.29)	0.97	50298.4	10400.00
17	39385.03	130.23	0.30 ( 0.29)	0.97	51613.5	12010.00
18	38072.84	136.03	0.30 ( 0.29)	0.97	51927.2	10210.00
19	37695.35	138.69	0.30 ( 0.29)	0.97	52038.1	12000.00
20	34592.70	161.89	0.30 ( 0.29)	0.97	52660.0	10100.00
TOTAL AREA (ACRES) =						52660.0

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	13.14	0.30 ( 0.24)	0.80	3345.3	50110.00
2	25348.84	18.20	0.30 ( 0.24)	0.80	4615.3	300.00
3	29507.20	30.90	0.30 ( 0.26)	0.85	9076.7	400.00
4	30725.96	36.14	0.30 ( 0.26)	0.87	11076.5	390.00
5	33226.08	47.02	0.30 ( 0.27)	0.91	15170.1	40100.00
6	35341.21	54.37	0.30 ( 0.28)	0.92	17974.2	11801.00
7	38172.67	63.97	0.30 ( 0.28)	0.93	22271.0	11530.00
8	40469.65	72.61	0.30 ( 0.28)	0.95	27276.6	11910.00
9	42557.99	79.77	0.30 ( 0.29)	0.95	31858.2	11330.00
10	43596.95	86.14	0.30 ( 0.29)	0.96	36289.2	11130.00
11	43452.86	93.73	0.30 ( 0.29)	0.96	40283.2	12330.00
12	43189.13	100.36	0.30 ( 0.29)	0.96	43626.4	12400.00
13	42630.50	109.00	0.30 ( 0.29)	0.97	46995.2	12201.00

14 42157.63 112.94 0.30( 0.29) 0.97 48079.8 12111.00  
 15 41493.63 118.28 0.30( 0.29) 0.97 49449.3 12101.10  
 16 40951.27 122.28 0.30( 0.29) 0.97 50298.4 10400.00  
 17 39385.03 130.23 0.30( 0.29) 0.97 51613.5 12010.00  
 18 38072.84 136.03 0.30( 0.29) 0.97 51927.2 10210.00  
 19 37695.35 138.69 0.30( 0.29) 0.97 52038.1 12000.00  
 20 34592.70 161.89 0.30( 0.29) 0.97 52660.0 10100.00  
 TOTAL AREA(ACRES) = 52660.0

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 240.00 DOWNSTREAM(FEET) = 216.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 3120.28 CHANNEL SLOPE = 0.0077  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.89  
 CHANNEL FLOW THRU SUBAREA(CFS) = 43596.95  
 FLOW VELOCITY(FEET/SEC.) = 17.67 FLOW DEPTH(FEET) = 9.89  
 TRAVEL TIME(MIN.) = 2.94 Tc(MIN.) = 89.09  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	16.76	2.789	0.30( 0.24)	0.80	3345.3	50110.00
2	25348.84	21.72	2.331	0.30( 0.24)	0.80	4615.3	300.00
3	29507.20	34.24	1.780	0.30( 0.26)	0.85	9076.7	400.00
4	30725.96	39.44	1.646	0.30( 0.26)	0.87	11076.5	390.00
5	33226.08	50.24	1.409	0.30( 0.27)	0.91	15170.1	40100.00
6	35341.21	57.52	1.333	0.30( 0.28)	0.92	17974.2	11801.00
7	38172.67	67.04	1.260	0.30( 0.28)	0.93	22271.0	11530.00
8	40469.65	75.63	1.202	0.30( 0.28)	0.95	27276.6	11910.00
9	42557.99	82.74	1.155	0.30( 0.29)	0.95	31858.2	11330.00
10	43596.95	89.09	1.112	0.30( 0.29)	0.96	36289.2	11130.00
11	43452.86	96.68	1.076	0.30( 0.29)	0.96	40283.2	12330.00
12	43189.13	103.31	1.045	0.30( 0.29)	0.96	43626.4	12400.00
13	42630.50	111.97	1.006	0.30( 0.29)	0.97	46995.2	12201.00
14	42157.63	115.92	0.988	0.30( 0.29)	0.97	48079.8	12111.00
15	41493.63	121.27	0.966	0.30( 0.29)	0.97	49449.3	12101.10
16	40951.27	125.28	0.955	0.30( 0.29)	0.97	50298.4	10400.00
17	39385.03	133.27	0.934	0.30( 0.29)	0.97	51613.5	12010.00
18	38072.84	139.11	0.919	0.30( 0.29)	0.97	51927.2	10210.00
19	37695.35	141.78	0.912	0.30( 0.29)	0.97	52038.1	12000.00
20	34592.70	165.07	0.852	0.30( 0.29)	0.97	52660.0	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 43596.95 Tc(MIN.) = 89.09  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA(ACRES) = 36289.25

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 89.09  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.112  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 2.60 0.30 0.100 56  
 COMMERCIAL B 3.20 0.30 0.100 56  
 PUBLIC PARK B 1.50 0.30 0.850 56  
 COMMERCIAL B 5.60 0.30 0.100 56  
 PUBLIC PARK B 6.50 0.30 0.850 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.409  
 SUBAREA AREA(ACRES) = 19.40 SUBAREA RUNOFF(CFS) = 17.27  
 EFFECTIVE AREA(ACRES) = 36308.64 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA(ACRES) = 52679.4 PEAK FLOW RATE(CFS) = 43596.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 89.09  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.112  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 0.50 0.30 0.100 56  
 PUBLIC PARK B 4.10 0.30 0.850 56  
 PUBLIC PARK B 0.10 0.30 0.850 56  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 1.60 0.30 0.900 56  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.60 0.30 0.900 56  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 1.00 0.30 0.900 56  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.823  
 SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 6.15  
 EFFECTIVE AREA(ACRES) = 36316.54 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA(ACRES) = 52687.3 PEAK FLOW RATE(CFS) = 43596.95  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 89.09  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.112

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.60	0.30	0.900	56
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER					
"BARREN"	B	12.00	0.30	1.000	86
PUBLIC PARK	B	36.10	0.30	0.850	56
NATURAL FAIR COVER					
"GRASS"	B	15.90	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	1.50	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA(ACRES) = 69.40 SUBAREA RUNOFF(CFS) = 52.28  
EFFECTIVE AREA(ACRES) = 36385.94 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA(ACRES) = 52756.7 PEAK FLOW RATE(CFS) = 43596.95  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 89.09  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.112  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	4.20	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.00	0.30	1.000	65
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	4.10	0.30	0.500	56
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	3.70	0.30	0.500	56
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.40	0.30	0.500	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.703  
SUBAREA AREA(ACRES) = 13.80 SUBAREA RUNOFF(CFS) = 11.19  
EFFECTIVE AREA(ACRES) = 36399.74 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA(ACRES) = 52770.5 PEAK FLOW RATE(CFS) = 43596.95  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 89.09

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.112  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	6.70	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.20	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.90	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 7.89  
EFFECTIVE AREA(ACRES) = 36410.54 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
TOTAL AREA(ACRES) = 52781.3 PEAK FLOW RATE(CFS) = 43596.95  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12901.00 TO NODE 12902.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 216.00 DOWNSTREAM(FEET) = 215.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 122.04 CHANNEL SLOPE = 0.0082  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 9.72  
CHANNEL FLOW THRU SUBAREA(CFS) = 43596.95  
FLOW VELOCITY(FEET/SEC.) = 18.05 FLOW DEPTH(FEET) = 9.72  
TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 89.20  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	16.90	2.774	0.30( 0.24)	0.80	3466.6	50110.00
2	25348.84	21.86	2.322	0.30( 0.24)	0.80	4736.6	300.00
3	29507.20	34.37	1.777	0.30( 0.25)	0.85	9198.0	400.00
4	30725.96	39.57	1.643	0.30( 0.26)	0.87	11197.8	390.00
5	33226.08	50.36	1.407	0.30( 0.27)	0.91	15291.4	40100.00
6	35341.21	57.64	1.332	0.30( 0.28)	0.92	18095.5	11801.00
7	38172.67	67.16	1.259	0.30( 0.28)	0.93	22392.3	11530.00
8	40469.65	75.74	1.202	0.30( 0.28)	0.95	27397.9	11910.00
9	42557.99	82.85	1.154	0.30( 0.29)	0.95	31979.6	11330.00
10	43596.95	89.20	1.111	0.30( 0.29)	0.96	36410.5	11130.00
11	43452.86	96.79	1.075	0.30( 0.29)	0.96	40404.5	12330.00
12	43189.13	103.42	1.045	0.30( 0.29)	0.96	43747.7	12400.00
13	42630.50	112.08	1.005	0.30( 0.29)	0.96	47116.5	12201.00
14	42157.63	116.03	0.987	0.30( 0.29)	0.97	48201.1	12111.00
15	41493.63	121.39	0.965	0.30( 0.29)	0.97	49570.6	12101.10
16	40951.27	125.40	0.955	0.30( 0.29)	0.97	50419.7	10400.00
17	39385.03	133.39	0.934	0.30( 0.29)	0.97	51734.8	12010.00
18	38072.84	139.22	0.919	0.30( 0.29)	0.97	52048.5	10210.00
19	37695.35	141.90	0.912	0.30( 0.29)	0.97	52159.4	12000.00
20	34592.70	165.19	0.852	0.30( 0.29)	0.97	52781.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 43596.95 Tc(MIN.) = 89.20  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA(ACRES) = 36410.54

\*\*\*\*\*

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P503XXCE.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1954.61	18.51	0.30 ( 0.22)	0.74	1037.1	50320.00
2	1958.52	19.18	0.30 ( 0.22)	0.74	1065.7	50240.00
3	1953.83	20.19	0.30 ( 0.22)	0.74	1103.3	50330.00
4	1953.14	23.39	0.30 ( 0.22)	0.74	1204.8	50280.00
5	1934.70	24.58	0.30 ( 0.22)	0.74	1235.7	50300.00
6	1911.74	25.74	0.30 ( 0.22)	0.74	1257.1	50220.00
7	1820.38	28.97	0.30 ( 0.22)	0.74	1290.9	50260.00
8	1712.34	32.40	0.30 ( 0.22)	0.74	1298.6	50200.00
TOTAL AREA(ACRES) =						1298.6

\*\*\*\*\*

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23424.99	16.90	2.774	0.30 ( 0.24)	0.80	3466.6	50110.00
2	25348.84	21.86	2.322	0.30 ( 0.24)	0.80	4736.6	300.00
3	29507.20	34.37	1.777	0.30 ( 0.25)	0.85	9198.0	400.00
4	30725.96	39.57	1.643	0.30 ( 0.26)	0.87	11197.8	390.00
5	33226.08	50.36	1.407	0.30 ( 0.27)	0.91	15291.4	40100.00
6	35341.21	57.64	1.332	0.30 ( 0.28)	0.92	18095.5	11801.00
7	38172.67	67.16	1.259	0.30 ( 0.28)	0.93	22392.3	11530.00
8	40469.65	75.74	1.202	0.30 ( 0.28)	0.95	27397.9	11910.00
9	42557.99	82.85	1.154	0.30 ( 0.29)	0.95	31979.6	11330.00
10	43596.95	89.20	1.111	0.30 ( 0.29)	0.96	36410.5	11130.00
11	43452.86	96.79	1.075	0.30 ( 0.29)	0.96	40404.5	12330.00
12	43189.13	103.42	1.045	0.30 ( 0.29)	0.96	43747.7	12400.00
13	42630.50	112.08	1.005	0.30 ( 0.29)	0.96	47116.5	12201.00
14	42157.63	116.03	0.987	0.30 ( 0.29)	0.97	48201.1	12111.00
15	41493.63	121.39	0.965	0.30 ( 0.29)	0.97	49570.6	12101.10
16	40951.27	125.40	0.955	0.30 ( 0.29)	0.97	50419.7	10400.00
17	39385.03	133.39	0.934	0.30 ( 0.29)	0.97	51734.8	12010.00
18	38072.84	139.22	0.919	0.30 ( 0.29)	0.97	52048.5	10210.00
19	37695.35	141.90	0.912	0.30 ( 0.29)	0.97	52159.4	12000.00
20	34592.70	165.19	0.852	0.30 ( 0.29)	0.97	52781.3	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 =							115038.03 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1954.61	18.51	2.603	0.30 ( 0.22)	0.74	1037.1	50320.00

2	1958.52	19.18	2.532	0.30 ( 0.22)	0.74	1065.7	50240.00
3	1953.83	20.19	2.432	0.30 ( 0.22)	0.74	1103.3	50330.00
4	1953.14	23.39	2.221	0.30 ( 0.22)	0.74	1204.8	50280.00
5	1934.70	24.58	2.142	0.30 ( 0.22)	0.74	1235.7	50300.00
6	1911.74	25.74	2.082	0.30 ( 0.22)	0.74	1257.1	50220.00
7	1820.38	28.97	1.936	0.30 ( 0.22)	0.74	1290.9	50260.00
8	1712.34	32.40	1.827	0.30 ( 0.22)	0.74	1298.6	50200.00

LONGEST FLOWPATH FROM NODE 50220.00 TO NODE 12902.00 = 17597.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25337.41	16.90	2.774	0.30 ( 0.24)	0.78	4413.3	50110.00
2	26004.87	18.51	2.603	0.30 ( 0.24)	0.78	4916.4	50320.00
3	26268.47	19.18	2.532	0.30 ( 0.24)	0.78	5116.5	50240.00
4	26657.07	20.19	2.432	0.30 ( 0.24)	0.78	5413.7	50330.00
5	27302.32	21.86	2.322	0.30 ( 0.24)	0.79	5892.6	300.00
6	27812.25	23.39	2.221	0.30 ( 0.24)	0.79	6488.8	50280.00
7	28188.98	24.58	2.142	0.30 ( 0.24)	0.80	6943.7	50300.00
8	28549.59	25.74	2.082	0.30 ( 0.24)	0.80	7376.6	50220.00
9	29532.15	28.97	1.936	0.30 ( 0.24)	0.81	8562.6	50260.00
10	30564.23	32.40	1.827	0.30 ( 0.25)	0.83	9793.5	50200.00
11	31165.47	34.37	1.777	0.30 ( 0.25)	0.84	10496.6	400.00
12	32241.81	39.57	1.643	0.30 ( 0.26)	0.86	12496.4	390.00
13	34490.18	50.36	1.407	0.30 ( 0.27)	0.89	16590.0	40100.00
14	36524.54	57.64	1.332	0.30 ( 0.27)	0.91	19394.1	11801.00
15	39278.64	67.16	1.259	0.30 ( 0.28)	0.92	23690.9	11530.00
16	41514.26	75.74	1.202	0.30 ( 0.28)	0.94	28696.5	11910.00
17	43551.80	82.85	1.154	0.30 ( 0.28)	0.94	33278.2	11330.00
18	44545.36	89.20	1.111	0.30 ( 0.29)	0.95	37709.1	11130.00
19	44362.48	96.79	1.075	0.30 ( 0.29)	0.95	41703.1	12330.00
20	44066.42	103.42	1.045	0.30 ( 0.29)	0.96	45046.3	12400.00
21	43465.60	112.08	1.005	0.30 ( 0.29)	0.96	48415.1	12201.00
22	42973.48	116.03	0.987	0.30 ( 0.29)	0.96	49499.7	12111.00
23	42286.30	121.39	0.965	0.30 ( 0.29)	0.96	50869.2	12101.10
24	41732.81	125.40	0.955	0.30 ( 0.29)	0.96	51718.3	10400.00
25	40144.41	133.39	0.934	0.30 ( 0.29)	0.96	53033.4	12010.00
26	38816.03	139.22	0.919	0.30 ( 0.29)	0.96	53347.1	10210.00
27	38431.12	141.90	0.912	0.30 ( 0.29)	0.96	53458.0	12000.00
28	35263.86	165.19	0.852	0.30 ( 0.29)	0.96	54079.9	10100.00
TOTAL AREA(ACRES) =							54079.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 44545.36 Tc(MIN.) = 89.201  
 EFFECTIVE AREA(ACRES) = 37709.14 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 54079.9  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 12902.00 TO NODE 12903.00 IS CODE = 56

\*\*\*\*\*

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 215.00 DOWNSTREAM(FEET) = 214.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 895.53 CHANNEL SLOPE = 0.0011
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
\*ESTIMATED CHANNEL HEIGHT(FEET) = 17.05
CHANNEL FLOW THRU SUBAREA(CFS) = 44545.36
FLOW VELOCITY(FEET/SEC.) = 9.16 FLOW DEPTH(FEET) = 17.05
TRAVEL TIME(MIN.) = 1.63 Tc(MIN.) = 90.83
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 28 rows of data.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 44545.36 Tc(MIN.) = 90.83
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 37709.14

\*\*\*\*\*

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P504XXCE.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 7 rows of data.

1 159.82 13.14 0.30( 0.28) 0.94 70.7 50400.00
TOTAL AREA(ACRES) = 70.7

\*\*\*\*\*
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 28 rows of data.

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 1 row of data.

LONGEST FLOWPATH FROM NODE 50400.00 TO NODE 12903.00 = 3607.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 7 rows of data.

8	28282.53	26.46	2.049	0.30	( 0.24)	0.80	7014.4	50300.00
9	28640.40	27.60	1.997	0.30	( 0.24)	0.80	7447.3	50220.00
10	29616.12	30.82	1.868	0.30	( 0.24)	0.81	8633.3	50260.00
11	30643.56	34.23	1.780	0.30	( 0.25)	0.83	9864.2	50200.00
12	31242.14	36.19	1.730	0.30	( 0.25)	0.84	10567.3	400.00
13	32311.70	41.36	1.602	0.30	( 0.26)	0.86	12567.1	390.00
14	34548.79	52.12	1.389	0.30	( 0.27)	0.89	16660.7	40100.00
15	36579.17	59.37	1.314	0.30	( 0.27)	0.91	19464.8	11801.00
16	39329.79	68.85	1.248	0.30	( 0.28)	0.92	23761.6	11530.00
17	41562.37	77.41	1.190	0.30	( 0.28)	0.94	28767.2	11910.00
18	43597.39	84.49	1.143	0.30	( 0.28)	0.94	33348.9	11330.00
19	44588.81	90.83	1.102	0.30	( 0.29)	0.95	37779.8	11130.00
20	44404.09	98.42	1.068	0.30	( 0.29)	0.95	41773.8	12330.00
21	44106.43	105.06	1.037	0.30	( 0.29)	0.96	45117.0	12400.00
22	43503.51	113.73	0.998	0.30	( 0.29)	0.96	48485.8	12201.00
23	43010.44	117.68	0.980	0.30	( 0.29)	0.96	49570.4	12111.00
24	42322.28	123.04	0.961	0.30	( 0.29)	0.96	50939.9	12101.10
25	41768.23	127.06	0.951	0.30	( 0.29)	0.96	51789.0	10400.00
26	40178.73	135.07	0.930	0.30	( 0.29)	0.96	53104.1	12010.00
27	38849.54	140.92	0.915	0.30	( 0.29)	0.96	53417.8	10210.00
28	38464.27	143.60	0.908	0.30	( 0.29)	0.96	53528.7	12000.00
29	35293.79	166.94	0.847	0.30	( 0.29)	0.96	54150.6	10100.00

TOTAL AREA (ACRES) = 54150.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 44588.81 Tc (MIN.) = 90.831  
EFFECTIVE AREA (ACRES) = 37779.84 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 54150.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 214.00 DOWNSTREAM (FEET) = 213.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 767.57 CHANNEL SLOPE = 0.0013  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 16.37  
CHANNEL FLOW THRU SUBAREA (CFS) = 44588.81  
FLOW VELOCITY (FEET/SEC.) = 9.67 FLOW DEPTH (FEET) = 16.37  
TRAVEL TIME (MIN.) = 1.32 Tc (MIN.) = 92.16  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23390.94	14.76	3.017	0.30 ( 0.24)	0.79	3150.2	50400.00
2	25458.45	20.41	2.418	0.30 ( 0.24)	0.79	4484.0	50110.00

3	26117.86	21.99	2.314	0.30	( 0.24)	0.79	4987.1	50320.00
4	26379.15	22.65	2.270	0.30	( 0.24)	0.79	5187.2	50240.00
5	26764.23	23.65	2.204	0.30	( 0.24)	0.79	5484.4	50330.00
6	27403.72	25.29	2.102	0.30	( 0.24)	0.79	5963.3	300.00
7	27908.63	26.80	2.033	0.30	( 0.24)	0.79	6559.5	50280.00
8	28282.53	27.98	1.980	0.30	( 0.24)	0.80	7014.4	50300.00
9	28640.40	29.12	1.929	0.30	( 0.24)	0.80	7447.3	50220.00
10	29616.12	32.32	1.829	0.30	( 0.24)	0.81	8633.3	50260.00
11	30643.56	35.71	1.742	0.30	( 0.25)	0.83	9864.2	50200.00
12	31242.14	37.66	1.692	0.30	( 0.25)	0.84	10567.3	400.00
13	32311.70	42.82	1.570	0.30	( 0.26)	0.86	12567.1	390.00
14	34548.79	53.55	1.374	0.30	( 0.27)	0.89	16660.7	40100.00
15	36579.17	60.78	1.302	0.30	( 0.27)	0.91	19464.8	11801.00
16	39329.79	70.23	1.238	0.30	( 0.28)	0.92	23761.6	11530.00
17	41562.37	78.76	1.181	0.30	( 0.28)	0.94	28767.2	11910.00
18	43597.39	85.82	1.134	0.30	( 0.28)	0.94	33348.9	11330.00
19	44588.81	92.16	1.096	0.30	( 0.29)	0.95	37779.8	11130.00
20	44404.09	99.75	1.061	0.30	( 0.29)	0.95	41773.8	12330.00
21	44106.43	106.39	1.031	0.30	( 0.29)	0.96	45117.0	12400.00
22	43503.51	115.06	0.992	0.30	( 0.29)	0.96	48485.8	12201.00
23	43010.44	119.02	0.973	0.30	( 0.29)	0.96	49570.4	12111.00
24	42322.28	124.39	0.958	0.30	( 0.29)	0.96	50939.9	12101.10
25	41768.23	128.41	0.947	0.30	( 0.29)	0.96	51789.0	10400.00
26	40178.73	136.44	0.926	0.30	( 0.29)	0.96	53104.1	12010.00
27	38849.54	142.30	0.911	0.30	( 0.29)	0.96	53417.8	10210.00
28	38464.27	144.99	0.904	0.30	( 0.29)	0.96	53528.7	12000.00
29	35293.79	168.36	0.843	0.30	( 0.29)	0.96	54150.6	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 44588.81 Tc (MIN.) = 92.16  
AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA (ACRES) = 37779.84

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 3B00EVRL.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	510.76	14.40	0.30 ( 0.13)	0.42	192.1	200.00
2	503.52	17.29	0.30 ( 0.13)	0.42	214.7	210.00
TOTAL AREA (ACRES) =			214.7			

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23390.94	14.76	3.017	0.30 ( 0.24)	0.79	3150.2	50400.00
2	25458.45	20.41	2.418	0.30 ( 0.24)	0.79	4484.0	50110.00
3	26117.86	21.99	2.314	0.30 ( 0.24)	0.79	4987.1	50320.00
4	26379.15	22.65	2.270	0.30 ( 0.24)	0.79	5187.2	50240.00



5	26764.23	23.65	2.204	0.30 ( 0.24)	0.79	5484.4	50330.00
6	27403.72	25.29	2.102	0.30 ( 0.24)	0.79	5963.3	300.00
7	27908.63	26.80	2.033	0.30 ( 0.24)	0.79	6559.5	50280.00
8	28282.53	27.98	1.980	0.30 ( 0.24)	0.80	7014.4	50300.00
9	28640.40	29.12	1.929	0.30 ( 0.24)	0.80	7447.3	50220.00
10	29616.12	32.32	1.829	0.30 ( 0.24)	0.81	8633.3	50260.00
11	30643.56	35.71	1.742	0.30 ( 0.25)	0.83	9864.2	50200.00
12	31242.14	37.66	1.692	0.30 ( 0.25)	0.84	10567.3	400.00
13	32311.70	42.82	1.570	0.30 ( 0.26)	0.86	12567.1	390.00
14	34548.79	53.55	1.374	0.30 ( 0.27)	0.89	16660.7	40100.00
15	36579.17	60.78	1.302	0.30 ( 0.27)	0.91	19464.8	11801.00
16	39329.79	70.23	1.238	0.30 ( 0.28)	0.92	23761.6	11530.00
17	41562.37	78.76	1.181	0.30 ( 0.28)	0.94	28767.2	11910.00
18	43597.39	85.82	1.134	0.30 ( 0.28)	0.94	33348.9	11330.00
19	44588.81	92.16	1.096	0.30 ( 0.29)	0.95	37779.8	11130.00
20	44404.09	99.75	1.061	0.30 ( 0.29)	0.95	41773.8	12330.00
21	44106.43	106.39	1.031	0.30 ( 0.29)	0.96	45117.0	12400.00
22	43503.51	115.06	0.992	0.30 ( 0.29)	0.96	48485.8	12201.00
23	43010.44	119.02	0.973	0.30 ( 0.29)	0.96	49570.4	12111.00
24	42322.28	124.39	0.958	0.30 ( 0.29)	0.96	50939.9	12101.10
25	41768.23	128.41	0.947	0.30 ( 0.29)	0.96	51789.0	10400.00
26	40178.73	136.44	0.926	0.30 ( 0.29)	0.96	53104.1	12010.00
27	38849.54	142.30	0.911	0.30 ( 0.29)	0.96	53417.8	10210.00
28	38464.27	144.99	0.904	0.30 ( 0.29)	0.96	53528.7	12000.00
29	35293.79	168.36	0.843	0.30 ( 0.29)	0.96	54150.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	510.76	14.40	3.080	0.30 ( 0.13)	0.42	192.1	200.00
2	503.52	17.29	2.732	0.30 ( 0.13)	0.42	214.7	210.00

LONGEST FLOWPATH FROM NODE 210.00 TO NODE 12904.00 = 5961.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23850.43	14.40	3.080	0.30 ( 0.23)	0.77	3266.3	200.00
2	23900.80	14.76	3.017	0.30 ( 0.23)	0.77	3345.1	50400.00
3	24821.12	17.29	2.732	0.30 ( 0.23)	0.77	3962.7	210.00
4	25901.27	20.41	2.418	0.30 ( 0.23)	0.77	4698.7	50110.00
5	26540.48	21.99	2.314	0.30 ( 0.23)	0.77	5201.8	50320.00
6	26793.37	22.65	2.270	0.30 ( 0.23)	0.77	5401.9	50240.00
7	27165.71	23.65	2.204	0.30 ( 0.23)	0.77	5699.1	50330.00
8	27785.46	25.29	2.102	0.30 ( 0.23)	0.77	6178.0	300.00
9	28277.12	26.80	2.033	0.30 ( 0.23)	0.78	6774.2	50280.00
10	28640.77	27.98	1.980	0.30 ( 0.24)	0.79	7229.1	50300.00
11	28988.67	29.12	1.929	0.30 ( 0.24)	0.79	7662.0	50220.00
12	29945.20	32.32	1.829	0.30 ( 0.24)	0.81	8848.0	50260.00
13	30955.79	35.71	1.742	0.30 ( 0.25)	0.82	10078.9	50200.00
14	31544.67	37.66	1.692	0.30 ( 0.25)	0.83	10782.0	400.00
15	32590.57	42.82	1.570	0.30 ( 0.25)	0.85	12781.8	390.00
16	34789.88	53.55	1.374	0.30 ( 0.27)	0.89	16875.4	40100.00
17	36806.29	60.78	1.302	0.30 ( 0.27)	0.90	19679.5	11801.00
18	39544.67	70.23	1.238	0.30 ( 0.28)	0.92	23976.3	11530.00
19	41766.21	78.76	1.181	0.30 ( 0.28)	0.93	28981.9	11910.00
20	43792.09	85.82	1.134	0.30 ( 0.28)	0.94	33563.6	11330.00
21	44776.20	92.16	1.096	0.30 ( 0.28)	0.95	37994.5	11130.00

22	44584.78	99.75	1.061	0.30 ( 0.29)	0.95	41988.5	12330.00
23	44281.26	106.39	1.031	0.30 ( 0.29)	0.95	45331.7	12400.00
24	43670.68	115.06	0.992	0.30 ( 0.29)	0.96	48700.5	12201.00
25	43174.12	119.02	0.973	0.30 ( 0.29)	0.96	49785.1	12111.00
26	42482.89	124.39	0.958	0.30 ( 0.29)	0.96	51154.6	12101.10
27	41926.82	128.41	0.947	0.30 ( 0.29)	0.96	52003.7	10400.00
28	40333.29	136.44	0.926	0.30 ( 0.29)	0.96	53318.8	12010.00
29	39001.16	142.30	0.911	0.30 ( 0.29)	0.96	53632.5	10210.00
30	38614.54	144.99	0.904	0.30 ( 0.29)	0.96	53743.4	12000.00
31	35432.31	168.36	0.843	0.30 ( 0.29)	0.96	54365.3	10100.00

TOTAL AREA (ACRES) = 54365.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 44776.20 Tc (MIN.) = 92.155  
EFFECTIVE AREA (ACRES) = 37994.54 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 54365.3  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12904.00 = 116701.13 FEET.

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 92.16  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.096  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.70	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	20.00	0.30	1.000	69
NATURAL FAIR COVER "MEADOWS"	B	0.10	0.30	1.000	70
PUBLIC PARK	B	14.90	0.30	0.850	56
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.920  
SUBAREA AREA (ACRES) = 39.10 SUBAREA RUNOFF (CFS) = 28.86  
EFFECTIVE AREA (ACRES) = 38033.64 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA (ACRES) = 54404.4 PEAK FLOW RATE (CFS) = 44776.20  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 92.16  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.096  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.30	0.30	0.100	56

NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.10 0.30 1.000 66  
 AGRICULTURAL FAIR COVER  
 "ORCHARDS" B 0.10 0.30 1.000 65  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 1.70 0.30 0.900 56  
 NATURAL FAIR COVER  
 "GRASS" B 2.60 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.20 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.912  
 SUBAREA AREA (ACRES) = 5.00 SUBAREA RUNOFF (CFS) = 3.70  
 EFFECTIVE AREA (ACRES) = 38038.64 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 54409.4 PEAK FLOW RATE (CFS) = 44776.20  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 92.16

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.096

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL FAIR COVER "ORCHARDS"	B	0.10	0.30	1.000	65
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "GRASS"	B	3.00	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.956

SUBAREA AREA (ACRES) = 5.90 SUBAREA RUNOFF (CFS) = 4.30

EFFECTIVE AREA (ACRES) = 38044.54 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA (ACRES) = 54415.3 PEAK FLOW RATE (CFS) = 44776.20

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 54415.3 TC (MIN.) = 92.16

EFFECTIVE AREA (ACRES) = 38044.54 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.947

PEAK FLOW RATE (CFS) = 44776.20

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23850.43	14.40	3.080	0.30 ( 0.23)	0.77	3316.3	200.00
2	23900.80	14.76	3.017	0.30 ( 0.23)	0.77	3395.1	50400.00
3	24821.12	17.29	2.732	0.30 ( 0.23)	0.77	4012.7	210.00
4	25901.27	20.41	2.418	0.30 ( 0.23)	0.77	4748.7	50110.00
5	26540.48	21.99	2.314	0.30 ( 0.23)	0.77	5251.8	50320.00

6	26793.37	22.65	2.270	0.30 ( 0.23)	0.77	5451.9	50240.00
7	27165.71	23.65	2.204	0.30 ( 0.23)	0.77	5749.1	50330.00
8	27785.46	25.29	2.102	0.30 ( 0.23)	0.78	6228.0	300.00
9	28277.12	26.80	2.033	0.30 ( 0.23)	0.78	6824.2	50280.00
10	28640.77	27.98	1.980	0.30 ( 0.24)	0.79	7279.1	50300.00
11	28988.67	29.12	1.929	0.30 ( 0.24)	0.79	7712.0	50220.00
12	29945.20	32.32	1.829	0.30 ( 0.24)	0.81	8898.0	50260.00
13	30955.79	35.71	1.742	0.30 ( 0.25)	0.82	10128.9	50200.00
14	31544.67	37.66	1.692	0.30 ( 0.25)	0.83	10832.0	400.00
15	32590.57	42.82	1.570	0.30 ( 0.25)	0.85	12831.8	390.00
16	34789.88	53.55	1.374	0.30 ( 0.27)	0.89	16925.4	40100.00
17	36806.29	60.78	1.302	0.30 ( 0.27)	0.90	19729.5	11801.00
18	39544.67	70.23	1.238	0.30 ( 0.28)	0.92	24026.3	11530.00
19	41766.21	78.76	1.181	0.30 ( 0.28)	0.93	29031.9	11910.00
20	43792.09	85.82	1.134	0.30 ( 0.28)	0.94	33613.6	11330.00
21	44776.20	92.16	1.096	0.30 ( 0.28)	0.95	38044.5	11130.00
22	44584.78	99.75	1.061	0.30 ( 0.29)	0.95	42038.5	12330.00
23	44281.26	106.39	1.031	0.30 ( 0.29)	0.95	45381.7	12400.00
24	43670.68	115.06	0.992	0.30 ( 0.29)	0.96	48750.5	12201.00
25	43174.12	119.02	0.973	0.30 ( 0.29)	0.96	49835.1	12111.00
26	42482.89	124.39	0.958	0.30 ( 0.29)	0.96	51204.6	12101.10
27	41926.82	128.41	0.947	0.30 ( 0.29)	0.96	52053.7	10400.00
28	40333.29	136.44	0.926	0.30 ( 0.29)	0.96	53368.8	12010.00
29	39001.16	142.30	0.911	0.30 ( 0.29)	0.96	53682.5	10210.00
30	38614.54	144.99	0.904	0.30 ( 0.29)	0.96	53793.4	12000.00
31	35432.31	168.36	0.843	0.30 ( 0.29)	0.96	54415.3	10100.00

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
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Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S33- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV33.DAT  
TIME/DATE OF STUDY: 11:53 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.875
- 2) 10.00; 3.789
- 3) 15.00; 2.933
- 4) 20.00; 2.419
- 5) 25.00; 2.096
- 6) 30.00; 1.872
- 7) 40.00; 1.617
- 8) 50.00; 1.400
- 9) 60.00; 1.290
- 10) 90.00; 1.088
- 11) 120.00; 0.951
- 12) 180.00; 0.795
- 13) 360.00; 0.588
- 14) 1200.00; 0.256

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: S31X00.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3200.10	33.81	0.30 ( 0.24)	0.81	2538.8	13100.00
2	3223.67	57.47	0.30 ( 0.24)	0.81	3777.0	13000.00
3	3120.61	59.66	0.30 ( 0.24)	0.81	3796.8	13010.00
TOTAL AREA (ACRES) =						3796.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: S32X00.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1444.32	32.09	0.30 ( 0.25)	0.83	1115.4	13210.00
2	1446.69	32.62	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13221.00 TO NODE 13222.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1444.32	32.09	0.30 ( 0.25)	0.83	1115.4	13210.00
2	1446.69	32.62	0.30 ( 0.25)	0.83	1127.6	13200.00
TOTAL AREA (ACRES) =						1127.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13112.00 TO NODE 13222.00 IS CODE = 11  
-----

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

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\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1444.32	32.09	1.819	0.30 ( 0.25)	0.83	1115.4	13210.00
2	1446.69	32.62	1.805	0.30 ( 0.25)	0.83	1127.6	13200.00
LONGEST FLOWPATH FROM NODE 13200.00 TO NODE 13222.00 =							16821.05 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	3200.10	33.81	1.775	0.30 ( 0.24)	0.81	2538.8	13100.00
2	3223.67	57.47	1.318	0.30 ( 0.24)	0.81	3777.0	13000.00
3	3120.61	59.66	1.294	0.30 ( 0.24)	0.81	3796.8	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4568.37	32.09	1.819	0.30 ( 0.24)	0.82	3524.7	13210.00
2	4595.02	32.62	1.805	0.30 ( 0.24)	0.82	3576.6	13200.00
3	4618.44	33.81	1.775	0.30 ( 0.24)	0.82	3666.4	13100.00
4	4217.51	57.47	1.318	0.30 ( 0.24)	0.81	4904.6	13000.00
5	4092.02	59.66	1.294	0.30 ( 0.24)	0.81	4924.4	13010.00

TOTAL AREA (ACRES) = 4924.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
 PEAK FLOW RATE(CFS) = 4618.44 Tc(MIN.) = 33.814  
 EFFECTIVE AREA(ACRES) = 3666.43 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 4924.4  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13222.00 = 32126.49 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 2 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.38  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.692  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER					
"OPEN BRUSH"	B	15.60	0.30	1.000	66
RESIDENTIAL					
"3-4 DWELLINGS/ACRE"	B	0.10	0.30	0.600	56
AGRICULTURAL POOR COVER					

"ROW CROPS,CONTOURED"	B	5.30	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
COMMERCIAL	B	22.60	0.30	0.100	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.521  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4649.68  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.04  
 AVERAGE FLOW DEPTH(FEET) = 5.39 TRAVEL TIME(MIN.) = 3.24  
 Tc(MIN.) = 37.05  
 SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 62.48  
 EFFECTIVE AREA(ACRES) = 3711.63 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
 TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 4839.42  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 5.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 5.51 FLOW VELOCITY(FEET/SEC.) = 13.21  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4794.87	35.34	1.736	0.30 ( 0.24)	0.81	3569.9	13210.00
2	4821.31	35.86	1.723	0.30 ( 0.24)	0.81	3621.8	13200.00
3	4839.42	37.05	1.692	0.30 ( 0.24)	0.81	3711.6	13100.00
4	4640.99	60.80	1.285	0.30 ( 0.24)	0.81	4949.8	13000.00
5	4592.78	63.02	1.270	0.30 ( 0.24)	0.81	4969.6	13010.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 4839.42 Tc(MIN.) = 37.05  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.81 EFFECTIVE AREA(ACRES) = 3711.63

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 37.05  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.692  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.00	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	7.40	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	4.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.596					
SUBAREA AREA(ACRES) = 16.50 SUBAREA RUNOFF(CFS) = 22.47					
EFFECTIVE AREA(ACRES) = 3728.13 AREA-AVERAGED Fm(INCH/HR) = 0.24					

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 4986.1 PEAK FLOW RATE (CFS) = 4861.90

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 37.05  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.692  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	1.30	0.30	1.000	86
COMMERCIAL	B	0.20	0.30	0.100	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	5.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.30	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.20	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.60	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.977  
SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 9.95  
EFFECTIVE AREA (ACRES) = 3736.03 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 4994.0 PEAK FLOW RATE (CFS) = 4871.84

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 37.05  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.692  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	4.30	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.80	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	1.10	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	6.90	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	7.90	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	1.00	0.30	1.000	65

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 22.00 SUBAREA RUNOFF (CFS) = 27.57  
EFFECTIVE AREA (ACRES) = 3758.03 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81

TOTAL AREA (ACRES) = 5016.0 PEAK FLOW RATE (CFS) = 4899.41

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 37.05  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.692  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	14.60	0.30	1.000	79

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 18.79  
EFFECTIVE AREA (ACRES) = 3773.03 AREA-AVERAGED Fm (INCH/HR) = 0.24  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81  
TOTAL AREA (ACRES) = 5031.0 PEAK FLOW RATE (CFS) = 4918.20

\*\*\*\*\*

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<

\*\*\*\*\*

FLOW PROCESS FROM NODE 31100.00 TO NODE 31101.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00  
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$   
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.356  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER						
"CHAPARRAL, BROADLEAF"	B	0.50	0.30	1.000	63	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64
NATURAL FAIR COVER						
"OPEN BRUSH"	B	0.30	0.30	1.000	66	8.64

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF (CFS) = 4.02  
TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 4.02

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FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 685.00 DOWNSTREAM(FEET) = 655.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 135.00 CHANNEL SLOPE = 0.2222
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.224
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.50 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 0.70 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.31
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.09
AVERAGE FLOW DEPTH(FEET) = 0.54 TRAVEL TIME(MIN.) = 0.32
Tc(MIN.) = 8.96
SUBAREA AREA(ACRES) = 1.30 SUBAREA RUNOFF(CFS) = 4.59
EFFECTIVE AREA(ACRES) = 2.40 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 8.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.61 FLOW VELOCITY(FEET/SEC.) = 7.66
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

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FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.054
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.30 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 1.90 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.36
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.30
AVERAGE FLOW DEPTH(FEET) = 0.70 TRAVEL TIME(MIN.) = 0.41
Tc(MIN.) = 9.37

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SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 7.77
EFFECTIVE AREA(ACRES) = 4.70 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 15.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.77 FLOW VELOCITY(FEET/SEC.) = 8.85
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

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FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.757
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 1.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.50 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 21.48
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.52
AVERAGE FLOW DEPTH(FEET) = 1.05 TRAVEL TIME(MIN.) = 0.82
Tc(MIN.) = 10.19
SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 11.20
EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 25.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.12 FLOW VELOCITY(FEET/SEC.) = 6.81
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

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*****
FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.641
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.70 0.30 1.000 63

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NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 3.00 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 35.45  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.08  
 AVERAGE FLOW DEPTH(FEET) = 1.29 TRAVEL TIME(MIN.) = 0.68  
 Tc(MIN.) = 10.86  
 SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 19.24  
 EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 44.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.41 FLOW VELOCITY(FEET/SEC.) = 7.45  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.521  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	2.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.60	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.10	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	4.10	0.30	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 59.86  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.19  
 AVERAGE FLOW DEPTH(FEET) = 1.56 TRAVEL TIME(MIN.) = 0.70  
 Tc(MIN.) = 11.57  
 SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 31.31  
 EFFECTIVE AREA(ACRES) = 25.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 25.5 PEAK FLOW RATE(CFS) = 73.92

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 1.69 FLOW VELOCITY(FEET/SEC.) = 8.64  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTREAM(FEET) = 530.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 619.00 CHANNEL SLOPE = 0.0485  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.297  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.80	0.30	1.000	63
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.50	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	8.20	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.70	0.30	1.000	66

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 94.29  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.89  
 AVERAGE FLOW DEPTH(FEET) = 2.00 TRAVEL TIME(MIN.) = 1.31  
 Tc(MIN.) = 12.87  
 SUBAREA AREA(ACRES) = 15.10 SUBAREA RUNOFF(CFS) = 40.73  
 EFFECTIVE AREA(ACRES) = 40.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 40.6 PEAK FLOW RATE(CFS) = 109.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.11 FLOW VELOCITY(FEET/SEC.) = 8.20  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 530.00 DOWNSTREAM(FEET) = 515.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 377.00 CHANNEL SLOPE = 0.0398  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.163  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					



"CHAPARRAL,BROADLEAF" B 0.50 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 6.50 0.30 1.000 63  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 1.30 0.30 1.000 63  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.10 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 5.50 0.30 1.000 66  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 3.40 0.30 1.000 66  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 133.09  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.00  
 AVERAGE FLOW DEPTH(FEET) = 2.35 TRAVEL TIME(MIN.) = 0.79  
 Tc(MIN.) = 13.66  
 SUBAREA AREA(ACRES) = 18.30 SUBAREA RUNOFF(CFS) = 47.15  
 EFFECTIVE AREA(ACRES) = 58.90 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 58.9 PEAK FLOW RATE(CFS) = 151.75

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.48 FLOW VELOCITY(FEET/SEC.) = 8.25  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
 -----

ELEVATION DATA: UPSTREAM(FEET) = 515.00 DOWNSTREAM(FEET) = 490.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 520.00 CHANNEL SLOPE = 0.0481  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.000  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	0.70	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	2.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	3.10	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	7.40	0.30	1.000	63
NATURAL FAIR COVER					
"GRASS"	B	0.30	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 169.49  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.10  
 AVERAGE FLOW DEPTH(FEET) = 2.49 TRAVEL TIME(MIN.) = 0.95  
 Tc(MIN.) = 14.61

SUBAREA AREA(ACRES) = 14.60 SUBAREA RUNOFF(CFS) = 35.47  
 EFFECTIVE AREA(ACRES) = 73.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 73.5 PEAK FLOW RATE(CFS) = 178.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 2.54 FLOW VELOCITY(FEET/SEC.) = 9.24  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31109.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 -----  
 MAINLINE Tc(MIN.) = 14.61  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.000  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	11.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	8.90	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL,BROADLEAF"	B	1.90	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	1.40	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 32.80 SUBAREA RUNOFF(CFS) = 79.69  
 EFFECTIVE AREA(ACRES) = 106.30 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 106.3 PEAK FLOW RATE(CFS) = 258.27

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31109.00 TO NODE 31110.00 IS CODE = 51  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<  
 -----

ELEVATION DATA: UPSTREAM(FEET) = 490.00 DOWNSTREAM(FEET) = 432.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1420.00 CHANNEL SLOPE = 0.0408  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000  
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.720  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.60	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.10	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS,CONTOURED"	B	1.30	0.30	1.000	79

NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 4.00 0.30 1.000 65  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" B 1.50 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 267.31  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.60  
 AVERAGE FLOW DEPTH(FEET) = 3.05 TRAVEL TIME(MIN.) = 2.47  
 Tc(MIN.) = 17.08  
 SUBAREA AREA(ACRES) = 8.30 SUBAREA RUNOFF(CFS) = 18.08  
 EFFECTIVE AREA(ACRES) = 114.60 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 114.6 PEAK FLOW RATE(CFS) = 258.27  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 3.01 FLOW VELOCITY(FEET/SEC.) = 9.51  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31110.00 = 4544.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 31110.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 17.08  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.720  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 9.60 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.40 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 6.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 3.90 0.30 1.000 65  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.40 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.998  
 SUBAREA AREA(ACRES) = 21.80 SUBAREA RUNOFF(CFS) = 47.48  
 EFFECTIVE AREA(ACRES) = 136.40 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 136.4 PEAK FLOW RATE(CFS) = 297.03

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 31110.00 TO NODE 13301.00 IS CODE = 51

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 432.00 DOWNSTREAM(FEET) = 382.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1847.00 CHANNEL SLOPE = 0.0271  
 CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000

MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.375  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 4.90 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.50 0.30 1.000 79  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.50 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 5.30 0.30 1.000 79  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 3.30 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.997  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 313.95  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.56  
 AVERAGE FLOW DEPTH(FEET) = 3.50 TRAVEL TIME(MIN.) = 3.60  
 Tc(MIN.) = 20.67  
 SUBAREA AREA(ACRES) = 18.10 SUBAREA RUNOFF(CFS) = 33.83  
 EFFECTIVE AREA(ACRES) = 154.50 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 154.5 PEAK FLOW RATE(CFS) = 297.03  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 3.42 FLOW VELOCITY(FEET/SEC.) = 8.45  
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	297.03	20.67	2.375	0.30( 0.30)	1.00	154.5	31100.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4876.06	35.34	1.736	0.30( 0.24)	0.81	3631.3	13210.00
2	4901.77	35.86	1.723	0.30( 0.24)	0.81	3683.2	13200.00
3	4918.20	37.05	1.692	0.30( 0.24)	0.81	3773.0	13100.00
4	4697.25	60.80	1.285	0.30( 0.24)	0.81	5011.2	13000.00
5	4648.21	63.02	1.270	0.30( 0.24)	0.81	5031.0	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
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1	4372.56	20.67	2.375	0.30	( 0.25)	0.83	2278.9	31100.00
2	5081.57	35.34	1.736	0.30	( 0.25)	0.82	3785.8	13210.00
3	5105.38	35.86	1.723	0.30	( 0.25)	0.82	3837.7	13200.00
4	5117.46	37.05	1.692	0.30	( 0.25)	0.82	3927.5	13100.00
5	4838.18	60.80	1.285	0.30	( 0.24)	0.82	5165.7	13000.00
6	4787.00	63.02	1.270	0.30	( 0.24)	0.82	5185.5	13010.00
TOTAL AREA (ACRES) =		5185.5						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5117.46 Tc(MIN.) = 37.052  
EFFECTIVE AREA(ACRES) = 3927.53 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5185.5  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13301.00 = 34659.82 FEET.

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<<

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FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.62  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.640  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	9.40	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5123.13  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.23  
AVERAGE FLOW DEPTH(FEET) = 7.62 TRAVEL TIME(MIN.) = 2.06  
Tc(MIN.) = 39.11

SUBAREA AREA(ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 11.33  
EFFECTIVE AREA(ACRES) = 3936.93 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 5117.46  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 7.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 7.61 FLOW VELOCITY(FEET/SEC.) = 9.23  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13302.00 = 35800.91 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4372.56	22.83	2.236	0.30( 0.25)	0.83	2288.3	31100.00
2	5081.57	37.40	1.683	0.30( 0.25)	0.82	3795.2	13210.00
3	5105.38	37.92	1.670	0.30( 0.25)	0.82	3847.1	13200.00
4	5117.46	39.11	1.640	0.30( 0.25)	0.82	3936.9	13100.00
5	4838.18	62.89	1.271	0.30( 0.24)	0.82	5175.1	13000.00
6	4787.00	65.12	1.256	0.30( 0.24)	0.82	5194.9	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5117.46 Tc(MIN.) = 39.11  
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.82 EFFECTIVE AREA(ACRES) = 3936.93

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 39.11

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.640

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	13.80	0.30	1.000	86
NATURAL POOR COVER					
"BARREN"	B	2.60	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952  
SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 34.24  
EFFECTIVE AREA(ACRES) = 3965.03 AREA-AVERAGED Fm(INCH/HR) = 0.25  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 5117.46  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<<

MAINLINE Tc(MIN.) = 39.11

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.640

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	0.10	0.30	1.000	79
COMMERCIAL	B	0.10	0.30	0.100	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.40	0.30	0.900	56
AGRICULTURAL POOR COVER					

"ROW CROPS, CONTOURED" B 0.50 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894  
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 3.83  
 EFFECTIVE AREA (ACRES) = 3968.13 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 5117.46  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 39.11  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.640  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	0.10	0.30	1.000	86
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	0.40	0.30	1.000	65
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.20	0.30	1.000	63
NATURAL FAIR COVER					
"OPEN BRUSH"	B	13.80	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 24.35  
 EFFECTIVE AREA (ACRES) = 3988.33 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82  
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 5117.46  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 39.11  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.640  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	34.60	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.40	0.30	1.000	65
NATURAL FAIR COVER					
"OPEN BRUSH"	B	22.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	11.60	0.30	1.000	79
APARTMENTS	B	0.40	0.30	0.200	56

NATURAL FAIR COVER  
 "CHAPARRAL, BROADLEAF" B 4.80 0.30 1.000 63  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996  
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 92.20  
 EFFECTIVE AREA (ACRES) = 4064.73 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 5117.46  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 39.11  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.640  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	1.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	46.40	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.10	0.30	0.200	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	60.70	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	5.80	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999  
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 138.19  
 EFFECTIVE AREA (ACRES) = 4179.33 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 5230.29

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091  
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 6.92  
 CHANNEL FLOW THRU SUBAREA (CFS) = 5230.29  
 FLOW VELOCITY (FEET/SEC.) = 10.68 FLOW DEPTH (FEET) = 6.92  
 TRAVEL TIME (MIN.) = 3.43 Tc (MIN.) = 42.54  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13303.00 = 37994.87 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4517.52	26.41	2.033	0.30 ( 0.25)	0.84	2530.7	31100.00
2	5210.44	40.83	1.599	0.30 ( 0.25)	0.83	4037.6	13210.00

3 5229.03 41.35 1.588 0.30( 0.25) 0.83 4089.5 13200.00  
 4 5230.29 42.54 1.562 0.30( 0.25) 0.83 4179.3 13100.00  
 5 4989.12 66.36 1.247 0.30( 0.25) 0.82 5417.5 13000.00  
 6 4934.17 68.61 1.232 0.30( 0.25) 0.82 5437.3 13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5230.29 Tc(MIN.) = 42.54  
 AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA(ACRES) = 4179.33

\*\*\*\*\*

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.54  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.562  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.40	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	0.80	0.30	1.000	86
COMMERCIAL	B	1.40	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	2.60	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834  
 SUBAREA AREA(ACRES) = 7.60 SUBAREA RUNOFF(CFS) = 8.97  
 EFFECTIVE AREA(ACRES) = 4186.93 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.54  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.562  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	3.10	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.40	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	0.20	0.30	1.000	63
COMMERCIAL	B	3.60	0.30	0.100	56
NATURAL FAIR COVER					

"GRASS" B 4.00 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781  
 SUBAREA AREA(ACRES) = 14.80 SUBAREA RUNOFF(CFS) = 17.68  
 EFFECTIVE AREA(ACRES) = 4201.73 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.54  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.562  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	14.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	6.30	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	3.70	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 24.60 SUBAREA RUNOFF(CFS) = 27.94  
 EFFECTIVE AREA(ACRES) = 4226.33 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 42.54  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.562  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER "BARREN"	B	0.50	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.80	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	1.60	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	31.90	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990  
 SUBAREA AREA(ACRES) = 35.30 SUBAREA RUNOFF(CFS) = 40.19  
 EFFECTIVE AREA(ACRES) = 4261.63 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5519.6 PEAK FLOW RATE (CFS) = 5230.29  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 5230.29  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 42.54  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.562  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
COMMERCIAL B 1.70 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
RESIDENTIAL  
".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 5.50 0.30 1.000 79  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.20 0.30 1.000 65  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.20 0.30 1.000 66  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830  
SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 12.41  
EFFECTIVE AREA (ACRES) = 4272.13 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 5230.29  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 42.54  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.562  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
RESIDENTIAL  
".4 DWELLING/ACRE" B 1.30 0.30 0.900 56  
NATURAL POOR COVER  
"BARREN" B 0.30 0.30 1.000 86  
COMMERCIAL B 0.20 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 0.30 0.30 1.000 66  
RESIDENTIAL  
".4 DWELLING/ACRE" B 6.50 0.30 0.900 56  
AGRICULTURAL POOR COVER  
"ROW CROPS, CONTOURED" B 3.00 0.30 1.000 79  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 13.43  
EFFECTIVE AREA (ACRES) = 4283.73 AREA-AVERAGED Fm (INCH/HR) = 0.25

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 7.98  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.524  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
PUBLIC PARK B 13.80 0.30 0.850 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 5238.17  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.88  
AVERAGE FLOW DEPTH (FEET) = 7.98 TRAVEL TIME (MIN.) = 1.74  
Tc (MIN.) = 44.27  
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 15.76  
EFFECTIVE AREA (ACRES) = 4297.53 AREA-AVERAGED Fm (INCH/HR) = 0.25  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 5230.29  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 7.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 7.97 FLOW VELOCITY (FEET/SEC.) = 8.88  
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13304.00 = 38920.27 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4517.52	28.22	1.952	0.30 ( 0.25)	0.85	2648.9	31100.00
2	5210.44	42.57	1.561	0.30 ( 0.25)	0.83	4155.8	13210.00
3	5229.03	43.08	1.550	0.30 ( 0.25)	0.83	4207.7	13200.00
4	5230.29	44.27	1.524	0.30 ( 0.25)	0.83	4297.5	13100.00
5	4989.12	68.12	1.235	0.30 ( 0.25)	0.83	5535.7	13000.00
6	4934.17	70.37	1.220	0.30 ( 0.25)	0.83	5555.5	13010.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 5230.29 Tc (MIN.) = 44.27  
AREA-AVERAGED Fm (INCH/HR) = 0.25 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.83 EFFECTIVE AREA (ACRES) = 4297.53

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 44.27  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.524  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 7.80 0.30 1.000 86  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 1.70 0.30 1.000 79  
 NATURAL POOR COVER  
 "BARREN" B 9.40 0.30 1.000 86  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 1.20 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.10 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.60 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 22.80 SUBAREA RUNOFF(CFS) = 25.12  
 EFFECTIVE AREA(ACRES) = 4320.33 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5578.3 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

-----  
 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 44.27  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.524  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "WOODLAND,GRASS" B 0.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.30 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 0.20 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS,CONTOURED" B 2.70 0.30 1.000 79  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994  
 SUBAREA AREA(ACRES) = 3.40 SUBAREA RUNOFF(CFS) = 3.75  
 EFFECTIVE AREA(ACRES) = 4323.73 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83  
 TOTAL AREA(ACRES) = 5581.7 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 56

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 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
 ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 6.46  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433  
 SUBAREA LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 27.40 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5244.25  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.70  
 AVERAGE FLOW DEPTH(FEET) = 6.46 TRAVEL TIME(MIN.) = 4.22  
 Tc(MIN.) = 48.50  
 SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 27.93  
 EFFECTIVE AREA(ACRES) = 4351.13 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 6.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 6.45 FLOW VELOCITY(FEET/SEC.) = 11.69  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4517.52	32.64	1.805	0.30( 0.25)	0.85	2702.5	31100.00
2	5210.44	46.80	1.469	0.30( 0.25)	0.84	4209.4	13210.00
3	5229.03	47.31	1.458	0.30( 0.25)	0.84	4261.3	13200.00
4	5230.29	48.50	1.433	0.30( 0.25)	0.84	4351.1	13100.00
5	4989.12	72.41	1.206	0.30( 0.25)	0.83	5589.3	13000.00
6	4934.17	74.67	1.191	0.30( 0.25)	0.83	5609.1	13010.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 5230.29 Tc(MIN.) = 48.50  
 AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.84 EFFECTIVE AREA(ACRES) = 4351.13

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

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 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 48.50  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL POOR COVER  
 "BARREN" B 18.40 0.30 1.000 86  
 NATURAL FAIR COVER  
 "MEADOWS" B 1.20 0.30 1.000 70  
 NATURAL FAIR COVER

"WOODLAND,GRASS" B 0.10 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 26.60 0.30 1.000 86  
 COMMERCIAL B 3.90 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.00 0.30 1.000 86  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934  
 SUBAREA AREA (ACRES) = 53.20 SUBAREA RUNOFF (CFS) = 55.18  
 EFFECTIVE AREA (ACRES) = 4404.33 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5662.3 PEAK FLOW RATE (CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 48.50  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.433  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 1.10 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.20 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 14.00 0.30 1.000 86  
 COMMERCIAL B 4.30 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 5.30 0.30 1.000 86  
 NATURAL FAIR COVER  
 "GRASS" B 2.70 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860  
 SUBAREA AREA (ACRES) = 27.60 SUBAREA RUNOFF (CFS) = 29.18  
 EFFECTIVE AREA (ACRES) = 4431.93 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5689.9 PEAK FLOW RATE (CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 48.50  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.433  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "MEADOWS" B 3.20 0.30 1.000 70  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 6.10 0.30 1.000 66  
 RESIDENTIAL

".4 DWELLING/ACRE" B 7.50 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 5.40 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 1.60 0.30 1.000 65  
 NATURAL POOR COVER  
 "BARREN" B 1.90 0.30 1.000 86  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.971  
 SUBAREA AREA (ACRES) = 25.70 SUBAREA RUNOFF (CFS) = 26.40  
 EFFECTIVE AREA (ACRES) = 4457.63 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5715.6 PEAK FLOW RATE (CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 48.50  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.433  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 COMMERCIAL B 2.00 0.30 0.100 56  
 AGRICULTURAL POOR COVER  
 "FALLOW" B 3.70 0.30 1.000 86  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 2.10 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 2.60 0.30 0.900 56  
 AGRICULTURAL POOR COVER  
 "ROW CROPS, CONTOURED" B 0.20 0.30 1.000 79  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.10 0.30 1.000 65  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807  
 SUBAREA AREA (ACRES) = 10.70 SUBAREA RUNOFF (CFS) = 11.46  
 EFFECTIVE AREA (ACRES) = 4468.33 AREA-AVERAGED Fm (INCH/HR) = 0.25  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 5726.3 PEAK FLOW RATE (CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 48.50  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.433  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 RESIDENTIAL  
 ".4 DWELLING/ACRE" B 8.20 0.30 0.900 56



SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906  
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 9.09  
 EFFECTIVE AREA(ACRES) = 4477.03 AREA-AVERAGED Fm(INCH/HR) = 0.25  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA(ACRES) = 5735.0 PEAK FLOW RATE(CFS) = 5230.29  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 3A00EVRL.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1221.20	13.34	0.30( 0.13)	0.43	436.8	120.00
2	1221.18	13.34	0.30( 0.13)	0.43	436.8	110.00
3	1039.13	20.29	0.30( 0.13)	0.43	504.5	100.00
4	976.70	22.82	0.30( 0.13)	0.43	510.2	150.00
TOTAL AREA(ACRES) =						510.2

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

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 \*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4517.52	32.64	1.805	0.30( 0.26)	0.85	2828.4	31100.00
2	5210.44	46.80	1.469	0.30( 0.25)	0.84	4335.3	13210.00
3	5229.03	47.31	1.458	0.30( 0.25)	0.84	4387.2	13200.00
4	5230.29	48.50	1.433	0.30( 0.25)	0.84	4477.0	13100.00
5	4989.12	72.41	1.206	0.30( 0.25)	0.83	5715.2	13000.00
6	4934.17	74.67	1.191	0.30( 0.25)	0.83	5735.0	13010.00
LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 =							41886.54 FEET.

\*\*\*\*\*  
 \*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1221.20	13.34	3.218	0.30( 0.13)	0.43	436.8	120.00
2	1221.18	13.34	3.218	0.30( 0.13)	0.43	436.8	110.00
3	1039.13	20.29	2.401	0.30( 0.13)	0.43	504.5	100.00
4	976.70	22.82	2.237	0.30( 0.13)	0.43	510.2	150.00
LONGEST FLOWPATH FROM NODE 150.00 TO NODE 13305.00 =							9867.00 FEET.

\*\*\*\*\*  
 \*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4750.61	13.34	3.218	0.30( 0.22)	0.74	1592.4	120.00
2	4750.68	13.34	3.218	0.30( 0.22)	0.74	1592.5	110.00
3	4926.61	20.29	2.401	0.30( 0.23)	0.76	2262.4	100.00
4	5015.94	22.82	2.237	0.30( 0.23)	0.77	2487.4	150.00
5	5293.80	32.64	1.805	0.30( 0.24)	0.79	3338.6	31100.00
6	5831.29	46.80	1.469	0.30( 0.24)	0.80	4845.5	13210.00

7	5844.79	47.31	1.458	0.30( 0.24)	0.80	4897.4	13200.00
8	5834.09	48.50	1.433	0.30( 0.24)	0.80	4987.2	13100.00
9	5488.07	72.41	1.206	0.30( 0.24)	0.80	6225.4	13000.00
10	5426.06	74.67	1.191	0.30( 0.24)	0.80	6245.2	13010.00
TOTAL AREA(ACRES) =						6245.2	

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5844.79 Tc(MIN.) = 47.309  
 EFFECTIVE AREA(ACRES) = 4897.35 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.76  
 TOTAL AREA(ACRES) = 6245.2  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13305.00 = 41886.54 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.36  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.369

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	68.80	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5879.28

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.40

AVERAGE FLOW DEPTH(FEET) = 6.35 TRAVEL TIME(MIN.) = 5.48

Tc(MIN.) = 52.79

SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 69.00

EFFECTIVE AREA(ACRES) = 4966.15 AREA-AVERAGED Fm(INCH/HR) = 0.24

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80

TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 5844.79

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 6.34 FLOW VELOCITY(FEET/SEC.) = 13.37

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13306.00 = 46294.95 FEET.

\*\*\*\*\*  
 \*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4750.61	19.16	2.505	0.30( 0.22)	0.74	1661.2	120.00

2	4750.68	19.16	2.505	0.30	( 0.22)	0.74	1661.3	110.00
3	4926.61	26.05	2.049	0.30	( 0.23)	0.76	2331.2	100.00
4	5015.94	28.55	1.937	0.30	( 0.23)	0.77	2556.2	150.00
5	5293.80	38.29	1.661	0.30	( 0.24)	0.79	3407.4	31100.00
6	5831.29	52.29	1.375	0.30	( 0.24)	0.80	4914.3	13210.00
7	5844.79	52.79	1.369	0.30	( 0.24)	0.80	4966.2	13200.00
8	5834.09	53.99	1.356	0.30	( 0.24)	0.80	5056.0	13100.00
9	5488.07	78.00	1.169	0.30	( 0.24)	0.80	6294.2	13000.00
10	5426.06	80.29	1.153	0.30	( 0.24)	0.80	6314.0	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5844.79 Tc(MIN.) = 52.79  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 4966.15

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 52.79  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.369  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	21.50	0.30	1.000	86
COMMERCIAL	B	15.30	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.80	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.60	0.30	1.000	65
RESIDENTIAL					
".4 DWELLING/ACRE"	B	8.00	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.685  
 SUBAREA AREA(ACRES) = 46.30 SUBAREA RUNOFF(CFS) = 48.49  
 EFFECTIVE AREA(ACRES) = 5012.45 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6360.3 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 52.79  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.369  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL POOR COVER					
"BARREN"	B	43.30	0.30	1.000	86
COMMERCIAL	B	4.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	5.70	0.30	1.000	69

AGRICULTURAL FAIR COVER

"ORCHARDS"	B	0.50	0.30	1.000	65
PUBLIC PARK	B	1.10	0.30	0.850	56
RESIDENTIAL					
".4 DWELLING/ACRE"	B	3.10	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917  
 SUBAREA AREA(ACRES) = 58.60 SUBAREA RUNOFF(CFS) = 57.71  
 EFFECTIVE AREA(ACRES) = 5071.05 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6418.9 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 52.79  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.369  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	6.80	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	0.70	0.30	1.000	86
COMMERCIAL	B	1.10	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.50	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.10	0.30	1.000	65
PUBLIC PARK	B	0.50	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890  
 SUBAREA AREA(ACRES) = 9.70 SUBAREA RUNOFF(CFS) = 9.62  
 EFFECTIVE AREA(ACRES) = 5080.75 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6428.6 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 52.79  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.369  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
".4 DWELLING/ACRE"	B	2.20	0.30	0.900	56
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.904  
 SUBAREA AREA(ACRES) = 2.30 SUBAREA RUNOFF(CFS) = 2.27

EFFECTIVE AREA(ACRES) = 5083.05 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6430.9 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 245.50 DOWNSTREAM(FEET) = 220.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1543.21 CHANNEL SLOPE = 0.0165  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 6.25  
 CHANNEL FLOW THRU SUBAREA(CFS) = 5844.79  
 FLOW VELOCITY(FEET/SEC.) = 13.59 FLOW DEPTH(FEET) = 6.25  
 TRAVEL TIME(MIN.) = 1.89 Tc(MIN.) = 54.68  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13307.00 = 47838.16 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4750.61	21.18	2.343	0.30( 0.22)	0.75	1778.1	120.00
2	4750.68	21.18	2.343	0.30( 0.22)	0.75	1778.2	110.00
3	4926.61	28.05	1.959	0.30( 0.23)	0.76	2448.1	100.00
4	5015.94	30.54	1.858	0.30( 0.23)	0.77	2673.1	150.00
5	5293.80	40.24	1.612	0.30( 0.24)	0.79	3524.3	31100.00
6	5831.29	54.18	1.354	0.30( 0.24)	0.80	5031.2	13210.00
7	5844.79	54.68	1.348	0.30( 0.24)	0.80	5083.1	13200.00
8	5834.09	55.88	1.335	0.30( 0.24)	0.80	5172.9	13100.00
9	5488.07	79.93	1.156	0.30( 0.24)	0.80	6411.1	13000.00
10	5426.06	82.22	1.140	0.30( 0.24)	0.80	6430.9	13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5844.79 Tc(MIN.) = 54.68  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 5083.05

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc(MIN.) = 54.68  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.348  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	0.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
AGRICULTURAL FAIR COVER					
"ORCHARDS"	B	0.20	0.30	1.000	65
NATURAL POOR COVER					
"BARREN"	B	3.70	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER					

"GRASS" B 3.20 0.30 1.000 69  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.942  
 SUBAREA AREA(ACRES) = 7.70 SUBAREA RUNOFF(CFS) = 7.39  
 EFFECTIVE AREA(ACRES) = 5090.75 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6438.6 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<  
 =====

MAINLINE Tc(MIN.) = 54.68  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.348  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	3.60	0.30	1.000	65
NATURAL FAIR COVER					
"GRASS"	B	1.90	0.30	1.000	69
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	0.60	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA(ACRES) = 6.10					
SUBAREA RUNOFF(CFS) = 5.76					
EFFECTIVE AREA(ACRES) = 5096.85					
AREA-AVERAGED Fm(INCH/HR) = 0.24					
AREA-AVERAGED Fp(INCH/HR) = 0.30					
AREA-AVERAGED Ap = 0.80					
TOTAL AREA(ACRES) = 6444.7					
PEAK FLOW RATE(CFS) = 5844.79					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<  
 =====

ELEVATION DATA: UPSTREAM(FEET) = 220.00 DOWNSTREAM(FEET) = 212.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 925.62 CHANNEL SLOPE = 0.0086  
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 7.46  
 CHANNEL FLOW THRU SUBAREA(CFS) = 5844.79  
 FLOW VELOCITY(FEET/SEC.) = 10.83 FLOW DEPTH(FEET) = 7.46  
 TRAVEL TIME(MIN.) = 1.42 Tc(MIN.) = 56.11  
 LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4750.61	22.69	2.245	0.30( 0.22)	0.75	1791.9	120.00
2	4750.68	22.69	2.245	0.30( 0.22)	0.75	1792.0	110.00
3	4926.61	29.55	1.892	0.30( 0.23)	0.76	2461.9	100.00
4	5015.94	32.03	1.820	0.30( 0.23)	0.77	2686.9	150.00
5	5293.80	41.70	1.580	0.30( 0.24)	0.79	3538.1	31100.00
6	5831.29	55.61	1.338	0.30( 0.24)	0.80	5045.0	13210.00

7 5844.79 56.11 1.333 0.30( 0.24) 0.80 5096.9 13200.00  
 8 5834.09 57.31 1.320 0.30( 0.24) 0.80 5186.7 13100.00  
 9 5488.07 81.38 1.146 0.30( 0.24) 0.80 6424.9 13000.00  
 10 5426.06 83.68 1.131 0.30( 0.24) 0.80 6444.7 13010.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 5844.79 Tc(MIN.) = 56.11  
 AREA-AVERAGED Fm(INCH/HR) = 0.24 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.80 EFFECTIVE AREA(ACRES) = 5096.85

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.20	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND,GRASS"	B	5.00	0.30	1.000	65
COMMERCIAL	B	3.20	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	0.10	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.90	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.697  
 SUBAREA AREA(ACRES) = 9.50 SUBAREA RUNOFF(CFS) = 9.61  
 EFFECTIVE AREA(ACRES) = 5106.35 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80  
 TOTAL AREA(ACRES) = 6454.2 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	B	0.30	0.30	0.200	56
NATURAL POOR COVER					
"BARREN"	B	0.20	0.30	1.000	86
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	1.00	0.30	1.000	63
COMMERCIAL	B	41.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	7.20	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	25.00	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.498  
 SUBAREA AREA(ACRES) = 75.60 SUBAREA RUNOFF(CFS) = 80.52  
 EFFECTIVE AREA(ACRES) = 5181.95 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6529.8 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
PUBLIC PARK	B	0.10	0.30	0.850	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	0.90	0.30	1.000	79
SCHOOL	B	0.30	0.30	0.600	56
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	13.20	0.30	1.000	65
APARTMENTS	B	0.50	0.30	0.200	56
NATURAL FAIR COVER					
"CHAPARRAL, BROADLEAF"	B	0.60	0.30	1.000	63

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.966  
 SUBAREA AREA(ACRES) = 15.60 SUBAREA RUNOFF(CFS) = 14.65  
 EFFECTIVE AREA(ACRES) = 5197.55 AREA-AVERAGED Fm(INCH/HR) = 0.24  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA(ACRES) = 6545.4 PEAK FLOW RATE(CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc(MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	33.90	0.30	0.100	56
NATURAL FAIR COVER					
"GRASS"	B	17.60	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	16.80	0.30	1.000	66
RESIDENTIAL					
"11+ DWELLINGS/ACRE"	B	0.60	0.30	0.200	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	1.50	0.30	0.400	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	10.00	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.603

SUBAREA AREA (ACRES) = 80.40 SUBAREA RUNOFF (CFS) = 83.35  
 EFFECTIVE AREA (ACRES) = 5277.95 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6625.8 PEAK FLOW RATE (CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 SCHOOL B 0.30 0.30 0.600 56  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.70 0.30 1.000 65  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.880  
 SUBAREA AREA (ACRES) = 1.00 SUBAREA RUNOFF (CFS) = 0.96  
 EFFECTIVE AREA (ACRES) = 5278.95 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6626.8 PEAK FLOW RATE (CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.80 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 0.50 0.30 1.000 69  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 0.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 0.30 0.30 1.000 69  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 2.10 SUBAREA RUNOFF (CFS) = 1.95  
 EFFECTIVE AREA (ACRES) = 5281.05 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6628.9 PEAK FLOW RATE (CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81  
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 56.11  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.333  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 NATURAL FAIR COVER  
 "GRASS" B 1.20 0.30 1.000 69  
 NATURAL FAIR COVER  
 "OPEN BRUSH" B 0.50 0.30 1.000 66  
 PUBLIC PARK B 1.70 0.30 0.850 56  
 NATURAL FAIR COVER  
 "WOODLAND, GRASS" B 7.20 0.30 1.000 65  
 NATURAL FAIR COVER  
 "GRASS" B 1.00 0.30 1.000 69  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.978  
 SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 10.85  
 EFFECTIVE AREA (ACRES) = 5292.65 AREA-AVERAGED Fm (INCH/HR) = 0.24  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.79  
 TOTAL AREA (ACRES) = 6640.5 PEAK FLOW RATE (CFS) = 5844.79  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10  
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>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU00EV29.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25901.27	20.41	0.30 ( 0.23)	0.77	4748.7	50110.00
2	27785.46	25.29	0.30 ( 0.23)	0.78	6228.0	300.00
3	29945.20	32.32	0.30 ( 0.24)	0.81	8898.0	50260.00
4	31544.67	37.66	0.30 ( 0.25)	0.83	10832.0	400.00
5	32590.57	42.82	0.30 ( 0.25)	0.85	12831.8	390.00
6	34789.88	53.55	0.30 ( 0.27)	0.89	16925.4	40100.00
7	36806.29	60.78	0.30 ( 0.27)	0.90	19729.5	11801.00
8	39544.67	70.23	0.30 ( 0.28)	0.92	24026.3	11530.00
9	41766.21	78.76	0.30 ( 0.28)	0.93	29031.9	11910.00
10	43792.09	85.82	0.30 ( 0.28)	0.94	33613.6	11330.00
11	44776.20	92.16	0.30 ( 0.28)	0.95	38044.5	11130.00
12	44584.78	99.75	0.30 ( 0.29)	0.95	42038.5	12330.00
13	44281.26	106.39	0.30 ( 0.29)	0.95	45381.7	12400.00
14	43670.68	115.06	0.30 ( 0.29)	0.96	48750.5	12201.00
15	43174.12	119.02	0.30 ( 0.29)	0.96	49835.1	12111.00
16	42482.89	124.39	0.30 ( 0.29)	0.96	51204.6	12101.10
17	41926.82	128.41	0.30 ( 0.29)	0.96	52053.7	10400.00
18	40333.29	136.44	0.30 ( 0.29)	0.96	53368.8	12010.00
19	39001.16	142.30	0.30 ( 0.29)	0.96	53682.5	10210.00

20 35432.31 168.36 0.30( 0.29) 0.96 54415.3 10100.00  
TOTAL AREA(ACRES) = 54415.3

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 14.0

=====  
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<<  
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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25901.27	20.41	0.30( 0.23)	0.77	4748.7	50110.00
2	27785.46	25.29	0.30( 0.23)	0.78	6228.0	300.00
3	29945.20	32.32	0.30( 0.24)	0.81	8898.0	50260.00
4	31544.67	37.66	0.30( 0.25)	0.83	10832.0	400.00
5	32590.57	42.82	0.30( 0.25)	0.85	12831.8	390.00
6	34789.88	53.55	0.30( 0.27)	0.89	16925.4	40100.00
7	36806.29	60.78	0.30( 0.27)	0.90	19729.5	11801.00
8	39544.67	70.23	0.30( 0.28)	0.92	24026.3	11530.00
9	41766.21	78.76	0.30( 0.28)	0.93	29031.9	11910.00
10	43792.09	85.82	0.30( 0.28)	0.94	33613.6	11330.00
11	44776.20	92.16	0.30( 0.28)	0.95	38044.5	11130.00
12	44584.78	99.75	0.30( 0.29)	0.95	42038.5	12330.00
13	44281.26	106.39	0.30( 0.29)	0.95	45381.7	12400.00
14	43670.68	115.06	0.30( 0.29)	0.96	48750.5	12201.00
15	43174.12	119.02	0.30( 0.29)	0.96	49835.1	12111.00
16	42482.89	124.39	0.30( 0.29)	0.96	51204.6	12101.10
17	41926.82	128.41	0.30( 0.29)	0.96	52053.7	10400.00
18	40333.29	136.44	0.30( 0.29)	0.96	53368.8	12010.00
19	39001.16	142.30	0.30( 0.29)	0.96	53682.5	10210.00
20	35432.31	168.36	0.30( 0.29)	0.96	54415.3	10100.00

TOTAL AREA(ACRES) = 54415.3

\*\*\*\*\*  
FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

=====  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<<  
=====

ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007  
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 19.24  
CHANNEL FLOW THRU SUBAREA(CFS) = 44776.20  
FLOW VELOCITY(FEET/SEC.) = 7.86 FLOW DEPTH(FEET) = 19.24  
TRAVEL TIME(MIN.) = 2.95 Tc(MIN.) = 95.10  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25901.27	23.88	2.168	0.30( 0.23)	0.77	4748.7	50110.00
2	27785.46	28.69	1.931	0.30( 0.23)	0.78	6228.0	300.00
3	29945.20	35.64	1.728	0.30( 0.24)	0.81	8898.0	50260.00
4	31544.67	40.94	1.597	0.30( 0.25)	0.83	10832.0	400.00
5	32590.57	46.06	1.485	0.30( 0.25)	0.85	12831.8	390.00

6	34789.88	56.73	1.326	0.30( 0.27)	0.89	16925.4	40100.00
7	36806.29	63.90	1.264	0.30( 0.27)	0.90	19729.5	11801.00
8	39544.67	73.29	1.201	0.30( 0.28)	0.92	24026.3	11530.00
9	41766.21	81.77	1.143	0.30( 0.28)	0.93	29031.9	11910.00
10	43792.09	88.79	1.096	0.30( 0.28)	0.94	33613.6	11330.00
11	44776.20	95.10	1.065	0.30( 0.28)	0.95	38044.5	11130.00
12	44584.78	102.70	1.030	0.30( 0.29)	0.95	42038.5	12330.00
13	44281.26	109.34	1.000	0.30( 0.29)	0.95	45381.7	12400.00
14	43670.68	118.03	0.960	0.30( 0.29)	0.96	48750.5	12201.00
15	43174.12	122.00	0.946	0.30( 0.29)	0.96	49835.1	12111.00
16	42482.89	127.38	0.932	0.30( 0.29)	0.96	51204.6	12101.10
17	41926.82	131.42	0.921	0.30( 0.29)	0.96	52053.7	10400.00
18	40333.29	139.47	0.900	0.30( 0.29)	0.96	53368.8	12010.00
19	39001.16	145.37	0.885	0.30( 0.29)	0.96	53682.5	10210.00
20	35432.31	171.52	0.817	0.30( 0.29)	0.96	54415.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 44776.20 Tc(MIN.) = 95.10  
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 38044.54

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 11

=====  
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<<  
=====

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25901.27	23.88	2.168	0.30( 0.23)	0.77	4748.7	50110.00
2	27785.46	28.69	1.931	0.30( 0.23)	0.78	6228.0	300.00
3	29945.20	35.64	1.728	0.30( 0.24)	0.81	8898.0	50260.00
4	31544.67	40.94	1.597	0.30( 0.25)	0.83	10832.0	400.00
5	32590.57	46.06	1.485	0.30( 0.25)	0.85	12831.8	390.00
6	34789.88	56.73	1.326	0.30( 0.27)	0.89	16925.4	40100.00
7	36806.29	63.90	1.264	0.30( 0.27)	0.90	19729.5	11801.00
8	39544.67	73.29	1.201	0.30( 0.28)	0.92	24026.3	11530.00
9	41766.21	81.77	1.143	0.30( 0.28)	0.93	29031.9	11910.00
10	43792.09	88.79	1.096	0.30( 0.28)	0.94	33613.6	11330.00
11	44776.20	95.10	1.065	0.30( 0.28)	0.95	38044.5	11130.00
12	44584.78	102.70	1.030	0.30( 0.29)	0.95	42038.5	12330.00
13	44281.26	109.34	1.000	0.30( 0.29)	0.95	45381.7	12400.00
14	43670.68	118.03	0.960	0.30( 0.29)	0.96	48750.5	12201.00
15	43174.12	122.00	0.946	0.30( 0.29)	0.96	49835.1	12111.00
16	42482.89	127.38	0.932	0.30( 0.29)	0.96	51204.6	12101.10
17	41926.82	131.42	0.921	0.30( 0.29)	0.96	52053.7	10400.00
18	40333.29	139.47	0.900	0.30( 0.29)	0.96	53368.8	12010.00
19	39001.16	145.37	0.885	0.30( 0.29)	0.96	53682.5	10210.00
20	35432.31	171.52	0.817	0.30( 0.29)	0.96	54415.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4750.61	22.69	2.245	0.30( 0.22)	0.74	1987.7	120.00
2	4750.68	22.69	2.245	0.30( 0.22)	0.74	1987.8	110.00
3	4926.61	29.55	1.892	0.30( 0.23)	0.75	2657.7	100.00
4	5015.94	32.03	1.820	0.30( 0.23)	0.76	2882.7	150.00

5	5293.80	41.70	1.580	0.30 ( 0.23)	0.78	3733.9	31100.00
6	5831.29	55.61	1.338	0.30 ( 0.24)	0.79	5240.8	13210.00
7	5844.79	56.11	1.333	0.30 ( 0.24)	0.79	5292.7	13200.00
8	5834.09	57.31	1.320	0.30 ( 0.24)	0.79	5382.5	13100.00
9	5488.07	81.38	1.146	0.30 ( 0.24)	0.79	6620.7	13000.00
10	5426.06	83.68	1.131	0.30 ( 0.24)	0.79	6640.5	13010.00

LONGEST FLOWPATH FROM NODE 13010.00 TO NODE 13308.00 = 48763.78 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30337.96	22.69	2.245	0.30 ( 0.23)	0.76	6499.7	120.00
2	30338.38	22.69	2.245	0.30 ( 0.23)	0.76	6500.1	110.00
3	30682.47	23.88	2.168	0.30 ( 0.23)	0.76	6852.8	50110.00
4	32690.03	28.69	1.931	0.30 ( 0.23)	0.77	8801.8	300.00
5	32978.88	29.55	1.892	0.30 ( 0.23)	0.77	9215.5	100.00
6	33838.16	32.03	1.820	0.30 ( 0.23)	0.78	10392.4	150.00
7	35064.95	35.64	1.728	0.30 ( 0.24)	0.80	12098.6	50260.00
8	36816.47	40.94	1.597	0.30 ( 0.25)	0.82	14498.5	400.00
9	36994.73	41.70	1.580	0.30 ( 0.25)	0.82	14864.7	31100.00
10	38052.93	46.06	1.485	0.30 ( 0.25)	0.83	17038.3	390.00
11	40389.28	55.61	1.338	0.30 ( 0.26)	0.86	21734.5	13210.00
12	40506.02	56.11	1.333	0.30 ( 0.26)	0.86	21978.6	13200.00
13	40629.09	56.73	1.326	0.30 ( 0.26)	0.86	22264.9	40100.00
14	40785.35	57.31	1.320	0.30 ( 0.26)	0.87	22532.3	13100.00
15	42545.57	63.90	1.264	0.30 ( 0.26)	0.88	25451.3	11801.00
16	45149.10	73.29	1.201	0.30 ( 0.27)	0.89	30230.6	11530.00
17	47153.29	81.38	1.146	0.30 ( 0.27)	0.91	35425.1	13000.00
18	47243.84	81.77	1.143	0.30 ( 0.27)	0.91	35655.9	11910.00
19	47742.25	83.68	1.131	0.30 ( 0.27)	0.91	36916.3	13010.00
20	49008.73	88.79	1.096	0.30 ( 0.27)	0.92	40254.1	11330.00
21	49801.71	95.10	1.065	0.30 ( 0.28)	0.92	44685.1	11130.00
22	49399.45	102.70	1.030	0.30 ( 0.28)	0.93	48679.0	12330.00
23	48911.40	109.34	1.000	0.30 ( 0.28)	0.93	52022.2	12400.00
24	48059.75	118.03	0.960	0.30 ( 0.28)	0.94	55391.0	12201.00
25	47476.86	122.00	0.946	0.30 ( 0.28)	0.94	56475.7	12111.00
26	46700.52	127.38	0.932	0.30 ( 0.28)	0.94	57845.1	12101.10
27	46080.68	131.42	0.921	0.30 ( 0.28)	0.94	58694.2	10400.00
28	44359.77	139.47	0.900	0.30 ( 0.28)	0.94	60009.4	12010.00
29	42934.41	145.37	0.885	0.30 ( 0.28)	0.94	60323.1	10210.00
30	38952.27	171.52	0.817	0.30 ( 0.28)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 49801.71 Tc (MIN.) = 95.102  
EFFECTIVE AREA (ACRES) = 44685.07 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86  
TOTAL AREA (ACRES) = 61055.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 61055.8 TC (MIN.) = 95.10  
EFFECTIVE AREA (ACRES) = 44685.07 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.925  
PEAK FLOW RATE (CFS) = 49801.71

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	30337.96	22.69	2.245	0.30 ( 0.23)	0.76	6499.7 120.00
2	30338.38	22.69	2.245	0.30 ( 0.23)	0.76	6500.1 110.00
3	30682.47	23.88	2.168	0.30 ( 0.23)	0.76	6852.8 50110.00
4	32690.03	28.69	1.931	0.30 ( 0.23)	0.77	8801.8 300.00
5	32978.88	29.55	1.892	0.30 ( 0.23)	0.77	9215.5 100.00
6	33838.16	32.03	1.820	0.30 ( 0.23)	0.78	10392.4 150.00
7	35064.95	35.64	1.728	0.30 ( 0.24)	0.80	12098.6 50260.00
8	36816.47	40.94	1.597	0.30 ( 0.25)	0.82	14498.5 400.00
9	36994.73	41.70	1.580	0.30 ( 0.25)	0.82	14864.7 31100.00
10	38052.93	46.06	1.485	0.30 ( 0.25)	0.83	17038.3 390.00
11	40389.28	55.61	1.338	0.30 ( 0.26)	0.86	21734.5 13210.00
12	40506.02	56.11	1.333	0.30 ( 0.26)	0.86	21978.6 13200.00
13	40629.09	56.73	1.326	0.30 ( 0.26)	0.86	22264.9 40100.00
14	40785.35	57.31	1.320	0.30 ( 0.26)	0.87	22532.3 13100.00
15	42545.57	63.90	1.264	0.30 ( 0.26)	0.88	25451.3 11801.00
16	45149.10	73.29	1.201	0.30 ( 0.27)	0.89	30230.6 11530.00
17	47153.29	81.38	1.146	0.30 ( 0.27)	0.91	35425.1 13000.00
18	47243.84	81.77	1.143	0.30 ( 0.27)	0.91	35655.9 11910.00
19	47742.25	83.68	1.131	0.30 ( 0.27)	0.91	36916.3 13010.00
20	49008.73	88.79	1.096	0.30 ( 0.27)	0.92	40254.1 11330.00
21	49801.71	95.10	1.065	0.30 ( 0.28)	0.92	44685.1 11130.00
22	49399.45	102.70	1.030	0.30 ( 0.28)	0.93	48679.0 12330.00
23	48911.40	109.34	1.000	0.30 ( 0.28)	0.93	52022.2 12400.00
24	48059.75	118.03	0.960	0.30 ( 0.28)	0.94	55391.0 12201.00
25	47476.86	122.00	0.946	0.30 ( 0.28)	0.94	56475.7 12111.00
26	46700.52	127.38	0.932	0.30 ( 0.28)	0.94	57845.1 12101.10
27	46080.68	131.42	0.921	0.30 ( 0.28)	0.94	58694.2 10400.00
28	44359.77	139.47	0.900	0.30 ( 0.28)	0.94	60009.4 12010.00
29	42934.41	145.37	0.885	0.30 ( 0.28)	0.94	60323.1 10210.00
30	38952.27	171.52	0.817	0.30 ( 0.28)	0.94	61055.8 10100.00

=====  
END OF RATIONAL METHOD ANALYSIS





\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
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Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S34- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV MARCH 2019 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV34.DAT  
TIME/DATE OF STUDY: 11:53 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.846
- 2) 10.00; 3.774
- 3) 15.00; 2.924
- 4) 20.00; 2.413
- 5) 25.00; 2.091
- 6) 30.00; 1.869
- 7) 40.00; 1.613
- 8) 50.00; 1.397
- 9) 60.00; 1.286
- 10) 90.00; 1.084
- 11) 120.00; 0.947
- 12) 180.00; 0.791
- 13) 360.00; 0.584
- 14) 1200.00; 0.255

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV33.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30682.47	23.88	0.30 ( 0.23)	0.76	6852.8	50110.00
2	33838.16	32.03	0.30 ( 0.23)	0.78	10392.4	150.00
3	35064.95	35.64	0.30 ( 0.24)	0.80	12098.6	50260.00
4	36994.73	41.70	0.30 ( 0.25)	0.82	14864.7	31100.00
5	38052.93	46.06	0.30 ( 0.25)	0.83	17038.3	390.00
6	40785.35	57.31	0.30 ( 0.26)	0.87	22532.3	13100.00
7	42545.57	63.90	0.30 ( 0.26)	0.88	25451.3	11801.00
8	45149.10	73.29	0.30 ( 0.27)	0.89	30230.6	11530.00
9	47742.25	83.68	0.30 ( 0.27)	0.91	36916.3	13010.00
10	49008.73	88.79	0.30 ( 0.27)	0.92	40254.1	11330.00
11	49801.71	95.10	0.30 ( 0.28)	0.92	44685.1	11130.00
12	49399.45	102.70	0.30 ( 0.28)	0.93	48679.0	12330.00
13	48911.40	109.34	0.30 ( 0.28)	0.93	52022.2	12400.00
14	48059.75	118.03	0.30 ( 0.28)	0.94	55391.0	12201.00
15	47476.86	122.00	0.30 ( 0.28)	0.94	56475.7	12111.00
16	46700.52	127.38	0.30 ( 0.28)	0.94	57845.1	12101.10
17	46080.68	131.42	0.30 ( 0.28)	0.94	58694.2	10400.00
18	44359.77	139.47	0.30 ( 0.28)	0.94	60009.4	12010.00
19	42934.41	145.37	0.30 ( 0.28)	0.94	60323.1	10210.00
20	38952.27	171.52	0.30 ( 0.28)	0.94	61055.8	10100.00
TOTAL AREA (ACRES) =						61055.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30682.47	23.88	0.30 ( 0.23)	0.76	6852.8	50110.00
2	33838.16	32.03	0.30 ( 0.23)	0.78	10392.4	150.00
3	35064.95	35.64	0.30 ( 0.24)	0.80	12098.6	50260.00
4	36994.73	41.70	0.30 ( 0.25)	0.82	14864.7	31100.00
5	38052.93	46.06	0.30 ( 0.25)	0.83	17038.3	390.00
6	40785.35	57.31	0.30 ( 0.26)	0.87	22532.3	13100.00
7	42545.57	63.90	0.30 ( 0.26)	0.88	25451.3	11801.00
8	45149.10	73.29	0.30 ( 0.27)	0.89	30230.6	11530.00
9	47742.25	83.68	0.30 ( 0.27)	0.91	36916.3	13010.00
10	49008.73	88.79	0.30 ( 0.27)	0.92	40254.1	11330.00
11	49801.71	95.10	0.30 ( 0.28)	0.92	44685.1	11130.00
12	49399.45	102.70	0.30 ( 0.28)	0.93	48679.0	12330.00
13	48911.40	109.34	0.30 ( 0.28)	0.93	52022.2	12400.00

14	48059.75	118.03	0.30	( 0.28)	0.94	55391.0	12201.00
15	47476.86	122.00	0.30	( 0.28)	0.94	56475.7	12111.00
16	46700.52	127.38	0.30	( 0.28)	0.94	57845.1	12101.10
17	46080.68	131.42	0.30	( 0.28)	0.94	58694.2	10400.00
18	44359.77	139.47	0.30	( 0.28)	0.94	60009.4	12010.00
19	42934.41	145.37	0.30	( 0.28)	0.94	60323.1	10210.00
20	38952.27	171.52	0.30	( 0.28)	0.94	61055.8	10100.00

TOTAL AREA (ACRES) = 61055.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 212.00 DOWNSTREAM (FEET) = 209.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 623.02 CHANNEL SLOPE = 0.0048  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 12.15  
CHANNEL FLOW THRU SUBAREA (CFS) = 49801.71  
FLOW VELOCITY (FEET/SEC.) = 15.72 FLOW DEPTH (FEET) = 12.15  
TRAVEL TIME (MIN.) = 0.66 Tc (MIN.) = 95.76  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30682.47	24.65	2.113	0.30 ( 0.23)	0.76	6852.8	50110.00
2	33838.16	32.77	1.798	0.30 ( 0.23)	0.78	10392.4	150.00
3	35064.95	36.38	1.706	0.30 ( 0.24)	0.80	12098.6	50260.00
4	36994.73	42.43	1.561	0.30 ( 0.25)	0.82	14864.7	31100.00
5	38052.93	46.78	1.467	0.30 ( 0.25)	0.83	17038.3	390.00
6	40785.35	58.01	1.308	0.30 ( 0.26)	0.87	22532.3	13100.00
7	42545.57	64.60	1.255	0.30 ( 0.26)	0.88	25451.3	11801.00
8	45149.10	73.97	1.192	0.30 ( 0.27)	0.89	30230.6	11530.00
9	47742.25	84.34	1.122	0.30 ( 0.27)	0.91	36916.3	13010.00
10	49008.73	89.45	1.088	0.30 ( 0.27)	0.92	40254.1	11330.00
11	49801.71	95.76	1.058	0.30 ( 0.28)	0.92	44685.1	11130.00
12	49399.45	103.36	1.023	0.30 ( 0.28)	0.93	48679.0	12330.00
13	48911.40	110.01	0.993	0.30 ( 0.28)	0.93	52022.2	12400.00
14	48059.75	118.69	0.953	0.30 ( 0.28)	0.94	55391.0	12201.00
15	47476.86	122.67	0.940	0.30 ( 0.28)	0.94	56475.7	12111.00
16	46700.52	128.05	0.926	0.30 ( 0.28)	0.94	57845.1	12101.10
17	46080.68	132.09	0.916	0.30 ( 0.28)	0.94	58694.2	10400.00
18	44359.77	140.16	0.895	0.30 ( 0.28)	0.94	60009.4	12010.00
19	42934.41	146.06	0.879	0.30 ( 0.28)	0.94	60323.1	10210.00
20	38952.27	172.23	0.811	0.30 ( 0.28)	0.94	61055.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 49801.71 Tc (MIN.) = 95.76  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44685.07

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P505XXCE.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	282.54	17.03	2.717	0.30 ( 0.29)	0.96	146.4	50500.00

TOTAL AREA (ACRES) = 146.4

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11  
-----

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30682.47	24.65	2.113	0.30 ( 0.23)	0.76	6852.8	50110.00
2	33838.16	32.77	1.798	0.30 ( 0.23)	0.78	10392.4	150.00
3	35064.95	36.38	1.706	0.30 ( 0.24)	0.80	12098.6	50260.00
4	36994.73	42.43	1.561	0.30 ( 0.25)	0.82	14864.7	31100.00
5	38052.93	46.78	1.467	0.30 ( 0.25)	0.83	17038.3	390.00
6	40785.35	58.01	1.308	0.30 ( 0.26)	0.87	22532.3	13100.00
7	42545.57	64.60	1.255	0.30 ( 0.26)	0.88	25451.3	11801.00
8	45149.10	73.97	1.192	0.30 ( 0.27)	0.89	30230.6	11530.00
9	47742.25	84.34	1.122	0.30 ( 0.27)	0.91	36916.3	13010.00
10	49008.73	89.45	1.088	0.30 ( 0.27)	0.92	40254.1	11330.00
11	49801.71	95.76	1.058	0.30 ( 0.28)	0.92	44685.1	11130.00
12	49399.45	103.36	1.023	0.30 ( 0.28)	0.93	48679.0	12330.00
13	48911.40	110.01	0.993	0.30 ( 0.28)	0.93	52022.2	12400.00
14	48059.75	118.69	0.953	0.30 ( 0.28)	0.94	55391.0	12201.00
15	47476.86	122.67	0.940	0.30 ( 0.28)	0.94	56475.7	12111.00
16	46700.52	128.05	0.926	0.30 ( 0.28)	0.94	57845.1	12101.10
17	46080.68	132.09	0.916	0.30 ( 0.28)	0.94	58694.2	10400.00
18	44359.77	140.16	0.895	0.30 ( 0.28)	0.94	60009.4	12010.00
19	42934.41	146.06	0.879	0.30 ( 0.28)	0.94	60323.1	10210.00
20	38952.27	172.23	0.811	0.30 ( 0.28)	0.94	61055.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	282.54	17.03	2.717	0.30 ( 0.29)	0.96	146.4	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 5416.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28258.32	17.03	2.717	0.30 ( 0.23)	0.77	4879.2	50500.00
2	30894.82	24.65	2.113	0.30 ( 0.23)	0.77	6999.2	50110.00
3	34013.84	32.77	1.798	0.30 ( 0.24)	0.78	10538.8	150.00
4	35229.88	36.38	1.706	0.30 ( 0.24)	0.80	12245.0	50260.00
5	37142.79	42.43	1.561	0.30 ( 0.25)	0.82	15011.1	31100.00
6	38190.05	46.78	1.467	0.30 ( 0.25)	0.83	17184.7	390.00
7	40904.05	58.01	1.308	0.30 ( 0.26)	0.87	22678.7	13100.00
8	42658.10	64.60	1.255	0.30 ( 0.26)	0.88	25597.7	11801.00
9	45254.29	73.97	1.192	0.30 ( 0.27)	0.89	30377.0	11530.00
10	47839.32	84.34	1.122	0.30 ( 0.27)	0.91	37062.7	13010.00
11	49101.80	89.45	1.088	0.30 ( 0.28)	0.92	40400.5	11330.00

12 49891.29 95.76 1.058 0.30( 0.28) 0.92 44831.5 11130.00  
 13 49484.99 103.36 1.023 0.30( 0.28) 0.93 48825.4 12330.00  
 14 48993.41 110.01 0.993 0.30( 0.28) 0.93 52168.6 12400.00  
 15 48137.15 118.69 0.953 0.30( 0.28) 0.94 55537.4 12201.00  
 16 47552.75 122.67 0.940 0.30( 0.28) 0.94 56622.1 12111.00  
 17 46774.79 128.05 0.926 0.30( 0.28) 0.94 57991.5 12101.10  
 18 46153.72 132.09 0.916 0.30( 0.28) 0.94 58840.6 10400.00  
 19 44430.37 140.16 0.895 0.30( 0.28) 0.94 60155.8 12010.00  
 20 43003.23 146.06 0.879 0.30( 0.28) 0.94 60469.5 10210.00  
 21 39013.17 172.23 0.811 0.30( 0.28) 0.94 61202.2 10100.00  
 TOTAL AREA (ACRES) = 61202.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 49891.29 Tc (MIN.) = 95.762  
 EFFECTIVE AREA (ACRES) = 44831.47 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 61202.2  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13402.00 TO NODE 13404.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 209.00 DOWNSTREAM (FEET) = 207.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 395.35 CHANNEL SLOPE = 0.0051  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 12.00  
 CHANNEL FLOW THRU SUBAREA (CFS) = 49891.29  
 FLOW VELOCITY (FEET/SEC.) = 16.00 FLOW DEPTH (FEET) = 12.00  
 TRAVEL TIME (MIN.) = 0.41 Tc (MIN.) = 96.17  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28258.32	17.52	2.666	0.30( 0.23)	0.77	4879.2	50500.00
2	30894.82	25.13	2.085	0.30( 0.23)	0.77	6999.2	50110.00
3	34013.84	33.24	1.786	0.30( 0.24)	0.78	10538.8	150.00
4	35229.88	36.84	1.694	0.30( 0.24)	0.80	12245.0	50260.00
5	37142.79	42.88	1.551	0.30( 0.25)	0.82	15011.1	31100.00
6	38190.05	47.23	1.457	0.30( 0.25)	0.83	17184.7	390.00
7	40904.05	58.45	1.303	0.30( 0.26)	0.87	22678.7	13100.00
8	42658.10	65.03	1.252	0.30( 0.26)	0.88	25597.7	11801.00
9	45254.29	74.39	1.189	0.30( 0.27)	0.89	30377.0	11530.00
10	47839.32	84.76	1.119	0.30( 0.27)	0.91	37062.7	13010.00
11	49101.80	89.87	1.085	0.30( 0.28)	0.92	40400.5	11330.00
12	49891.29	96.17	1.056	0.30( 0.28)	0.92	44831.5	11130.00
13	49484.99	103.77	1.021	0.30( 0.28)	0.93	48825.4	12330.00
14	48993.41	110.42	0.991	0.30( 0.28)	0.93	52168.6	12400.00
15	48137.15	119.11	0.951	0.30( 0.28)	0.94	55537.4	12201.00
16	47552.75	123.09	0.939	0.30( 0.28)	0.94	56622.1	12111.00
17	46774.79	128.48	0.925	0.30( 0.28)	0.94	57991.5	12101.10
18	46153.72	132.51	0.914	0.30( 0.28)	0.94	58840.6	10400.00
19	44430.37	140.59	0.893	0.30( 0.28)	0.94	60155.8	12010.00
20	43003.23	146.50	0.878	0.30( 0.28)	0.94	60469.5	10210.00

21 39013.17 172.68 0.810 0.30( 0.28) 0.94 61202.2 10100.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 49891.29 Tc (MIN.) = 96.17  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44831.47

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P506XXCE.DNA  
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	92.51	17.87	0.30( 0.29)	0.97	49.5	50600.00
TOTAL AREA (ACRES) = 49.5						

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28258.32	17.52	2.666	0.30( 0.23)	0.77	4879.2	50500.00
2	30894.82	25.13	2.085	0.30( 0.23)	0.77	6999.2	50110.00
3	34013.84	33.24	1.786	0.30( 0.24)	0.78	10538.8	150.00
4	35229.88	36.84	1.694	0.30( 0.24)	0.80	12245.0	50260.00
5	37142.79	42.88	1.551	0.30( 0.25)	0.82	15011.1	31100.00
6	38190.05	47.23	1.457	0.30( 0.25)	0.83	17184.7	390.00
7	40904.05	58.45	1.303	0.30( 0.26)	0.87	22678.7	13100.00
8	42658.10	65.03	1.252	0.30( 0.26)	0.88	25597.7	11801.00
9	45254.29	74.39	1.189	0.30( 0.27)	0.89	30377.0	11530.00
10	47839.32	84.76	1.119	0.30( 0.27)	0.91	37062.7	13010.00
11	49101.80	89.87	1.085	0.30( 0.28)	0.92	40400.5	11330.00
12	49891.29	96.17	1.056	0.30( 0.28)	0.92	44831.5	11130.00
13	49484.99	103.77	1.021	0.30( 0.28)	0.93	48825.4	12330.00
14	48993.41	110.42	0.991	0.30( 0.28)	0.93	52168.6	12400.00
15	48137.15	119.11	0.951	0.30( 0.28)	0.94	55537.4	12201.00
16	47552.75	123.09	0.939	0.30( 0.28)	0.94	56622.1	12111.00
17	46774.79	128.48	0.925	0.30( 0.28)	0.94	57991.5	12101.10
18	46153.72	132.51	0.914	0.30( 0.28)	0.94	58840.6	10400.00
19	44430.37	140.59	0.893	0.30( 0.28)	0.94	60155.8	12010.00
20	43003.23	146.50	0.878	0.30( 0.28)	0.94	60469.5	10210.00
21	39013.17	172.68	0.810	0.30( 0.28)	0.94	61202.2	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.							

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	92.51	17.87	2.631	0.30( 0.29)	0.97	49.5	50600.00
LONGEST FLOWPATH FROM NODE 50600.00 TO NODE 13404.00 = 4378.00 FEET.							

\*\* PEAK FLOW RATE TABLE \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	28350.40	17.52	2.666	0.30 ( 0.23)	0.77	4927.7 50500.00
2	28471.89	17.87	2.631	0.30 ( 0.23)	0.77	5026.0 50600.00
3	30965.77	25.13	2.085	0.30 ( 0.23)	0.77	7048.7 50110.00
4	34072.98	33.24	1.786	0.30 ( 0.24)	0.79	10588.3 150.00
5	35285.38	36.84	1.694	0.30 ( 0.24)	0.80	12294.5 50260.00
6	37192.63	42.88	1.551	0.30 ( 0.25)	0.82	15060.6 31100.00
7	38236.18	47.23	1.457	0.30 ( 0.25)	0.84	17234.2 390.00
8	40944.10	58.45	1.303	0.30 ( 0.26)	0.87	22728.2 13100.00
9	42696.13	65.03	1.252	0.30 ( 0.26)	0.88	25647.2 11801.00
10	45289.84	74.39	1.189	0.30 ( 0.27)	0.89	30426.5 11530.00
11	47872.10	84.76	1.119	0.30 ( 0.27)	0.91	37112.2 13010.00
12	49133.23	89.87	1.085	0.30 ( 0.28)	0.92	40450.0 11330.00
13	49921.56	96.17	1.056	0.30 ( 0.28)	0.92	44881.0 11130.00
14	49513.90	103.77	1.021	0.30 ( 0.28)	0.93	48874.9 12330.00
15	49021.11	110.42	0.991	0.30 ( 0.28)	0.93	52218.1 12400.00
16	48163.29	119.11	0.951	0.30 ( 0.28)	0.94	55586.9 12201.00
17	47578.41	123.09	0.939	0.30 ( 0.28)	0.94	56671.6 12111.00
18	46799.89	128.48	0.925	0.30 ( 0.28)	0.94	58041.0 12101.10
19	46178.42	132.51	0.914	0.30 ( 0.28)	0.94	58890.1 10400.00
20	44454.23	140.59	0.893	0.30 ( 0.28)	0.94	60205.3 12010.00
21	43026.49	146.50	0.878	0.30 ( 0.28)	0.94	60519.0 10210.00
22	39033.74	172.68	0.810	0.30 ( 0.28)	0.94	61251.7 10100.00

TOTAL AREA (ACRES) = 61251.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 49921.56 Tc (MIN.) = 96.174  
EFFECTIVE AREA (ACRES) = 44880.97 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61251.7  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 = 119109.03 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13404.00 TO NODE 13406.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 207.00 DOWNSTREAM (FEET) = 195.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1601.97 CHANNEL SLOPE = 0.0075  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 10.75  
CHANNEL FLOW THRU SUBAREA (CFS) = 49921.56  
FLOW VELOCITY (FEET/SEC.) = 18.29 FLOW DEPTH (FEET) = 10.75  
TRAVEL TIME (MIN.) = 1.46 Tc (MIN.) = 97.63  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28350.40	19.28	2.487	0.30 ( 0.23)	0.77	4927.7	50500.00
2	28471.89	19.63	2.451	0.30 ( 0.23)	0.77	5026.0	50600.00
3	30965.77	26.84	2.009	0.30 ( 0.23)	0.77	7048.7	50110.00
4	34072.98	34.89	1.744	0.30 ( 0.24)	0.79	10588.3	150.00
5	35285.38	38.47	1.652	0.30 ( 0.24)	0.80	12294.5	50260.00
6	37192.63	44.49	1.516	0.30 ( 0.25)	0.82	15060.6	31100.00
7	38236.18	48.82	1.422	0.30 ( 0.25)	0.84	17234.2	390.00

8	40944.10	60.00	1.286	0.30 ( 0.26)	0.87	22728.2	13100.00
9	42696.13	66.56	1.242	0.30 ( 0.26)	0.88	25647.2	11801.00
10	45289.84	75.90	1.179	0.30 ( 0.27)	0.89	30426.5	11530.00
11	47872.10	86.24	1.109	0.30 ( 0.27)	0.91	37112.2	13010.00
12	49133.23	91.34	1.078	0.30 ( 0.28)	0.92	40450.0	11330.00
13	49921.56	97.63	1.049	0.30 ( 0.28)	0.92	44881.0	11130.00
14	49513.90	105.24	1.014	0.30 ( 0.28)	0.93	48874.9	12330.00
15	49021.11	111.89	0.984	0.30 ( 0.28)	0.93	52218.1	12400.00
16	48163.29	120.59	0.945	0.30 ( 0.28)	0.94	55586.9	12201.00
17	47578.41	124.57	0.935	0.30 ( 0.28)	0.94	56671.6	12111.00
18	46799.89	129.97	0.921	0.30 ( 0.28)	0.94	58041.0	12101.10
19	46178.42	134.01	0.911	0.30 ( 0.28)	0.94	58890.1	10400.00
20	44454.23	142.10	0.890	0.30 ( 0.28)	0.94	60205.3	12010.00
21	43026.49	148.03	0.874	0.30 ( 0.28)	0.94	60519.0	10210.00
22	39033.74	174.26	0.806	0.30 ( 0.28)	0.94	61251.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 49921.56 Tc (MIN.) = 97.63  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44880.97

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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MAINLINE Tc (MIN.) = 97.63  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.049  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	1.60	0.30	1.000	81

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 20.10 SUBAREA RUNOFF (CFS) = 13.55  
EFFECTIVE AREA (ACRES) = 44901.07 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61271.8 PEAK FLOW RATE (CFS) = 49921.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 97.63  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.049  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 2.00 0.30 1.000 81  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 7.10 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 5.80 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.10 0.30 1.000 65  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 15.00 SUBAREA RUNOFF (CFS) = 10.11  
EFFECTIVE AREA (ACRES) = 44916.07 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61286.8 PEAK FLOW RATE (CFS) = 49921.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 195.00 DOWNSTREAM (FEET) = 182.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2458.36 CHANNEL SLOPE = 0.0053  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 11.85  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.038

SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"OPEN BRUSH" B 7.00 0.30 1.000 66  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 3.30 0.30 1.000 65  
COMMERCIAL B 0.40 0.30 0.100 56  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.40 0.30 1.000 66  
COMMERCIAL B 0.30 0.30 0.100 56  
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.949  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 49925.76  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 16.25  
AVERAGE FLOW DEPTH (FEET) = 11.85 TRAVEL TIME (MIN.) = 2.52  
Tc (MIN.) = 100.16  
SUBAREA AREA (ACRES) = 12.40 SUBAREA RUNOFF (CFS) = 8.40  
EFFECTIVE AREA (ACRES) = 44928.47 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA (ACRES) = 61299.2 PEAK FLOW RATE (CFS) = 49921.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 11.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 11.85 FLOW VELOCITY (FEET/SEC.) = 16.24

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28350.40	22.31	2.264	0.30 ( 0.23)	0.77	4975.2	50500.00
2	28471.89	22.65	2.242	0.30 ( 0.23)	0.77	5073.5	50600.00
3	30965.77	29.78	1.879	0.30 ( 0.23)	0.77	7096.2	50110.00
4	34072.98	37.74	1.671	0.30 ( 0.24)	0.79	10635.8	150.00
5	35285.38	41.29	1.585	0.30 ( 0.24)	0.80	12342.0	50260.00
6	37192.63	47.26	1.456	0.30 ( 0.25)	0.82	15108.1	31100.00
7	38236.18	51.57	1.380	0.30 ( 0.25)	0.84	17281.7	390.00
8	40944.10	62.69	1.268	0.30 ( 0.26)	0.87	22775.7	13100.00
9	42696.13	69.21	1.224	0.30 ( 0.26)	0.88	25694.7	11801.00
10	45289.84	78.50	1.161	0.30 ( 0.27)	0.89	30474.0	11530.00
11	47872.10	88.80	1.092	0.30 ( 0.27)	0.91	37159.7	13010.00
12	49133.23	93.87	1.066	0.30 ( 0.28)	0.92	40497.5	11330.00
13	49921.56	100.16	1.038	0.30 ( 0.28)	0.92	44928.5	11130.00
14	49513.90	107.76	1.003	0.30 ( 0.28)	0.93	48922.4	12330.00
15	49021.11	114.43	0.972	0.30 ( 0.28)	0.93	52265.6	12400.00
16	48163.29	123.14	0.939	0.30 ( 0.28)	0.94	55634.4	12201.00
17	47578.41	127.13	0.928	0.30 ( 0.28)	0.94	56719.1	12111.00
18	46799.89	132.54	0.914	0.30 ( 0.28)	0.94	58088.5	12101.10
19	46178.42	136.60	0.904	0.30 ( 0.28)	0.94	58937.6	10400.00
20	44454.23	144.72	0.883	0.30 ( 0.28)	0.94	60252.8	12010.00
21	43026.49	150.67	0.867	0.30 ( 0.28)	0.94	60566.5	10210.00
22	39033.74	176.99	0.799	0.30 ( 0.28)	0.94	61299.2	10100.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE (CFS) = 49921.56 Tc (MIN.) = 100.16  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 44928.47

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 2P00EVBB.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	842.59	9.80	0.30 ( 0.11)	0.38	246.8	429.00
2	890.71	11.26	0.30 ( 0.11)	0.38	283.5	425.00
3	905.71	11.71	0.30 ( 0.11)	0.38	294.8	400.00
4	943.25	13.11	0.30 ( 0.11)	0.38	330.1	300.00
5	1001.68	18.01	0.30 ( 0.11)	0.38	440.3	210.00
6	980.97	20.12	0.30 ( 0.11)	0.38	468.0	410.00
7	972.01	21.00	0.30 ( 0.11)	0.38	479.3	200.00
8	969.62	21.61	0.30 ( 0.11)	0.38	486.7	230.00
9	947.95	22.69	0.30 ( 0.11)	0.37	491.2	220.50
TOTAL AREA (ACRES) =			491.2			

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28350.40	22.31	2.264	0.30 ( 0.23)	0.77	4975.2	50500.00
2	28471.89	22.65	2.242	0.30 ( 0.23)	0.77	5073.5	50600.00
3	30965.77	29.78	1.879	0.30 ( 0.23)	0.77	7096.2	50110.00
4	34072.98	37.74	1.671	0.30 ( 0.24)	0.79	10635.8	150.00
5	35285.38	41.29	1.585	0.30 ( 0.24)	0.80	12342.0	50260.00
6	37192.63	47.26	1.456	0.30 ( 0.25)	0.82	15108.1	31100.00
7	38236.18	51.57	1.380	0.30 ( 0.25)	0.84	17281.7	390.00
8	40944.10	62.69	1.268	0.30 ( 0.26)	0.87	22775.7	13100.00
9	42696.13	69.21	1.224	0.30 ( 0.26)	0.88	25694.7	11801.00
10	45289.84	78.50	1.161	0.30 ( 0.27)	0.89	30474.0	11530.00
11	47872.10	88.80	1.092	0.30 ( 0.27)	0.91	37159.7	13010.00
12	49133.23	93.87	1.066	0.30 ( 0.28)	0.92	40497.5	11330.00
13	49921.56	100.16	1.038	0.30 ( 0.28)	0.92	44928.5	11130.00
14	49513.90	107.76	1.003	0.30 ( 0.28)	0.93	48922.4	12330.00
15	49021.11	114.43	0.972	0.30 ( 0.28)	0.93	52265.6	12400.00
16	48163.29	123.14	0.939	0.30 ( 0.28)	0.94	55634.4	12201.00
17	47578.41	127.13	0.928	0.30 ( 0.28)	0.94	56719.1	12111.00
18	46799.89	132.54	0.914	0.30 ( 0.28)	0.94	58088.5	12101.10
19	46178.42	136.60	0.904	0.30 ( 0.28)	0.94	58937.6	10400.00
20	44454.23	144.72	0.883	0.30 ( 0.28)	0.94	60252.8	12010.00
21	43026.49	150.67	0.867	0.30 ( 0.28)	0.94	60566.5	10210.00
22	39033.74	176.99	0.799	0.30 ( 0.28)	0.94	61299.2	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	842.59	9.80	3.857	0.30 ( 0.11)	0.38	246.8	429.00
2	890.71	11.26	3.559	0.30 ( 0.11)	0.38	283.5	425.00
3	905.71	11.71	3.483	0.30 ( 0.11)	0.38	294.8	400.00
4	943.25	13.11	3.245	0.30 ( 0.11)	0.38	330.1	300.00
5	1001.68	18.01	2.616	0.30 ( 0.11)	0.38	440.3	210.00
6	980.97	20.12	2.406	0.30 ( 0.11)	0.38	468.0	410.00
7	972.01	21.00	2.349	0.30 ( 0.11)	0.38	479.3	200.00
8	969.62	21.61	2.309	0.30 ( 0.11)	0.38	486.7	230.00
9	947.95	22.69	2.240	0.30 ( 0.11)	0.37	491.2	220.50

LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13408.00 = 11903.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23052.83	9.80	3.857	0.30 ( 0.22)	0.73	2432.2	429.00
2	24322.78	11.26	3.559	0.30 ( 0.22)	0.73	2795.7	425.00
3	24711.46	11.71	3.483	0.30 ( 0.22)	0.73	2906.7	400.00
4	25642.79	13.11	3.245	0.30 ( 0.22)	0.73	3253.7	300.00
5	27852.38	18.01	2.616	0.30 ( 0.22)	0.73	4456.7	210.00
6	28320.39	20.12	2.406	0.30 ( 0.22)	0.73	4954.1	410.00
7	28764.97	21.00	2.349	0.30 ( 0.22)	0.73	5162.4	200.00
8	29041.23	21.61	2.309	0.30 ( 0.22)	0.73	5306.8	230.00

9	29306.07	22.31	2.264	0.30 ( 0.22)	0.74	5464.8	50500.00
10	29420.72	22.65	2.242	0.30 ( 0.22)	0.74	5564.6	50600.00
11	29435.18	22.69	2.240	0.30 ( 0.22)	0.74	5577.2	220.50
12	31752.89	29.78	1.879	0.30 ( 0.22)	0.74	7587.4	50110.00
13	34767.44	37.74	1.671	0.30 ( 0.23)	0.77	11127.0	150.00
14	35941.66	41.29	1.585	0.30 ( 0.23)	0.78	12833.2	50260.00
15	37791.49	47.26	1.456	0.30 ( 0.24)	0.81	15599.3	31100.00
16	38800.89	51.57	1.380	0.30 ( 0.25)	0.82	17772.9	390.00
17	41459.03	62.69	1.268	0.30 ( 0.26)	0.86	23266.9	13100.00
18	43191.48	69.21	1.224	0.30 ( 0.26)	0.87	26185.9	11801.00
19	45757.33	78.50	1.161	0.30 ( 0.27)	0.89	30965.2	11530.00
20	48308.69	88.80	1.092	0.30 ( 0.27)	0.90	37650.9	13010.00
21	49558.33	93.87	1.066	0.30 ( 0.27)	0.91	40988.7	11330.00
22	50333.87	100.16	1.038	0.30 ( 0.28)	0.92	45419.7	11130.00
23	49910.73	107.76	1.003	0.30 ( 0.28)	0.92	49413.6	12330.00
24	49404.38	114.43	0.972	0.30 ( 0.28)	0.93	52756.8	12400.00
25	48531.58	123.14	0.939	0.30 ( 0.28)	0.93	56125.6	12201.00
26	47942.08	127.13	0.928	0.30 ( 0.28)	0.93	57210.3	12111.00
27	47157.29	132.54	0.914	0.30 ( 0.28)	0.93	58579.7	12101.10
28	46531.11	136.60	0.904	0.30 ( 0.28)	0.93	59428.8	10400.00
29	44797.52	144.72	0.883	0.30 ( 0.28)	0.94	60744.0	12010.00
30	43362.88	150.67	0.867	0.30 ( 0.28)	0.94	61057.7	10210.00
31	39339.63	176.99	0.799	0.30 ( 0.28)	0.94	61790.4	10100.00

TOTAL AREA (ACRES) = 61790.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 50333.87 Tc (MIN.) = 100.156

EFFECTIVE AREA (ACRES) = 45419.67 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.77

TOTAL AREA (ACRES) = 61790.4

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P507XXCE.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	374.22	22.05	0.30 ( 0.30)	0.99	231.4	50700.00

TOTAL AREA (ACRES) = 231.4

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	23052.83	9.80	3.857	0.30 ( 0.22)	0.73	2432.2 429.00
2	24322.78	11.26	3.559	0.30 ( 0.22)	0.73	2795.7 425.00
3	24711.46	11.71	3.483	0.30 ( 0.22)	0.73	2906.7 400.00
4	25642.79	13.11	3.245	0.30 ( 0.22)	0.73	3253.7 300.00
5	27852.38	18.01	2.616	0.30 ( 0.22)	0.73	4456.7 210.00
6	28320.39	20.12	2.406	0.30 ( 0.22)	0.73	4954.1 410.00
7	28764.97	21.00	2.349	0.30 ( 0.22)	0.73	5162.4 200.00
8	29041.23	21.61	2.309	0.30 ( 0.22)	0.73	5306.8 230.00
9	29306.07	22.31	2.264	0.30 ( 0.22)	0.74	5464.8 50500.00
10	29420.72	22.65	2.242	0.30 ( 0.22)	0.74	5564.6 50600.00
11	29435.18	22.69	2.240	0.30 ( 0.22)	0.74	5577.2 220.50
12	31752.89	29.78	1.879	0.30 ( 0.22)	0.74	7587.4 50110.00
13	34767.44	37.74	1.671	0.30 ( 0.23)	0.77	11127.0 150.00
14	35941.66	41.29	1.585	0.30 ( 0.23)	0.78	12833.2 50260.00
15	37791.49	47.26	1.456	0.30 ( 0.24)	0.81	15599.3 31100.00
16	38800.89	51.57	1.380	0.30 ( 0.25)	0.82	17772.9 390.00
17	41459.03	62.69	1.268	0.30 ( 0.26)	0.86	23266.9 13100.00
18	43191.48	69.21	1.224	0.30 ( 0.26)	0.87	26185.9 11801.00
19	45757.33	78.50	1.161	0.30 ( 0.27)	0.89	30965.2 11530.00
20	48308.69	88.80	1.092	0.30 ( 0.27)	0.90	37650.9 13010.00
21	49558.33	93.87	1.066	0.30 ( 0.27)	0.91	40988.7 11330.00
22	50333.87	100.16	1.038	0.30 ( 0.28)	0.92	45419.7 11130.00
23	49910.73	107.76	1.003	0.30 ( 0.28)	0.92	49413.6 12330.00
24	49404.38	114.43	0.972	0.30 ( 0.28)	0.93	52756.8 12400.00
25	48531.58	123.14	0.939	0.30 ( 0.28)	0.93	56125.6 12201.00
26	47942.08	127.13	0.928	0.30 ( 0.28)	0.93	57210.3 12111.00
27	47157.29	132.54	0.914	0.30 ( 0.28)	0.93	58579.7 12101.10
28	46531.11	136.60	0.904	0.30 ( 0.28)	0.93	59428.8 10400.00
29	44797.52	144.72	0.883	0.30 ( 0.28)	0.94	60744.0 12010.00
30	43362.88	150.67	0.867	0.30 ( 0.28)	0.94	61057.7 10210.00
31	39339.63	176.99	0.799	0.30 ( 0.28)	0.94	61790.4 10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	374.22	22.05	2.281	0.30 ( 0.30)	0.99	231.4	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7683.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23351.22	9.80	3.857	0.30 ( 0.22)	0.74	2535.1	429.00
2	24637.08	11.26	3.559	0.30 ( 0.22)	0.74	2913.9	425.00
3	25030.62	11.71	3.483	0.30 ( 0.22)	0.74	3029.6	400.00
4	25973.39	13.11	3.245	0.30 ( 0.22)	0.74	3391.3	300.00
5	28209.68	18.01	2.616	0.30 ( 0.22)	0.74	4645.7	210.00
6	28683.21	20.12	2.406	0.30 ( 0.22)	0.74	5165.2	410.00
7	29133.50	21.00	2.349	0.30 ( 0.22)	0.74	5382.8	200.00
8	29413.23	21.61	2.309	0.30 ( 0.22)	0.75	5533.6	230.00
9	29582.23	22.05	2.281	0.30 ( 0.22)	0.75	5637.7	50700.00
10	29677.16	22.31	2.264	0.30 ( 0.22)	0.75	5696.2	50500.00
11	29787.68	22.65	2.242	0.30 ( 0.22)	0.75	5796.0	50600.00
12	29801.61	22.69	2.240	0.30 ( 0.22)	0.75	5808.6	220.50
13	32051.26	29.78	1.879	0.30 ( 0.22)	0.75	7818.8	50110.00
14	35026.60	37.74	1.671	0.30 ( 0.23)	0.77	11358.4	150.00
15	36184.67	41.29	1.585	0.30 ( 0.24)	0.79	13064.6	50260.00

16	38010.20	47.26	1.456	0.30 ( 0.24)	0.81	15830.7	31100.00
17	39005.14	51.57	1.380	0.30 ( 0.25)	0.82	18004.3	390.00
18	41642.22	62.69	1.268	0.30 ( 0.26)	0.86	23498.3	13100.00
19	43366.39	69.21	1.224	0.30 ( 0.26)	0.87	26417.3	11801.00
20	45920.45	78.50	1.161	0.30 ( 0.27)	0.89	31196.6	11530.00
21	48458.74	88.80	1.092	0.30 ( 0.27)	0.90	37882.3	13010.00
22	49703.51	93.87	1.066	0.30 ( 0.27)	0.91	41220.1	11330.00
23	50473.64	100.16	1.038	0.30 ( 0.28)	0.92	45651.1	11130.00
24	50043.95	107.76	1.003	0.30 ( 0.28)	0.93	49645.0	12330.00
25	49531.86	114.43	0.972	0.30 ( 0.28)	0.93	52988.2	12400.00
26	48652.72	123.14	0.939	0.30 ( 0.28)	0.93	56357.0	12201.00
27	48061.27	127.13	0.928	0.30 ( 0.28)	0.93	57441.7	12111.00
28	47273.82	132.54	0.914	0.30 ( 0.28)	0.93	58811.1	12101.10
29	46645.66	136.60	0.904	0.30 ( 0.28)	0.94	59660.2	10400.00
30	44908.08	144.72	0.883	0.30 ( 0.28)	0.94	60975.4	12010.00
31	43470.52	150.67	0.867	0.30 ( 0.28)	0.94	61289.1	10210.00
32	39434.38	176.99	0.799	0.30 ( 0.28)	0.94	62021.8	10100.00

TOTAL AREA (ACRES) = 62021.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 50473.64 Tc (MIN.) = 100.156  
EFFECTIVE AREA (ACRES) = 45651.07 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 62021.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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FLOW PROCESS FROM NODE 13408.00 TO NODE 13410.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72  
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 13.43  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.032  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	0.40	0.30	1.000	66
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	2.90	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 50474.73					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.07					
AVERAGE FLOW DEPTH (FEET) = 13.43 TRAVEL TIME (MIN.) = 1.13					
Tc (MIN.) = 101.28					
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 2.18					
EFFECTIVE AREA (ACRES) = 45654.37 AREA-AVERAGED Fm (INCH/HR) = 0.28					
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92					
TOTAL AREA (ACRES) = 62025.1 PEAK FLOW RATE (CFS) = 50473.64					
NOTE: PEAK FLOW RATE DEFAULTS TO UPSTREAM VALUE					
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0					
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030					

\*ESTIMATED CHANNEL HEIGHT (FEET) = 13.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 13.43 FLOW VELOCITY (FEET/SEC.) = 14.07

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23351.22	11.24	3.562	0.30 ( 0.22)	0.74	2538.4	429.00
2	24637.08	12.68	3.318	0.30 ( 0.22)	0.74	2917.2	425.00
3	25030.62	13.12	3.243	0.30 ( 0.22)	0.74	3032.9	400.00
4	25973.39	14.50	3.008	0.30 ( 0.22)	0.74	3394.6	300.00
5	28209.68	19.37	2.478	0.30 ( 0.22)	0.74	4649.0	210.00
6	28683.21	21.47	2.319	0.30 ( 0.22)	0.74	5168.5	410.00
7	29133.50	22.34	2.262	0.30 ( 0.22)	0.75	5386.1	200.00
8	29413.23	22.95	2.223	0.30 ( 0.22)	0.75	5536.9	230.00
9	29582.23	23.39	2.195	0.30 ( 0.22)	0.75	5641.0	50700.00
10	29677.16	23.64	2.178	0.30 ( 0.22)	0.75	5699.5	50500.00
11	29787.68	23.98	2.156	0.30 ( 0.22)	0.75	5799.3	50600.00
12	29801.61	24.03	2.154	0.30 ( 0.22)	0.75	5811.9	220.50
13	32051.26	31.09	1.841	0.30 ( 0.23)	0.75	7822.1	50110.00
14	35026.60	39.01	1.638	0.30 ( 0.23)	0.77	11361.7	150.00
15	36184.67	42.55	1.558	0.30 ( 0.24)	0.79	13067.9	50260.00
16	38010.20	48.49	1.430	0.30 ( 0.24)	0.81	15834.0	31100.00
17	39005.14	52.79	1.366	0.30 ( 0.25)	0.82	18007.6	390.00
18	41642.22	63.89	1.260	0.30 ( 0.26)	0.86	23501.6	13100.00
19	43366.39	70.40	1.216	0.30 ( 0.26)	0.87	26420.6	11801.00
20	45920.45	79.66	1.154	0.30 ( 0.27)	0.89	31199.9	11530.00
21	48458.74	89.94	1.084	0.30 ( 0.27)	0.90	37885.6	13010.00
22	49703.51	95.00	1.061	0.30 ( 0.27)	0.91	41223.4	11330.00
23	50473.64	101.28	1.032	0.30 ( 0.28)	0.92	45654.4	11130.00
24	50043.95	108.90	0.998	0.30 ( 0.28)	0.93	49648.3	12330.00
25	49531.86	115.56	0.967	0.30 ( 0.28)	0.93	52991.5	12400.00
26	48652.72	124.28	0.936	0.30 ( 0.28)	0.93	56360.3	12201.00
27	48061.27	128.28	0.925	0.30 ( 0.28)	0.93	57445.0	12111.00
28	47273.82	133.69	0.911	0.30 ( 0.28)	0.93	58814.4	12101.10
29	46645.66	137.75	0.901	0.30 ( 0.28)	0.94	59663.5	10400.00
30	44908.08	145.89	0.880	0.30 ( 0.28)	0.94	60978.7	12010.00
31	43470.52	151.85	0.864	0.30 ( 0.28)	0.94	61292.4	10210.00
32	39434.38	178.21	0.796	0.30 ( 0.28)	0.94	62025.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 50473.64 Tc (MIN.) = 101.28

AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 45654.37

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU00EV36.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2775.64	27.02	0.30 ( 0.27)	0.90	1487.3	110.00
2	2878.61	29.40	0.30 ( 0.27)	0.90	1661.9	100.00
3	2888.47	30.54	0.30 ( 0.27)	0.90	1737.8	100.00
4	2912.70	33.54	0.30 ( 0.27)	0.91	1918.1	130.00
5	3088.56	46.09	0.30 ( 0.28)	0.93	2647.7	20100.00
6	3029.46	51.26	0.30 ( 0.28)	0.93	2828.9	13600.00
7	2905.42	85.17	0.30 ( 0.28)	0.93	3796.8	13510.00
8	2757.26	93.58	0.30 ( 0.28)	0.93	3859.7	13500.00
TOTAL AREA (ACRES) =			3859.7			

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23351.22	11.24	3.562	0.30 ( 0.22)	0.74	2538.4	429.00
2	24637.08	12.68	3.318	0.30 ( 0.22)	0.74	2917.2	425.00
3	25030.62	13.12	3.243	0.30 ( 0.22)	0.74	3032.9	400.00
4	25973.39	14.50	3.008	0.30 ( 0.22)	0.74	3394.6	300.00
5	28209.68	19.37	2.478	0.30 ( 0.22)	0.74	4649.0	210.00
6	28683.21	21.47	2.319	0.30 ( 0.22)	0.74	5168.5	410.00
7	29133.50	22.34	2.262	0.30 ( 0.22)	0.75	5386.1	200.00
8	29413.23	22.95	2.223	0.30 ( 0.22)	0.75	5536.9	230.00
9	29582.23	23.39	2.195	0.30 ( 0.22)	0.75	5641.0	50700.00
10	29677.16	23.64	2.178	0.30 ( 0.22)	0.75	5699.5	50500.00
11	29787.68	23.98	2.156	0.30 ( 0.22)	0.75	5799.3	50600.00
12	29801.61	24.03	2.154	0.30 ( 0.22)	0.75	5811.9	220.50
13	32051.26	31.09	1.841	0.30 ( 0.23)	0.75	7822.1	50110.00
14	35026.60	39.01	1.638	0.30 ( 0.23)	0.77	11361.7	150.00
15	36184.67	42.55	1.558	0.30 ( 0.24)	0.79	13067.9	50260.00
16	38010.20	48.49	1.430	0.30 ( 0.24)	0.81	15834.0	31100.00
17	39005.14	52.79	1.366	0.30 ( 0.25)	0.82	18007.6	390.00
18	41642.22	63.89	1.260	0.30 ( 0.26)	0.86	23501.6	13100.00
19	43366.39	70.40	1.216	0.30 ( 0.26)	0.87	26420.6	11801.00
20	45920.45	79.66	1.154	0.30 ( 0.27)	0.89	31199.9	11530.00
21	48458.74	89.94	1.084	0.30 ( 0.27)	0.90	37885.6	13010.00
22	49703.51	95.00	1.061	0.30 ( 0.27)	0.91	41223.4	11330.00
23	50473.64	101.28	1.032	0.30 ( 0.28)	0.92	45654.4	11130.00
24	50043.95	108.90	0.998	0.30 ( 0.28)	0.93	49648.3	12330.00
25	49531.86	115.56	0.967	0.30 ( 0.28)	0.93	52991.5	12400.00
26	48652.72	124.28	0.936	0.30 ( 0.28)	0.93	56360.3	12201.00
27	48061.27	128.28	0.925	0.30 ( 0.28)	0.93	57445.0	12111.00
28	47273.82	133.69	0.911	0.30 ( 0.28)	0.93	58814.4	12101.10
29	46645.66	137.75	0.901	0.30 ( 0.28)	0.94	59663.5	10400.00
30	44908.08	145.89	0.880	0.30 ( 0.28)	0.94	60978.7	12010.00
31	43470.52	151.85	0.864	0.30 ( 0.28)	0.94	61292.4	10210.00
32	39434.38	178.21	0.796	0.30 ( 0.28)	0.94	62025.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	2775.64	27.02	2.001	0.30 ( 0.27)	0.90	1487.3 110.00
2	2878.61	29.40	1.896	0.30 ( 0.27)	0.90	1661.9 100.00
3	2888.47	30.54	1.855	0.30 ( 0.27)	0.90	1737.8 100.00
4	2912.70	33.54	1.778	0.30 ( 0.27)	0.91	1918.1 130.00
5	3088.56	46.09	1.481	0.30 ( 0.28)	0.93	2647.7 20100.00
6	3029.46	51.26	1.383	0.30 ( 0.28)	0.93	2828.9 13600.00
7	2905.42	85.17	1.117	0.30 ( 0.28)	0.93	3796.8 13510.00
8	2757.26	93.58	1.068	0.30 ( 0.28)	0.93	3859.7 13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25548.26	11.24	3.562	0.30 ( 0.23)	0.77	3157.2	429.00
2	26931.16	12.68	3.318	0.30 ( 0.23)	0.77	3615.4	425.00
3	27346.01	13.12	3.243	0.30 ( 0.23)	0.77	3755.3	400.00
4	28330.27	14.50	3.008	0.30 ( 0.23)	0.77	4192.9	300.00
5	30746.76	19.37	2.478	0.30 ( 0.23)	0.77	5714.9	210.00
6	31292.54	21.47	2.319	0.30 ( 0.23)	0.77	6350.0	410.00
7	31774.50	22.34	2.262	0.30 ( 0.23)	0.77	6615.7	200.00
8	32072.82	22.95	2.223	0.30 ( 0.23)	0.77	6800.1	230.00
9	32253.33	23.39	2.195	0.30 ( 0.23)	0.78	6928.2	50700.00
10	32354.38	23.64	2.178	0.30 ( 0.23)	0.78	7000.9	50500.00
11	32472.21	23.98	2.156	0.30 ( 0.23)	0.78	7119.3	50600.00
12	32487.01	24.03	2.154	0.30 ( 0.23)	0.78	7134.3	220.50
13	33531.92	27.02	2.001	0.30 ( 0.23)	0.78	8152.2	110.00
14	34391.76	29.40	1.896	0.30 ( 0.23)	0.78	9003.1	100.00
15	34766.75	30.54	1.855	0.30 ( 0.23)	0.78	9405.3	100.00
16	34944.11	31.09	1.841	0.30 ( 0.23)	0.78	9592.5	50110.00
17	35886.05	33.54	1.778	0.30 ( 0.24)	0.78	10837.1	130.00
18	38015.96	39.01	1.638	0.30 ( 0.24)	0.80	13597.9	150.00
19	39223.58	42.55	1.558	0.30 ( 0.24)	0.81	15509.7	50260.00
20	40360.75	46.09	1.481	0.30 ( 0.25)	0.82	17363.5	20100.00
21	41071.29	48.49	1.430	0.30 ( 0.25)	0.83	18566.0	31100.00
22	41679.85	51.26	1.383	0.30 ( 0.25)	0.84	20061.5	13600.00
23	42029.00	52.79	1.366	0.30 ( 0.25)	0.84	20880.2	390.00
24	44625.49	63.89	1.260	0.30 ( 0.26)	0.87	26691.0	13100.00
25	46325.85	70.40	1.216	0.30 ( 0.26)	0.88	29795.7	11801.00
26	48846.02	79.66	1.154	0.30 ( 0.27)	0.89	34839.5	11530.00
27	50186.27	85.17	1.117	0.30 ( 0.27)	0.90	38579.9	13510.00
28	51280.18	89.94	1.084	0.30 ( 0.27)	0.91	41718.0	13010.00
29	52111.80	93.58	1.068	0.30 ( 0.27)	0.91	44147.3	13500.00
30	52438.07	95.00	1.061	0.30 ( 0.27)	0.91	45083.1	11330.00
31	53107.79	101.28	1.032	0.30 ( 0.28)	0.92	49514.1	11130.00
32	52556.41	108.90	0.998	0.30 ( 0.28)	0.93	53508.0	12330.00
33	51937.77	115.56	0.967	0.30 ( 0.28)	0.93	56851.2	12400.00
34	50948.71	124.28	0.936	0.30 ( 0.28)	0.93	60220.0	12201.00
35	50320.89	128.28	0.925	0.30 ( 0.28)	0.93	61304.7	12111.00
36	49484.15	133.69	0.911	0.30 ( 0.28)	0.93	62674.1	12101.10
37	48819.00	137.75	0.901	0.30 ( 0.28)	0.93	63523.2	10400.00
38	47007.38	145.89	0.880	0.30 ( 0.28)	0.94	64838.3	12010.00
39	45515.53	151.85	0.864	0.30 ( 0.28)	0.94	65152.0	10210.00
40	41239.50	178.21	0.796	0.30 ( 0.28)	0.94	65884.8	10100.00

TOTAL AREA (ACRES) = 65884.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 53107.79 Tc (MIN.) = 101.285

EFFECTIVE AREA (ACRES) = 49514.05 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84  
 TOTAL AREA (ACRES) = 65884.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

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FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105  
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 10.11  
 CHANNEL FLOW THRU SUBAREA (CFS) = 53107.79  
 FLOW VELOCITY (FEET/SEC.) = 20.96 FLOW DEPTH (FEET) = 10.11  
 TRAVEL TIME (MIN.) = 0.14 Tc (MIN.) = 101.42  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25548.26	11.42	3.533	0.30 ( 0.23)	0.77	3157.2	429.00
2	26931.16	12.85	3.289	0.30 ( 0.23)	0.77	3615.4	425.00
3	27346.01	13.29	3.214	0.30 ( 0.23)	0.77	3755.3	400.00
4	28330.27	14.67	2.980	0.30 ( 0.23)	0.77	4192.9	300.00
5	30746.76	19.53	2.461	0.30 ( 0.23)	0.77	5714.9	210.00
6	31292.54	21.63	2.308	0.30 ( 0.23)	0.77	6350.0	410.00
7	31774.50	22.50	2.252	0.30 ( 0.23)	0.77	6615.7	200.00
8	32072.82	23.11	2.213	0.30 ( 0.23)	0.77	6800.1	230.00
9	32253.33	23.55	2.185	0.30 ( 0.23)	0.78	6928.2	50700.00
10	32354.38	23.80	2.168	0.30 ( 0.23)	0.78	7000.9	50500.00
11	32472.21	24.14	2.146	0.30 ( 0.23)	0.78	7119.3	50600.00
12	32487.01	24.19	2.143	0.30 ( 0.23)	0.78	7134.3	220.50
13	33531.92	27.18	1.994	0.30 ( 0.23)	0.78	8152.2	110.00
14	34391.76	29.55	1.889	0.30 ( 0.23)	0.78	9003.1	100.00
15	34766.75	30.70	1.851	0.30 ( 0.23)	0.78	9405.3	100.00
16	34944.11	31.24	1.837	0.30 ( 0.23)	0.78	9592.5	50110.00
17	35886.05	33.70	1.774	0.30 ( 0.24)	0.78	10837.1	130.00
18	38015.96	39.16	1.634	0.30 ( 0.24)	0.80	13597.9	150.00
19	39223.58	42.70	1.555	0.30 ( 0.24)	0.81	15509.7	50260.00
20	40360.75	46.24	1.478	0.30 ( 0.25)	0.82	17363.5	20100.00
21	41071.29	48.64	1.426	0.30 ( 0.25)	0.83	18566.0	31100.00
22	41679.85	51.41	1.381	0.30 ( 0.25)	0.84	20061.5	13600.00
23	42029.00	52.94	1.364	0.30 ( 0.25)	0.84	20880.2	390.00
24	44625.49	64.03	1.259	0.30 ( 0.26)	0.87	26691.0	13100.00
25	46325.85	70.54	1.215	0.30 ( 0.26)	0.88	29795.7	11801.00
26	48846.02	79.80	1.153	0.30 ( 0.27)	0.89	34839.5	11530.00
27	50186.27	85.31	1.116	0.30 ( 0.27)	0.90	38579.9	13510.00
28	51280.18	90.08	1.084	0.30 ( 0.27)	0.91	41718.0	13010.00
29	52111.80	93.72	1.067	0.30 ( 0.27)	0.91	44147.3	13500.00
30	52438.07	95.14	1.061	0.30 ( 0.27)	0.91	45083.1	11330.00
31	53107.79	101.42	1.032	0.30 ( 0.28)	0.92	49514.1	11130.00
32	52556.41	109.03	0.997	0.30 ( 0.28)	0.93	53508.0	12330.00
33	51937.77	115.70	0.967	0.30 ( 0.28)	0.93	56851.2	12400.00
34	50948.71	124.42	0.936	0.30 ( 0.28)	0.93	60220.0	12201.00

35	50320.89	128.41	0.925	0.30 ( 0.28)	0.93	61304.7	12111.00
36	49484.15	133.83	0.911	0.30 ( 0.28)	0.93	62674.1	12101.10
37	48819.00	137.89	0.900	0.30 ( 0.28)	0.93	63523.2	10400.00
38	47007.38	146.03	0.879	0.30 ( 0.28)	0.94	64838.3	12010.00
39	45515.53	152.00	0.864	0.30 ( 0.28)	0.94	65152.0	10210.00
40	41239.50	178.35	0.795	0.30 ( 0.28)	0.94	65884.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 53107.79 Tc(MIN.) = 101.42  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 49514.05

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506101b.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	683.96	36.50	0.30 ( 0.30)	0.98	591.0	10100.00

TOTAL AREA(ACRES) = 591.0

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25548.26	11.42	3.533	0.30 ( 0.23)	0.77	3157.2	429.00
2	26931.16	12.85	3.289	0.30 ( 0.23)	0.77	3615.4	425.00
3	27346.01	13.29	3.214	0.30 ( 0.23)	0.77	3755.3	400.00
4	28330.27	14.67	2.980	0.30 ( 0.23)	0.77	4192.9	300.00
5	30746.76	19.53	2.461	0.30 ( 0.23)	0.77	5714.9	210.00
6	31292.54	21.63	2.308	0.30 ( 0.23)	0.77	6350.0	410.00
7	31774.50	22.50	2.252	0.30 ( 0.23)	0.77	6615.7	200.00
8	32072.82	23.11	2.213	0.30 ( 0.23)	0.77	6800.1	230.00
9	32253.33	23.55	2.185	0.30 ( 0.23)	0.78	6928.2	50700.00
10	32354.38	23.80	2.168	0.30 ( 0.23)	0.78	7000.9	50500.00
11	32472.21	24.14	2.146	0.30 ( 0.23)	0.78	7119.3	50600.00
12	32487.01	24.19	2.143	0.30 ( 0.23)	0.78	7134.3	220.50
13	33531.92	27.18	1.994	0.30 ( 0.23)	0.78	8152.2	110.00
14	34391.76	29.55	1.889	0.30 ( 0.23)	0.78	9003.1	100.00
15	34766.75	30.70	1.851	0.30 ( 0.23)	0.78	9405.3	100.00
16	34944.11	31.24	1.837	0.30 ( 0.23)	0.78	9592.5	50110.00
17	35886.05	33.70	1.774	0.30 ( 0.24)	0.78	10837.1	130.00
18	38015.96	39.16	1.634	0.30 ( 0.24)	0.80	13597.9	150.00
19	39223.58	42.70	1.555	0.30 ( 0.24)	0.81	15509.7	50260.00
20	40360.75	46.24	1.478	0.30 ( 0.25)	0.82	17363.5	20100.00

21	41071.29	48.64	1.426	0.30 ( 0.25)	0.83	18566.0	31100.00
22	41679.85	51.41	1.381	0.30 ( 0.25)	0.84	20061.5	13600.00
23	42029.00	52.94	1.364	0.30 ( 0.25)	0.84	20880.2	390.00
24	44625.49	64.03	1.259	0.30 ( 0.26)	0.87	26691.0	13100.00
25	46325.85	70.54	1.215	0.30 ( 0.26)	0.88	29795.7	11801.00
26	48846.02	79.80	1.153	0.30 ( 0.27)	0.89	34839.5	11530.00
27	50186.27	85.31	1.116	0.30 ( 0.27)	0.90	38579.9	13510.00
28	51280.18	90.08	1.084	0.30 ( 0.27)	0.91	41718.0	13010.00
29	52111.80	93.72	1.067	0.30 ( 0.27)	0.91	44147.3	13500.00
30	52438.07	95.14	1.061	0.30 ( 0.27)	0.91	45083.1	11330.00
31	53107.79	101.42	1.032	0.30 ( 0.28)	0.92	49514.1	11130.00
32	52556.41	109.03	0.997	0.30 ( 0.28)	0.93	53508.0	12330.00
33	51937.77	115.70	0.967	0.30 ( 0.28)	0.93	56851.2	12400.00
34	50948.71	124.42	0.936	0.30 ( 0.28)	0.93	60220.0	12201.00
35	50320.89	128.41	0.925	0.30 ( 0.28)	0.93	61304.7	12111.00
36	49484.15	133.83	0.911	0.30 ( 0.28)	0.93	62674.1	12101.10
37	48819.00	137.89	0.900	0.30 ( 0.28)	0.93	63523.2	10400.00
38	47007.38	146.03	0.879	0.30 ( 0.28)	0.94	64838.3	12010.00
39	45515.53	152.00	0.864	0.30 ( 0.28)	0.94	65152.0	10210.00
40	41239.50	178.35	0.795	0.30 ( 0.28)	0.94	65884.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	683.96	36.50	1.703	0.30 ( 0.30)	0.98	591.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 14677.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26040.40	11.42	3.533	0.30 ( 0.24)	0.79	3342.0	429.00
2	27443.44	12.85	3.289	0.30 ( 0.24)	0.78	3823.5	425.00
3	27862.58	13.29	3.214	0.30 ( 0.24)	0.78	3970.5	400.00
4	28854.64	14.67	2.980	0.30 ( 0.24)	0.78	4430.4	300.00
5	31309.90	19.53	2.461	0.30 ( 0.24)	0.78	6031.1	210.00
6	31872.15	21.63	2.308	0.30 ( 0.24)	0.78	6700.1	410.00
7	32360.68	22.50	2.252	0.30 ( 0.24)	0.79	6980.0	200.00
8	32662.80	23.11	2.213	0.30 ( 0.24)	0.79	7174.3	230.00
9	32845.64	23.55	2.185	0.30 ( 0.24)	0.79	7309.4	50700.00
10	32947.91	23.80	2.168	0.30 ( 0.24)	0.79	7386.3	50500.00
11	33067.17	24.14	2.146	0.30 ( 0.24)	0.79	7510.2	50600.00
12	33082.14	24.19	2.143	0.30 ( 0.24)	0.79	7525.9	220.50
13	34146.73	27.18	1.994	0.30 ( 0.24)	0.79	8592.3	110.00
14	35018.79	29.55	1.889	0.30 ( 0.24)	0.79	9481.6	100.00
15	35402.67	30.70	1.851	0.30 ( 0.24)	0.79	9902.3	100.00
16	35585.49	31.24	1.837	0.30 ( 0.24)	0.79	10098.3	50110.00
17	36549.64	33.70	1.774	0.30 ( 0.24)	0.79	11382.7	130.00
18	37664.23	36.50	1.703	0.30 ( 0.24)	0.80	12846.4	10100.00
19	38666.86	39.16	1.634	0.30 ( 0.24)	0.80	14188.9	150.00
20	39835.75	42.70	1.555	0.30 ( 0.24)	0.81	16100.7	50260.00
21	40935.76	46.24	1.478	0.30 ( 0.25)	0.83	17954.5	20100.00
22	41621.07	48.64	1.426	0.30 ( 0.25)	0.83	19157.0	31100.00
23	42207.77	51.41	1.381	0.30 ( 0.25)	0.84	20652.5	13600.00
24	42548.65	52.94	1.364	0.30 ( 0.25)	0.84	21471.2	390.00
25	45093.86	64.03	1.259	0.30 ( 0.26)	0.87	27282.0	13100.00
26	46772.93	70.54	1.215	0.30 ( 0.26)	0.88	30386.7	11801.00
27	49262.79	79.80	1.153	0.30 ( 0.27)	0.89	35430.5	11530.00

28	50585.02	85.31	1.116	0.30	( 0.27)	0.90	39170.9	13510.00
29	51663.41	90.08	1.084	0.30	( 0.27)	0.91	42309.0	13010.00
30	52486.95	93.72	1.067	0.30	( 0.27)	0.91	44738.3	13500.00
31	52810.06	95.14	1.061	0.30	( 0.27)	0.91	45674.1	11330.00
32	53465.85	101.42	1.032	0.30	( 0.28)	0.92	50105.1	11130.00
33	52897.58	109.03	0.997	0.30	( 0.28)	0.93	54099.0	12330.00
34	52264.14	115.70	0.967	0.30	( 0.28)	0.93	57442.2	12400.00
35	51259.96	124.42	0.936	0.30	( 0.28)	0.93	60811.0	12201.00
36	50627.09	128.41	0.925	0.30	( 0.28)	0.93	61895.7	12111.00
37	49783.50	133.83	0.911	0.30	( 0.28)	0.93	63265.1	12101.10
38	49113.22	137.89	0.900	0.30	( 0.28)	0.94	64114.2	10400.00
39	47291.31	146.03	0.879	0.30	( 0.28)	0.94	65429.3	12010.00
40	45791.93	152.00	0.864	0.30	( 0.28)	0.94	65743.0	10210.00
41	41482.59	178.35	0.795	0.30	( 0.28)	0.94	66475.8	10100.00

TOTAL AREA (ACRES) = 66475.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 53465.85 Tc (MIN.) = 101.420  
EFFECTIVE AREA (ACRES) = 50105.05 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 66475.8  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

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FLOW PROCESS FROM NODE 13412.00 TO NODE 13700.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 176.93 DOWNSTREAM (FEET) = 173.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 260.10 CHANNEL SLOPE = 0.0151  
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 9.17  
CHANNEL FLOW THRU SUBAREA (CFS) = 53465.85  
FLOW VELOCITY (FEET/SEC.) = 23.71 FLOW DEPTH (FEET) = 9.17  
TRAVEL TIME (MIN.) = 0.18 Tc (MIN.) = 101.60  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26040.40	11.65	3.494	0.30 ( 0.24)	0.79	3342.0	429.00
2	27443.44	13.08	3.250	0.30 ( 0.24)	0.78	3823.5	425.00
3	27862.58	13.52	3.176	0.30 ( 0.24)	0.78	3970.5	400.00
4	28854.64	14.90	2.942	0.30 ( 0.24)	0.78	4430.4	300.00
5	31309.90	19.75	2.439	0.30 ( 0.24)	0.78	6031.1	210.00
6	31872.15	21.84	2.294	0.30 ( 0.24)	0.78	6700.1	410.00
7	32360.68	22.72	2.238	0.30 ( 0.24)	0.79	6980.0	200.00
8	32662.80	23.33	2.199	0.30 ( 0.24)	0.79	7174.3	230.00
9	32845.64	23.76	2.171	0.30 ( 0.24)	0.79	7309.4	50700.00
10	32947.91	24.02	2.154	0.30 ( 0.24)	0.79	7386.3	50500.00
11	33067.17	24.36	2.132	0.30 ( 0.24)	0.79	7510.2	50600.00
12	33082.14	24.40	2.130	0.30 ( 0.24)	0.79	7525.9	220.50
13	34146.73	27.39	1.985	0.30 ( 0.24)	0.79	8592.3	110.00
14	35018.79	29.76	1.879	0.30 ( 0.24)	0.79	9481.6	100.00
15	35402.67	30.91	1.846	0.30 ( 0.24)	0.79	9902.3	100.00
16	35585.49	31.45	1.832	0.30 ( 0.24)	0.79	10098.3	50110.00

17	36549.64	33.90	1.769	0.30	( 0.24)	0.79	11382.7	130.00
18	37664.23	36.71	1.697	0.30	( 0.24)	0.80	12846.4	10100.00
19	38666.86	39.37	1.629	0.30	( 0.24)	0.80	14188.9	150.00
20	39835.75	42.90	1.550	0.30	( 0.24)	0.81	16100.7	50260.00
21	40935.76	46.44	1.474	0.30	( 0.25)	0.83	17954.5	20100.00
22	41621.07	48.84	1.422	0.30	( 0.25)	0.83	19157.0	31100.00
23	42207.77	51.60	1.379	0.30	( 0.25)	0.84	20652.5	13600.00
24	42548.65	53.14	1.362	0.30	( 0.25)	0.84	21471.2	390.00
25	45093.86	64.23	1.258	0.30	( 0.26)	0.87	27282.0	13100.00
26	46772.93	70.73	1.214	0.30	( 0.26)	0.88	30386.7	11801.00
27	49262.79	79.99	1.151	0.30	( 0.27)	0.89	35430.5	11530.00
28	50585.02	85.49	1.114	0.30	( 0.27)	0.90	39170.9	13510.00
29	51663.41	90.26	1.083	0.30	( 0.27)	0.91	42309.0	13010.00
30	52486.95	93.90	1.066	0.30	( 0.27)	0.91	44738.3	13500.00
31	52810.06	95.32	1.060	0.30	( 0.27)	0.91	45674.1	11330.00
32	53465.85	101.60	1.031	0.30	( 0.28)	0.92	50105.1	11130.00
33	52897.58	109.22	0.996	0.30	( 0.28)	0.93	54099.0	12330.00
34	52264.14	115.88	0.966	0.30	( 0.28)	0.93	57442.2	12400.00
35	51259.96	124.60	0.935	0.30	( 0.28)	0.93	60811.0	12201.00
36	50627.09	128.60	0.925	0.30	( 0.28)	0.93	61895.7	12111.00
37	49783.50	134.02	0.911	0.30	( 0.28)	0.93	63265.1	12101.10
38	49113.22	138.08	0.900	0.30	( 0.28)	0.94	64114.2	10400.00
39	47291.31	146.22	0.879	0.30	( 0.28)	0.94	65429.3	12010.00
40	45791.93	152.19	0.863	0.30	( 0.28)	0.94	65743.0	10210.00
41	41482.59	178.55	0.795	0.30	( 0.28)	0.94	66475.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 53465.85 Tc (MIN.) = 101.60  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 50105.05

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FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 2 <<<<<

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FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: P508XXCE.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	213.71	21.83	0.30 ( 0.30)	0.99	131.3	50800.00

TOTAL AREA (ACRES) = 131.3

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FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26040.40	11.65	3.494	0.30 ( 0.24)	0.79	3342.0	429.00

2	27443.44	13.08	3.250	0.30 ( 0.24)	0.78	3823.5	425.00
3	27862.58	13.52	3.176	0.30 ( 0.24)	0.78	3970.5	400.00
4	28854.64	14.90	2.942	0.30 ( 0.24)	0.78	4430.4	300.00
5	31309.90	19.75	2.439	0.30 ( 0.24)	0.78	6031.1	210.00
6	31872.15	21.84	2.294	0.30 ( 0.24)	0.78	6700.1	410.00
7	32360.68	22.72	2.238	0.30 ( 0.24)	0.79	6980.0	200.00
8	32662.80	23.33	2.199	0.30 ( 0.24)	0.79	7174.3	230.00
9	32845.64	23.76	2.171	0.30 ( 0.24)	0.79	7309.4	50700.00
10	32947.91	24.02	2.154	0.30 ( 0.24)	0.79	7386.3	50500.00
11	33067.17	24.36	2.132	0.30 ( 0.24)	0.79	7510.2	50600.00
12	33082.14	24.40	2.130	0.30 ( 0.24)	0.79	7525.9	220.50
13	34146.73	27.39	1.985	0.30 ( 0.24)	0.79	8592.3	110.00
14	35018.79	29.76	1.879	0.30 ( 0.24)	0.79	9481.6	100.00
15	35402.67	30.91	1.846	0.30 ( 0.24)	0.79	9902.3	100.00
16	35585.49	31.45	1.832	0.30 ( 0.24)	0.79	10098.3	50110.00
17	36549.64	33.90	1.769	0.30 ( 0.24)	0.79	11382.7	130.00
18	37664.23	36.71	1.697	0.30 ( 0.24)	0.80	12846.4	10100.00
19	38666.86	39.37	1.629	0.30 ( 0.24)	0.80	14188.9	150.00
20	39835.75	42.90	1.550	0.30 ( 0.24)	0.81	16100.7	50260.00
21	40935.76	46.44	1.474	0.30 ( 0.25)	0.83	17954.5	20100.00
22	41621.07	48.84	1.422	0.30 ( 0.25)	0.83	19157.0	31100.00
23	42207.77	51.60	1.379	0.30 ( 0.25)	0.84	20652.5	13600.00
24	42548.65	53.14	1.362	0.30 ( 0.25)	0.84	21471.2	390.00
25	45093.86	64.23	1.258	0.30 ( 0.26)	0.87	27282.0	13100.00
26	46772.93	70.73	1.214	0.30 ( 0.26)	0.88	30386.7	11801.00
27	49262.79	79.99	1.151	0.30 ( 0.27)	0.89	35430.5	11530.00
28	50585.02	85.49	1.114	0.30 ( 0.27)	0.90	39170.9	13510.00
29	51663.41	90.26	1.083	0.30 ( 0.27)	0.91	42309.0	13010.00
30	52486.95	93.90	1.066	0.30 ( 0.27)	0.91	44738.3	13500.00
31	52810.06	95.32	1.060	0.30 ( 0.27)	0.91	45674.1	11330.00
32	53465.85	101.60	1.031	0.30 ( 0.28)	0.92	50105.1	11130.00
33	52897.58	109.22	0.996	0.30 ( 0.28)	0.93	54099.0	12330.00
34	52264.14	115.88	0.966	0.30 ( 0.28)	0.93	57442.2	12400.00
35	51259.96	124.60	0.935	0.30 ( 0.28)	0.93	60811.0	12201.00
36	50627.09	128.60	0.925	0.30 ( 0.28)	0.93	61895.7	12111.00
37	49783.50	134.02	0.911	0.30 ( 0.28)	0.93	63265.1	12101.10
38	49113.22	138.08	0.900	0.30 ( 0.28)	0.94	64114.2	10400.00
39	47291.31	146.22	0.879	0.30 ( 0.28)	0.94	65429.3	12010.00
40	45791.93	152.19	0.863	0.30 ( 0.28)	0.94	65743.0	10210.00
41	41482.59	178.55	0.795	0.30 ( 0.28)	0.94	66475.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

\*\* MEMORY BANK # 2 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	213.71	21.83	2.295	0.30 ( 0.30)	0.99	131.3	50800.00

LONGEST FLOWPATH FROM NODE 50800.00 TO NODE 13700.00 = 5946.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26222.83	11.65	3.494	0.30 ( 0.24)	0.79	3412.1	429.00
2	27632.70	13.08	3.250	0.30 ( 0.24)	0.79	3902.1	425.00
3	28053.25	13.52	3.176	0.30 ( 0.24)	0.79	4051.8	400.00
4	29047.65	14.90	2.942	0.30 ( 0.24)	0.79	4520.0	300.00
5	31517.12	19.75	2.439	0.30 ( 0.24)	0.79	6149.8	210.00
6	32081.31	21.83	2.295	0.30 ( 0.24)	0.79	6826.0	50800.00
7	32085.75	21.84	2.294	0.30 ( 0.24)	0.79	6831.4	410.00

8	32568.26	22.72	2.238	0.30 ( 0.24)	0.79	7111.3	200.00
9	32866.19	23.33	2.199	0.30 ( 0.24)	0.79	7305.6	230.00
10	33046.03	23.76	2.171	0.30 ( 0.24)	0.79	7440.7	50700.00
11	33146.54	24.02	2.154	0.30 ( 0.24)	0.79	7517.6	50500.00
12	33263.46	24.36	2.132	0.30 ( 0.24)	0.79	7641.5	50600.00
13	33278.13	24.40	2.130	0.30 ( 0.24)	0.79	7657.2	220.50
14	34327.25	27.39	1.985	0.30 ( 0.24)	0.79	8723.6	110.00
15	35188.05	29.76	1.879	0.30 ( 0.24)	0.79	9612.9	100.00
16	35568.32	30.91	1.846	0.30 ( 0.24)	0.79	10033.6	100.00
17	35749.66	31.45	1.832	0.30 ( 0.24)	0.79	10229.6	50110.00
18	36707.09	33.90	1.769	0.30 ( 0.24)	0.80	11514.0	130.00
19	37814.00	36.71	1.697	0.30 ( 0.24)	0.80	12977.7	10100.00
20	38809.36	39.37	1.629	0.30 ( 0.24)	0.81	14320.2	150.00
21	39969.83	42.90	1.550	0.30 ( 0.24)	0.82	16232.0	50260.00
22	41061.66	46.44	1.474	0.30 ( 0.25)	0.83	18085.8	20100.00
23	41741.43	48.84	1.422	0.30 ( 0.25)	0.83	19288.3	31100.00
24	42323.54	51.60	1.379	0.30 ( 0.25)	0.84	20783.8	13600.00
25	42662.60	53.14	1.362	0.30 ( 0.25)	0.84	21602.5	390.00
26	45196.62	64.23	1.258	0.30 ( 0.26)	0.87	27413.3	13100.00
27	46871.01	70.73	1.214	0.30 ( 0.26)	0.88	30518.0	11801.00
28	49354.20	79.99	1.151	0.30 ( 0.27)	0.89	35561.8	11530.00
29	50672.47	85.49	1.114	0.30 ( 0.27)	0.90	39302.2	13510.00
30	51747.49	90.26	1.083	0.30 ( 0.27)	0.91	42440.3	13010.00
31	52569.24	93.90	1.066	0.30 ( 0.27)	0.91	44869.6	13500.00
32	52891.66	95.32	1.060	0.30 ( 0.27)	0.91	45805.4	11330.00
33	53544.39	101.60	1.031	0.30 ( 0.28)	0.92	50236.4	11130.00
34	52972.41	109.22	0.996	0.30 ( 0.28)	0.93	54230.3	12330.00
35	52335.71	115.88	0.966	0.30 ( 0.28)	0.93	57573.5	12400.00
36	51328.23	124.60	0.935	0.30 ( 0.28)	0.93	60942.3	12201.00
37	50694.26	128.60	0.925	0.30 ( 0.28)	0.93	62027.0	12111.00
38	49849.16	134.02	0.911	0.30 ( 0.28)	0.93	63396.4	12101.10
39	49177.75	138.08	0.900	0.30 ( 0.28)	0.94	64245.5	10400.00
40	47353.58	146.22	0.879	0.30 ( 0.28)	0.94	65560.6	12010.00
41	45852.54	152.19	0.863	0.30 ( 0.28)	0.94	65874.3	10210.00
42	41535.88	178.55	0.795	0.30 ( 0.28)	0.94	66607.1	10100.00

TOTAL AREA (ACRES) = 66607.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) =	53544.39	Tc (MIN.) =	101.603
EFFECTIVE AREA (ACRES) =	50236.36	AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30	AREA-AVERAGED Ap =	0.91
TOTAL AREA (ACRES) =	66607.1		
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 =	124551.97 FEET.		

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) =	66607.1	TC (MIN.) =	101.60
EFFECTIVE AREA (ACRES) =	50236.36	AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30	AREA-AVERAGED Ap =	0.921
PEAK FLOW RATE (CFS) =	53544.39		

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26222.83	11.65	3.494	0.30 ( 0.24)	0.79	3412.1	429.00
2	27632.70	13.08	3.250	0.30 ( 0.24)	0.79	3902.1	425.00
3	28053.25	13.52	3.176	0.30 ( 0.24)	0.79	4051.8	400.00
4	29047.65	14.90	2.942	0.30 ( 0.24)	0.79	4520.0	300.00
5	31517.12	19.75	2.439	0.30 ( 0.24)	0.79	6149.8	210.00

6	32081.31	21.83	2.295	0.30	( 0.24)	0.79	6826.0	50800.00
7	32085.75	21.84	2.294	0.30	( 0.24)	0.79	6831.4	410.00
8	32568.26	22.72	2.238	0.30	( 0.24)	0.79	7111.3	200.00
9	32866.19	23.33	2.199	0.30	( 0.24)	0.79	7305.6	230.00
10	33046.03	23.76	2.171	0.30	( 0.24)	0.79	7440.7	50700.00
11	33146.54	24.02	2.154	0.30	( 0.24)	0.79	7517.6	50500.00
12	33263.46	24.36	2.132	0.30	( 0.24)	0.79	7641.5	50600.00
13	33278.13	24.40	2.130	0.30	( 0.24)	0.79	7657.2	220.50
14	34327.25	27.39	1.985	0.30	( 0.24)	0.79	8723.6	110.00
15	35188.05	29.76	1.879	0.30	( 0.24)	0.79	9612.9	100.00
16	35568.32	30.91	1.846	0.30	( 0.24)	0.79	10033.6	100.00
17	35749.66	31.45	1.832	0.30	( 0.24)	0.79	10229.6	50110.00
18	36707.09	33.90	1.769	0.30	( 0.24)	0.80	11514.0	130.00
19	37814.00	36.71	1.697	0.30	( 0.24)	0.80	12977.7	10100.00
20	38809.36	39.37	1.629	0.30	( 0.24)	0.81	14320.2	150.00
21	39969.83	42.90	1.550	0.30	( 0.24)	0.82	16232.0	50260.00
22	41061.66	46.44	1.474	0.30	( 0.25)	0.83	18085.8	20100.00
23	41741.43	48.84	1.422	0.30	( 0.25)	0.83	19288.3	31100.00
24	42323.54	51.60	1.379	0.30	( 0.25)	0.84	20783.8	13600.00
25	42662.60	53.14	1.362	0.30	( 0.25)	0.84	21602.5	390.00
26	45196.62	64.23	1.258	0.30	( 0.26)	0.87	27413.3	13100.00
27	46871.01	70.73	1.214	0.30	( 0.26)	0.88	30518.0	11801.00
28	49354.20	79.99	1.151	0.30	( 0.27)	0.89	35561.8	11530.00
29	50672.47	85.49	1.114	0.30	( 0.27)	0.90	39302.2	13510.00
30	51747.49	90.26	1.083	0.30	( 0.27)	0.91	42440.3	13010.00
31	52569.24	93.90	1.066	0.30	( 0.27)	0.91	44869.6	13500.00
32	52891.66	95.32	1.060	0.30	( 0.27)	0.91	45805.4	11330.00
33	53544.39	101.60	1.031	0.30	( 0.28)	0.92	50236.4	11130.00
34	52972.41	109.22	0.996	0.30	( 0.28)	0.93	54230.3	12330.00
35	52335.71	115.88	0.966	0.30	( 0.28)	0.93	57573.5	12400.00
36	51328.23	124.60	0.935	0.30	( 0.28)	0.93	60942.3	12201.00
37	50694.26	128.60	0.925	0.30	( 0.28)	0.93	62027.0	12111.00
38	49849.16	134.02	0.911	0.30	( 0.28)	0.93	63396.4	12101.10
39	49177.75	138.08	0.900	0.30	( 0.28)	0.94	64245.5	10400.00
40	47353.58	146.22	0.879	0.30	( 0.28)	0.94	65560.6	12010.00
41	45852.54	152.19	0.863	0.30	( 0.28)	0.94	65874.3	10210.00
42	41535.88	178.55	0.795	0.30	( 0.28)	0.94	66607.1	10100.00

=====  
 END OF RATIONAL METHOD ANALYSIS  
 =====

\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S36- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV36.DAT  
TIME/DATE OF STUDY: 11:53 03/29/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.785
- 2) 10.00; 3.744
- 3) 15.00; 2.904
- 4) 20.00; 2.401
- 5) 25.00; 2.083
- 6) 30.00; 1.861
- 7) 40.00; 1.606
- 8) 50.00; 1.392
- 9) 60.00; 1.279
- 10) 90.00; 1.075
- 11) 120.00; 0.938
- 12) 180.00; 0.782
- 13) 360.00; 0.577
- 14) 1200.00; 0.251

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61  
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.577  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "OPEN BRUSH"	-	3.39	0.30	1.000	69	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 10.00  
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 10.00

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32  
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.46  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.288  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.45	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.04  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.06  
AVERAGE FLOW DEPTH(FEET) = 0.45 TRAVEL TIME(MIN.) = 1.72  
Tc(MIN.) = 12.71  
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 20.04  
EFFECTIVE AREA(ACRES) = 10.84 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 10.8 PEAK FLOW RATE(CFS) = 29.15  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.56 FLOW VELOCITY(FEET/SEC.) = 4.67  
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13601.00 = 906.91 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13601.00 TO NODE 13602.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 707.32 DOWNSTREAM(FEET) = 657.12  
CHANNEL LENGTH THRU SUBAREA(FEET) = 777.60 CHANNEL SLOPE = 0.0646  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.03  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.898

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.32	0.30	1.000	-
USER-DEFINED	-	4.70	0.30	1.000	-
USER-DEFINED	-	25.05	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	0.44	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 65.43

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.52

AVERAGE FLOW DEPTH(FEET) = 0.99 TRAVEL TIME(MIN.) = 2.35

Tc(MIN.) = 15.06

SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 72.39  
EFFECTIVE AREA(ACRES) = 41.80 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 41.8 PEAK FLOW RATE(CFS) = 97.74  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.25 FLOW VELOCITY(FEET/SEC.) = 6.28

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13602.00 = 1684.51 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13602.00 TO NODE 13603.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 657.12 DOWNSTREAM(FEET) = 584.58  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1186.54 CHANNEL SLOPE = 0.0611  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.45  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.597

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.03	0.30	1.000	-
USER-DEFINED	-	2.51	0.30	1.000	-

USER-DEFINED - 1.52 0.30 1.000 -  
USER-DEFINED - 12.30 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 121.91

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.62

AVERAGE FLOW DEPTH(FEET) = 1.43 TRAVEL TIME(MIN.) = 2.99

Tc(MIN.) = 18.05

SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 48.30  
EFFECTIVE AREA(ACRES) = 65.16 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 65.2 PEAK FLOW RATE(CFS) = 134.74  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.52 FLOW VELOCITY(FEET/SEC.) = 6.82

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13603.00 = 2871.05 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 584.58 DOWNSTREAM(FEET) = 544.91  
CHANNEL LENGTH THRU SUBAREA(FEET) = 860.98 CHANNEL SLOPE = 0.0461  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.78  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.384

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	10.22	0.30	1.000	-
USER-DEFINED	-	4.19	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	1.11	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-
USER-DEFINED	-	0.09	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 154.66

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.47

AVERAGE FLOW DEPTH(FEET) = 1.77 TRAVEL TIME(MIN.) = 2.22

Tc(MIN.) = 20.27

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 39.84  
EFFECTIVE AREA(ACRES) = 86.40 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 86.4 PEAK FLOW RATE(CFS) = 162.06  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 1.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.82 FLOW VELOCITY(FEET/SEC.) = 6.53

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

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*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 10
-----
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 2 <<<<<
=====
PEAK FLOWRATE TABLE FILE NAME: S35X00.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1      1365.67  51.63  0.30( 0.28) 0.95    1517.0  13510.00
  2      1241.97  59.58  0.30( 0.28) 0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13522.00 IS CODE = 14.0
-----
>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<
=====
MAIN-STREAM MEMORY DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)    (ACRES)  NODE
  1      1365.67  51.63  0.30( 0.28) 0.95    1517.0  13510.00
  2      1241.97  59.58  0.30( 0.28) 0.94    1579.8  13500.00
TOTAL AREA(ACRES) =      1579.8

*****
FLOW PROCESS FROM NODE 13522.00 TO NODE 13620.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 632.19 DOWNSTREAM(FEET) = 544.91
CHANNEL LENGTH THRU SUBAREA(FEET) = 2062.96 CHANNEL SLOPE = 0.0423
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.76
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.344
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED      -      17.68      0.30      1.000      -
USER-DEFINED      -      2.36      0.30      1.000      -
USER-DEFINED      -      0.60      0.30      1.000      -
USER-DEFINED      -      0.22      0.30      1.000      -
USER-DEFINED      -      2.22      0.30      1.000      -
USER-DEFINED      -      3.42      0.30      1.000      -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1378.12
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.05

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AVERAGE FLOW DEPTH(FEET) = 2.76 TRAVEL TIME(MIN.) = 2.63
Tc(MIN.) = 54.26
SUBAREA AREA(ACRES) = 26.50 SUBAREA RUNOFF(CFS) = 24.90
EFFECTIVE AREA(ACRES) = 1543.46 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1606.3 PEAK FLOW RATE(CFS) = 1471.93
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.87 FLOW VELOCITY(FEET/SEC.) = 13.31
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1471.93  54.26  1.344  0.30( 0.28) 0.95    1543.5  13510.00
  2      1416.51  62.30  1.263  0.30( 0.28) 0.95    1606.3  13500.00
NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 1471.93 Tc(MIN.) = 54.26
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 1543.46

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 54.26
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.344
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE      GROUP      (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      1.44      0.30      1.000      65
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      0.01      0.30      1.000      65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 1.36
EFFECTIVE AREA(ACRES) = 1544.91 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 1473.29

*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1473.29  54.26  1.344  0.30( 0.28) 0.95    1544.9  13510.00
  2      1417.77  62.30  1.263  0.30( 0.28) 0.95    1607.8  13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

```



\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	162.06	20.27	2.384	0.30 ( 0.30)	1.00	86.4	13600.00

LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1252.52	20.27	2.384	0.30 ( 0.29)	0.95	663.4	13600.00
2	1554.47	54.26	1.344	0.30 ( 0.29)	0.95	1631.3	13510.00
3	1492.69	62.30	1.263	0.30 ( 0.28)	0.95	1694.2	13500.00

TOTAL AREA (ACRES) = 1694.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1554.47 Tc(MIN.) = 54.262  
EFFECTIVE AREA(ACRES) = 1631.31 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1694.2  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13620.00 TO NODE 13640.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

-----  
ELEVATION DATA: UPSTREAM(FEET) = 544.91 DOWNSTREAM(FEET) = 489.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1384.37 CHANNEL SLOPE = 0.0404  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.02

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.324  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.39	0.30	1.000	-
USER-DEFINED	-	16.30	0.30	1.000	-
USER-DEFINED	-	4.08	0.30	1.000	-
USER-DEFINED	-	12.36	0.30	1.000	-
USER-DEFINED	-	11.23	0.30	1.000	-
USER-DEFINED	-	5.16	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1579.60  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.40  
AVERAGE FLOW DEPTH(FEET) = 3.02 TRAVEL TIME(MIN.) = 1.72  
Tc(MIN.) = 55.98  
SUBAREA AREA(ACRES) = 54.52 SUBAREA RUNOFF(CFS) = 50.27  
EFFECTIVE AREA(ACRES) = 1685.83 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1748.7 PEAK FLOW RATE(CFS) = 1576.17  
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 3.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 3.02 FLOW VELOCITY(FEET/SEC.) = 13.38

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1279.42	22.10	2.267	0.30 ( 0.29)	0.96	717.9	13600.00
2	1576.17	55.98	1.324	0.30 ( 0.29)	0.95	1685.8	13510.00
3	1521.30	64.04	1.252	0.30 ( 0.28)	0.95	1748.7	13500.00

NEW PEAK FLOW DATA ARE:  
PEAK FLOW RATE(CFS) = 1576.17 Tc(MIN.) = 55.98  
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA(ACRES) = 1685.83

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 81  
-----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

-----  
MAINLINE Tc(MIN.) = 55.98  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.324  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	53.93	0.30	1.000	-
USER-DEFINED	-	0.45	0.30	1.000	-
USER-DEFINED	-	3.98	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA(ACRES) = 58.36 SUBAREA RUNOFF(CFS) = 53.81  
EFFECTIVE AREA(ACRES) = 1744.19 AREA-AVERAGED Fm(INCH/HR) = 0.29  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA(ACRES) = 1807.1 PEAK FLOW RATE(CFS) = 1629.97

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 3 <<<<<

-----  
PEAK FLOWRATE TABLE FILE NAME: P201XXCE.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	262.78	16.94	0.30 ( 0.26)	0.85	133.8	20100.00

TOTAL AREA(ACRES) = 133.8

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13640.00 TO NODE 13640.00 IS CODE = 11  
-----

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\*\*\*\*  
\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1382.76	22.10	2.267	0.30 ( 0.29)	0.96	776.3	13600.00
2	1629.97	55.98	1.324	0.30 ( 0.29)	0.95	1744.2	13510.00
3	1571.28	64.04	1.252	0.30 ( 0.29)	0.95	1807.1	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	262.78	16.94	2.709	0.30 ( 0.26)	0.85	133.8	20100.00

LONGEST FLOWPATH FROM NODE 20100.00 TO NODE 13640.00 = 5247.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1559.13	16.94	2.709	0.30 ( 0.28)	0.94	728.9	20100.00
2	1598.27	22.10	2.267	0.30 ( 0.28)	0.95	910.1	13600.00
3	1744.43	55.98	1.324	0.30 ( 0.28)	0.95	1878.0	13510.00
4	1677.93	64.04	1.252	0.30 ( 0.28)	0.94	1940.9	13500.00

TOTAL AREA (ACRES) = 1940.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 1744.43 Tc (MIN.) = 55.984  
EFFECTIVE AREA (ACRES) = 1877.99 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA (ACRES) = 1940.9  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13640.00 = 22062.09 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 489.00 DOWNSTREAM (FEET) = 436.89  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2994.52 CHANNEL SLOPE = 0.0174  
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.06  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.274

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.96	0.30	1.000	-
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	10.45	0.30	1.000	-
USER-DEFINED	-	44.94	0.30	1.000	-
USER-DEFINED	-	9.66	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1774.04  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.37  
AVERAGE FLOW DEPTH (FEET) = 4.06 TRAVEL TIME (MIN.) = 4.81  
Tc (MIN.) = 60.80  
SUBAREA AREA (ACRES) = 67.58 SUBAREA RUNOFF (CFS) = 59.22  
EFFECTIVE AREA (ACRES) = 1945.57 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA (ACRES) = 2008.4 PEAK FLOW RATE (CFS) = 1744.43  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.02

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 4.02 FLOW VELOCITY (FEET/SEC.) = 10.31  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13641.00 = 25056.61 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1559.13	21.89	2.280	0.30 ( 0.28)	0.95	796.5	20100.00
2	1598.27	27.02	1.993	0.30 ( 0.28)	0.95	977.7	13600.00
3	1744.43	60.80	1.274	0.30 ( 0.28)	0.95	1945.6	13510.00
4	1689.13	68.91	1.218	0.30 ( 0.28)	0.95	2008.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 1744.43 Tc (MIN.) = 60.80  
AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.95 EFFECTIVE AREA (ACRES) = 1945.57

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 60.80  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.274

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	16.49	0.30	1.000	-
USER-DEFINED	-	20.39	0.30	1.000	-
USER-DEFINED	-	7.02	0.30	1.000	-
USER-DEFINED	-	12.58	0.30	1.000	-
USER-DEFINED	-	42.49	0.30	1.000	-
USER-DEFINED	-	5.73	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 104.70 SUBAREA RUNOFF (CFS) = 91.75  
EFFECTIVE AREA (ACRES) = 2050.27 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA (ACRES) = 2113.1 PEAK FLOW RATE (CFS) = 1823.72

\*\*\*\*\*

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 60.80  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.274

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.78	0.30	1.000	-
USER-DEFINED	-	6.25	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 8.03 SUBAREA RUNOFF (CFS) = 7.04  
EFFECTIVE AREA (ACRES) = 2058.30 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
TOTAL AREA (ACRES) = 2121.2 PEAK FLOW RATE (CFS) = 1830.76

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*****
FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM( FEET) = 436.89 DOWNSTREAM( FEET) = 394.80
CHANNEL LENGTH THRU SUBAREA( FEET) = 2814.16 CHANNEL SLOPE = 0.0150
GIVEN CHANNEL BASE( FEET) = 30.00 CHANNEL FREEBOARD( FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT( FEET) = 4.42
* 100 YEAR RAINFALL INTENSITY( INCH/HR) = 1.242
SUBAREA LOSS RATE DATA( AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.67 0.30 1.000 -
USER-DEFINED - 24.24 0.30 1.000 -
USER-DEFINED - 1.34 0.30 1.000 -
USER-DEFINED - 74.98 0.30 1.000 -
USER-DEFINED - 101.12 0.30 1.000 -
USER-DEFINED - 16.90 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp( INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW( CFS) = 1923.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 10.06
AVERAGE FLOW DEPTH( FEET) = 4.42 TRAVEL TIME( MIN.) = 4.66
Tc( MIN.) = 65.46
SUBAREA AREA( ACRES) = 219.25 SUBAREA RUNOFF( CFS) = 185.87
EFFECTIVE AREA( ACRES) = 2277.55 AREA-AVERAGED Fm( INCH/HR) = 0.29
AREA-AVERAGED Fp( INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA( ACRES) = 2340.4 PEAK FLOW RATE( CFS) = 1957.90
GIVEN CHANNEL BASE( FEET) = 30.00 CHANNEL FREEBOARD( FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT( FEET) = 4.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH( FEET) = 4.46 FLOW VELOCITY( FEET/SEC.) = 10.12
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13642.00 = 27870.77 FEET.
```

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1748.35	26.64	2.010	0.30( 0.29)	0.96	1128.5	20100.00
2	1800.72	31.75	1.816	0.30( 0.29)	0.96	1309.6	13600.00
3	1957.90	65.46	1.242	0.30( 0.29)	0.96	2277.5	13510.00
4	1896.24	73.61	1.186	0.30( 0.29)	0.95	2340.4	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE( CFS) = 1957.90 Tc( MIN.) = 65.46  
 AREA-AVERAGED Fm( INCH/HR) = 0.29 AREA-AVERAGED Fp( INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA( ACRES) = 2277.55

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*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc( MIN.) = 65.46
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* 100 YEAR RAINFALL INTENSITY( INCH/HR) = 1.242
SUBAREA LOSS RATE DATA( AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 9.95 0.30 1.000 -
USER-DEFINED - 10.02 0.30 1.000 -
USER-DEFINED - 4.45 0.30 1.000 -
USER-DEFINED - 179.37 0.30 1.000 -
USER-DEFINED - 11.47 0.30 1.000 -
USER-DEFINED - 0.17 0.30 0.850 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp( INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA( ACRES) = 215.43 SUBAREA RUNOFF( CFS) = 182.64
EFFECTIVE AREA( ACRES) = 2492.98 AREA-AVERAGED Fm( INCH/HR) = 0.29
AREA-AVERAGED Fp( INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA( ACRES) = 2555.9 PEAK FLOW RATE( CFS) = 2140.54
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*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc( MIN.) = 65.46
* 100 YEAR RAINFALL INTENSITY( INCH/HR) = 1.242
SUBAREA LOSS RATE DATA( AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.03 0.30 0.850 -
USER-DEFINED - 5.14 0.30 1.000 -
USER-DEFINED - 11.22 0.30 1.000 -
USER-DEFINED - 0.33 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp( INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA( ACRES) = 16.72 SUBAREA RUNOFF( CFS) = 14.18
EFFECTIVE AREA( ACRES) = 2509.70 AREA-AVERAGED Fm( INCH/HR) = 0.29
AREA-AVERAGED Fp( INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA( ACRES) = 2572.6 PEAK FLOW RATE( CFS) = 2154.71
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*****
FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM( FEET) = 394.80 DOWNSTREAM( FEET) = 342.39
CHANNEL LENGTH THRU SUBAREA( FEET) = 2913.57 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE( FEET) = 30.00 CHANNEL FREEBOARD( FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT( FEET) = 4.54
* 100 YEAR RAINFALL INTENSITY( INCH/HR) = 1.212
SUBAREA LOSS RATE DATA( AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.22 0.30 1.000 -
USER-DEFINED - 2.17 0.30 1.000 -
USER-DEFINED - 9.19 0.30 1.000 -
USER-DEFINED - 67.57 0.30 1.000 -
USER-DEFINED - 35.19 0.30 1.000 -
```

USER-DEFINED - 30.67 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2214.26  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.20  
 AVERAGE FLOW DEPTH(FEET) = 4.53 TRAVEL TIME(MIN.) = 4.34  
 Tc(MIN.) = 69.79  
 SUBAREA AREA(ACRES) = 145.01 SUBAREA RUNOFF(CFS) = 119.09  
 EFFECTIVE AREA(ACRES) = 2654.71 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA(ACRES) = 2717.6 PEAK FLOW RATE(CFS) = 2207.20  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 4.53 FLOW VELOCITY(FEET/SEC.) = 11.19  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13643.00 = 30784.34 FEET.

**\*\* PEAK FLOW RATE TABLE \*\***  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2105.66	30.99	1.836	0.30( 0.29)	0.97	1505.6	20100.00
2	2147.48	36.09	1.706	0.30( 0.29)	0.97	1686.8	13600.00
3	2207.20	69.79	1.212	0.30( 0.29)	0.96	2654.7	13510.00
4	2124.26	78.00	1.157	0.30( 0.29)	0.96	2717.6	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2207.20 Tc(MIN.) = 69.79  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.96 EFFECTIVE AREA(ACRES) = 2654.71

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 69.79  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.212  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.30	1.000	-
USER-DEFINED	-	20.65	0.30	1.000	-
USER-DEFINED	-	2.69	0.30	1.000	-
USER-DEFINED	-	8.45	0.30	1.000	-
USER-DEFINED	-	96.93	0.30	1.000	-
USER-DEFINED	-	13.19	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 142.80 SUBAREA RUNOFF(CFS) = 117.27  
 EFFECTIVE AREA(ACRES) = 2797.51 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96  
 TOTAL AREA(ACRES) = 2860.4 PEAK FLOW RATE(CFS) = 2324.47

**\*\* PEAK FLOW RATE TABLE \*\***  

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2290.20	30.99	1.836	0.30( 0.29)	0.97	1648.4	20100.00

2 2328.15 36.09 1.706 0.30( 0.29) 0.97 1829.6 13600.00  
 3 2324.47 69.79 1.212 0.30( 0.29) 0.96 2797.5 13510.00  
 4 2234.36 78.00 1.157 0.30( 0.29) 0.96 2860.4 13500.00  
 NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE(CFS) = 2328.15 Tc(MIN.) = 36.09  
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1829.61

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

\*\*\*\*\*  
 MAINLINE Tc(MIN.) = 36.09  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.706  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	42.54	0.30	1.000	-
USER-DEFINED	-	16.96	0.30	1.000	-
USER-DEFINED	-	80.60	0.30	1.000	-
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	2.00	0.30	1.000	-
USER-DEFINED	-	3.11	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 146.77 SUBAREA RUNOFF(CFS) = 185.69  
 EFFECTIVE AREA(ACRES) = 1976.38 AREA-AVERAGED Fm(INCH/HR) = 0.29  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA(ACRES) = 3007.2 PEAK FLOW RATE(CFS) = 2513.83

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

\*\*\*\*\*  
 ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 4.40  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.655  
 SUBAREA LOSS RATE DATA(AMC II):  

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.89	0.30	1.000	-
USER-DEFINED	-	23.73	0.30	1.000	-
USER-DEFINED	-	0.27	0.30	1.000	-
USER-DEFINED	-	19.87	0.30	1.000	-
USER-DEFINED	-	6.40	0.30	1.000	-
USER-DEFINED	-	3.14	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2546.95  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.40  
 AVERAGE FLOW DEPTH(FEET) = 4.40 TRAVEL TIME(MIN.) = 1.98  
 Tc(MIN.) = 38.07

SUBAREA AREA (ACRES) = 54.30 SUBAREA RUNOFF (CFS) = 66.23  
 EFFECTIVE AREA (ACRES) = 2030.68 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 3061.5 PEAK FLOW RATE (CFS) = 2513.83  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 4.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 4.37 FLOW VELOCITY (FEET/SEC.) = 13.35  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2493.08	32.97	1.785	0.30 (0.29)	0.98	1849.5	20100.00
2	2513.83	38.07	1.655	0.30 (0.29)	0.98	2030.7	13600.00
3	2452.94	71.79	1.199	0.30 (0.29)	0.97	2998.6	13510.00
4	2351.50	80.02	1.143	0.30 (0.29)	0.96	3061.5	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 2513.83 Tc (MIN.) = 38.07  
 AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA (ACRES) = 2030.68

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc (MIN.) = 38.07  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.655  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	9.52	0.30	1.000	-
USER-DEFINED	-	0.71	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	39.42	0.30	1.000	-
USER-DEFINED	-	0.62	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 51.16 SUBAREA RUNOFF (CFS) = 62.40  
 EFFECTIVE AREA (ACRES) = 2081.84 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 3112.6 PEAK FLOW RATE (CFS) = 2552.71

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<  
 =====

MAINLINE Tc (MIN.) = 38.07  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.655  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.67	0.30	1.000	-
USER-DEFINED	-	9.52	0.30	1.000	-
USER-DEFINED	-	0.71	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	39.42	0.30	1.000	-
USER-DEFINED	-	0.62	0.30	1.000	-

USER-DEFINED - 0.11 0.30 1.000 -  
 USER-DEFINED - 0.77 0.30 1.000 -  
 USER-DEFINED - 0.22 0.30 1.000 -  
 USER-DEFINED - 2.69 0.30 1.000 -  
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 3.79 SUBAREA RUNOFF (CFS) = 4.62  
 EFFECTIVE AREA (ACRES) = 2085.63 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
 TOTAL AREA (ACRES) = 3116.4 PEAK FLOW RATE (CFS) = 2557.33

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2557.45	32.97	1.785	0.30 (0.29)	0.98	1904.5	20100.00
2	2557.33	38.07	1.655	0.30 (0.29)	0.98	2085.6	13600.00
3	2497.40	71.79	1.199	0.30 (0.29)	0.97	3053.5	13510.00
4	2393.19	80.02	1.143	0.30 (0.29)	0.97	3116.4	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 2557.45 Tc (MIN.) = 32.97  
 AREA-AVERAGED Fm (INCH/HR) = 0.29 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA (ACRES) = 1904.47

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12  
 -----

>>>>CLEAR MEMORY BANK # 1 <<<<  
 =====

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1  
 -----

>>>>DEFINE MEMORY BANK # 1 <<<<  
 =====

PEAK FLOWRATE TABLE FILE NAME: 2P00EVAA.DNA  
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	589.23	13.84	0.30 (0.11)	0.36	173.5	110.00
2	590.10	16.35	0.30 (0.11)	0.38	204.6	100.00
3	582.95	17.51	0.30 (0.11)	0.38	213.9	100.00
4	519.41	20.54	0.30 (0.12)	0.40	221.1	130.00

TOTAL AREA (ACRES) = 221.1

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<  
 =====

ELEVATION DATA: UPSTREAM (FEET) = 338.00 DOWNSTREAM (FEET) = 300.00  
 FLOW LENGTH (FEET) = 881.07 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 114.0 INCH PIPE IS 84.6 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 45.37  
 ESTIMATED PIPE DIAMETER (INCH) = 114.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 2557.45  
 PIPE TRAVEL TIME (MIN.) = 0.32 Tc (MIN.) = 33.29  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2557.45	33.29	1.777	0.30( 0.29)	0.98	1904.5	20100.00
2	2557.33	38.39	1.647	0.30( 0.29)	0.98	2085.6	13600.00
3	2497.40	72.12	1.197	0.30( 0.29)	0.97	3053.5	13510.00
4	2393.19	80.35	1.141	0.30( 0.29)	0.97	3116.4	13500.00

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	589.23	13.84	3.099	0.30( 0.11)	0.36	173.5	110.00
2	590.10	16.35	2.768	0.30( 0.11)	0.38	204.6	100.00
3	582.95	17.51	2.651	0.30( 0.11)	0.38	213.9	100.00
4	519.41	20.54	2.367	0.30( 0.12)	0.40	221.1	130.00

LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2599.41	13.84	3.099	0.30( 0.26)	0.87	965.1	110.00
2	2684.89	16.35	2.768	0.30( 0.26)	0.87	1139.7	100.00
3	2720.74	17.51	2.651	0.30( 0.26)	0.87	1215.6	100.00
4	2724.10	20.54	2.367	0.30( 0.27)	0.89	1395.9	130.00
5	2940.50	33.29	1.777	0.30( 0.28)	0.92	2125.6	20100.00
6	2910.30	38.39	1.647	0.30( 0.28)	0.92	2306.7	13600.00
7	2746.24	72.12	1.197	0.30( 0.28)	0.93	3274.6	13510.00
8	2629.09	80.35	1.141	0.30( 0.28)	0.93	3337.5	13500.00

TOTAL AREA (ACRES) = 3337.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2940.50 Tc(MIN.) = 33.293  
EFFECTIVE AREA(ACRES) = 2125.57 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87  
TOTAL AREA(ACRES) = 3337.5  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 33.29

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.777

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	1.11	0.30	1.000	86
AGRICULTURAL POOR COVER					

"FALLOW"	B	0.44	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.49	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	1.70	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	1.09	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	18.57	0.30	1.000	66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA(ACRES) = 24.40 SUBAREA RUNOFF(CFS) = 32.44					
EFFECTIVE AREA(ACRES) = 2149.97 AREA-AVERAGED Fm(INCH/HR) = 0.28					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92					
TOTAL AREA(ACRES) = 3361.9 PEAK FLOW RATE(CFS) = 2940.50					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 33.29

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.777

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL FAIR COVER "ORCHARDS"	B	12.39	0.30	1.000	65
AGRICULTURAL FAIR COVER "ORCHARDS"	B	2.30	0.30	1.000	65
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	5.19	0.30	1.000	79
AGRICULTURAL POOR COVER "ROW CROPS,STRAIGHT ROW"	B	28.71	0.30	1.000	81
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.17	0.30	1.000	65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000					
SUBAREA AREA(ACRES) = 48.76 SUBAREA RUNOFF(CFS) = 64.82					
EFFECTIVE AREA(ACRES) = 2198.73 AREA-AVERAGED Fm(INCH/HR) = 0.28					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92					
TOTAL AREA(ACRES) = 3410.7 PEAK FLOW RATE(CFS) = 2970.22					

\*\*\*\*\*

FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 300.00	DOWNSTREAM(FEET) = 288.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 933.89	CHANNEL SLOPE = 0.0128
GIVEN CHANNEL BASE(FEET) = 30.00	CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000	MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.81	
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740	
SUBAREA LOSS RATE DATA(AMC II):	
DEVELOPMENT TYPE/ SCS SOIL	AREA Fp Ap SCS

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 0.22 0.30 1.000 -  
 USER-DEFINED - 9.23 0.30 1.000 -  
 USER-DEFINED - 0.54 0.30 1.000 -  
 USER-DEFINED - 5.66 0.30 1.000 -  
 USER-DEFINED - 3.66 0.30 1.000 -  
 USER-DEFINED - 0.67 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2983.17  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.83  
 AVERAGE FLOW DEPTH (FEET) = 5.81 TRAVEL TIME (MIN.) = 1.44  
 Tc (MIN.) = 34.73  
 SUBAREA AREA (ACRES) = 19.98 SUBAREA RUNOFF (CFS) = 25.90  
 EFFECTIVE AREA (ACRES) = 2218.71 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 3430.6 PEAK FLOW RATE (CFS) = 2970.22  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.79  
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 5.79 FLOW VELOCITY (FEET/SEC.) = 10.82  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13680.00 = 34190.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2650.24	15.32	2.872	0.30 ( 0.26)	0.88	1058.2	110.00
2	2734.78	17.82	2.621	0.30 ( 0.26)	0.88	1232.9	100.00
3	2769.17	18.98	2.504	0.30 ( 0.26)	0.88	1308.7	100.00
4	2775.60	22.00	2.274	0.30 ( 0.27)	0.89	1489.1	130.00
5	2970.22	34.73	1.740	0.30 ( 0.28)	0.92	2218.7	20100.00
6	2934.30	39.84	1.610	0.30 ( 0.28)	0.92	2399.9	13600.00
7	2764.53	73.58	1.187	0.30 ( 0.28)	0.93	3367.8	13510.00
8	2645.20	81.84	1.131	0.30 ( 0.28)	0.93	3430.6	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 2970.22 Tc (MIN.) = 34.73  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA (ACRES) = 2218.71

\*\*\*\*\*

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 34.73

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.740

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	1.56	0.30	1.000	-
USER-DEFINED	-	9.40	0.30	1.000	-
USER-DEFINED	-	2.76	0.30	1.000	-
USER-DEFINED	-	17.38	0.30	1.000	-
USER-DEFINED	-	2.46	0.30	1.000	-
USER-DEFINED	-	5.56	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 39.12 SUBAREA RUNOFF (CFS) = 50.72  
 EFFECTIVE AREA (ACRES) = 2257.83 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 3469.8 PEAK FLOW RATE (CFS) = 2974.30

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FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 34.73

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.740

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.65	0.30	1.000	-
USER-DEFINED	-	1.70	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 2.35 SUBAREA RUNOFF (CFS) = 3.05

EFFECTIVE AREA (ACRES) = 2260.18 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 3472.1 PEAK FLOW RATE (CFS) = 2977.35

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FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

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FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 34.73

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.740

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	5.29	0.30	1.000	-
USER-DEFINED	-	31.25	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	6.26	0.30	1.000	-
USER-DEFINED	-	0.07	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 43.31 SUBAREA RUNOFF (CFS) = 56.15

EFFECTIVE AREA (ACRES) = 2303.49 AREA-AVERAGED Fm (INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA (ACRES) = 3515.4 PEAK FLOW RATE (CFS) = 3033.50

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FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 34.73
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 2.47 0.30 0.850 -
USER-DEFINED - 3.06 0.30 0.850 -
USER-DEFINED - 17.76 0.30 0.500 -
USER-DEFINED - 7.31 0.30 0.500 -
USER-DEFINED - 0.34 0.30 1.000 -
USER-DEFINED - 8.22 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.659
SUBAREA AREA(ACRES) = 39.16 SUBAREA RUNOFF(CFS) = 54.37
EFFECTIVE AREA(ACRES) = 2342.65 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3554.6 PEAK FLOW RATE(CFS) = 3087.87

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FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 34.73
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.740
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.53 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 0.69
EFFECTIVE AREA(ACRES) = 2343.18 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3555.1 PEAK FLOW RATE(CFS) = 3088.56

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FLOW PROCESS FROM NODE 13680.00 TO NODE 13682.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.00 DOWNSTREAM(FEET) = 242.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2860.77 CHANNEL SLOPE = 0.0161
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.58
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.638
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.22 0.30 1.000 -
USER-DEFINED - 5.28 0.30 1.000 -
USER-DEFINED - 0.52 0.30 1.000 -
USER-DEFINED - 3.61 0.30 1.000 -
USER-DEFINED - 0.67 0.30 1.000 -

USER-DEFINED - 1.37 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3095.59
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.86
AVERAGE FLOW DEPTH(FEET) = 5.58 TRAVEL TIME(MIN.) = 4.02
Tc(MIN.) = 38.75
SUBAREA AREA(ACRES) = 11.67 SUBAREA RUNOFF(CFS) = 14.05
EFFECTIVE AREA(ACRES) = 2354.85 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3566.8 PEAK FLOW RATE(CFS) = 3088.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
\*ESTIMATED CHANNEL HEIGHT(FEET) = 5.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 5.57 FLOW VELOCITY(FEET/SEC.) = 11.86
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Contains 8 rows of data.

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 3088.56 Tc(MIN.) = 38.75
AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.92 EFFECTIVE AREA(ACRES) = 2354.85

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 38.75
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.638
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 6.90 0.30 1.000 -
USER-DEFINED - 23.04 0.30 1.000 -
USER-DEFINED - 1.18 0.30 1.000 -
USER-DEFINED - 1.56 0.30 1.000 -
USER-DEFINED - 53.20 0.30 1.000 -
USER-DEFINED - 2.08 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 87.96 SUBAREA RUNOFF(CFS) = 105.92
EFFECTIVE AREA(ACRES) = 2442.81 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3654.7 PEAK FLOW RATE(CFS) = 3088.56



NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 38.75  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.638  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.01	0.30	1.000	-
USER-DEFINED	-	0.18	0.30	1.000	-
USER-DEFINED	-	0.38	0.30	1.000	-
USER-DEFINED	-	0.22	0.30	1.000	-
USER-DEFINED	-	7.73	0.30	1.000	-
USER-DEFINED	-	4.37	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 12.89 SUBAREA RUNOFF(CFS) = 15.52  
 EFFECTIVE AREA(ACRES) = 2455.70 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3667.6 PEAK FLOW RATE(CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 38.75  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.638  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
AGRICULTURAL POOR COVER "FALLOW"	B	2.57	0.30	1.000	86
AGRICULTURAL POOR COVER "FALLOW"	B	1.97	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	1.00	0.30	1.000	69
NATURAL FAIR COVER "GRASS"	B	2.98	0.30	1.000	69
NATURAL FAIR COVER "OPEN BRUSH"	B	2.39	0.30	1.000	66
NATURAL FAIR COVER "OPEN BRUSH"	B	1.67	0.30	1.000	66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 12.58 SUBAREA RUNOFF(CFS) = 15.15  
 EFFECTIVE AREA(ACRES) = 2468.28 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3680.2 PEAK FLOW RATE(CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 38.75  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.638  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.44	0.30	1.000	66
PUBLIC PARK	B	2.65	0.30	0.850	56
PUBLIC PARK	B	1.16	0.30	0.850	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.47	0.30	0.500	56
RESIDENTIAL "5-7 DWELLINGS/ACRE"	B	0.25	0.30	0.500	56
AGRICULTURAL POOR COVER "ROW CROPS, STRAIGHT ROW"	B	20.24	0.30	1.000	81

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.963  
 SUBAREA AREA(ACRES) = 25.21 SUBAREA RUNOFF(CFS) = 30.61  
 EFFECTIVE AREA(ACRES) = 2493.49 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3705.4 PEAK FLOW RATE(CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc(MIN.) = 38.75  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.638  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	7.08	0.30	1.000	-
USER-DEFINED	-	6.75	0.30	1.000	-
USER-DEFINED	-	0.02	0.30	1.000	-
USER-DEFINED	-	0.93	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA(ACRES) = 14.78 SUBAREA RUNOFF(CFS) = 17.80  
 EFFECTIVE AREA(ACRES) = 2508.27 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 3720.2 PEAK FLOW RATE(CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 242.00 DOWNSTREAM(FEET) = 208.53  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2526.22 CHANNEL SLOPE = 0.0132  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT (FEET) = 5.89  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.551  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.49	0.30	1.000	-
USER-DEFINED	-	13.31	0.30	1.000	-
USER-DEFINED	-	0.87	0.30	1.000	-
USER-DEFINED	-	20.26	0.30	1.000	-
USER-DEFINED	-	1.21	0.30	1.000	-
USER-DEFINED	-	0.05	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3113.45  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.08  
 AVERAGE FLOW DEPTH (FEET) = 5.89 TRAVEL TIME (MIN.) = 3.80  
 Tc (MIN.) = 42.55  
 SUBAREA AREA (ACRES) = 44.19 SUBAREA RUNOFF (CFS) = 49.77  
 EFFECTIVE AREA (ACRES) = 2552.46 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3764.4 PEAK FLOW RATE (CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 5.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 5.86 FLOW VELOCITY (FEET/SEC.) = 11.07  
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13683.00 = 39577.52 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2775.64	23.37	2.186	0.30 (0.27)	0.90	1392.0	110.00
2	2878.61	25.79	2.048	0.30 (0.27)	0.90	1566.6	100.00
3	2888.47	26.93	1.997	0.30 (0.27)	0.90	1642.5	100.00
4	2912.70	29.94	1.863	0.30 (0.27)	0.91	1822.8	130.00
5	3088.56	42.55	1.551	0.30 (0.28)	0.93	2552.5	20100.00
6	3029.46	47.70	1.441	0.30 (0.28)	0.93	2733.6	13600.00
7	2893.29	81.57	1.132	0.30 (0.28)	0.93	3701.5	13510.00
8	2754.58	89.93	1.075	0.30 (0.28)	0.93	3764.4	13500.00

NEW PEAK FLOW DATA ARE:  
 PEAK FLOW RATE (CFS) = 3088.56 Tc (MIN.) = 42.55  
 AREA-AVERAGED Fm (INCH/HR) = 0.28 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA (ACRES) = 2552.46

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.56	0.30	1.000	-
USER-DEFINED	-	0.81	0.30	1.000	-

USER-DEFINED - 0.01 0.30 1.000 -  
 USER-DEFINED - 1.11 0.30 1.000 -  
 USER-DEFINED - 0.59 0.30 1.000 -  
 USER-DEFINED - 3.04 0.30 1.000 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA AREA (ACRES) = 18.12 SUBAREA RUNOFF (CFS) = 20.41  
 EFFECTIVE AREA (ACRES) = 2570.58 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3782.5 PEAK FLOW RATE (CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.30	0.30	0.850	56
RESIDENTIAL					
"8-10 DWELLINGS/ACRE"	B	0.10	0.30	0.400	56
PUBLIC PARK	B	1.70	0.30	0.850	56
PUBLIC PARK	B	0.10	0.30	0.850	56
PUBLIC PARK	B	2.90	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835  
 SUBAREA AREA (ACRES) = 6.20 SUBAREA RUNOFF (CFS) = 7.26  
 EFFECTIVE AREA (ACRES) = 2576.78 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 3788.7 PEAK FLOW RATE (CFS) = 3088.56  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
RESIDENTIAL					
"5-7 DWELLINGS/ACRE"	B	0.10	0.30	0.500	56
CONDOMINIUMS	B	0.10	0.30	0.350	56
PUBLIC PARK	B	6.90	0.30	0.850	56
PUBLIC PARK	B	0.40	0.30	0.850	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839  
 SUBAREA AREA (ACRES) = 7.50 SUBAREA RUNOFF (CFS) = 8.77  
 EFFECTIVE AREA (ACRES) = 2584.28 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA (ACRES) = 3796.2 PEAK FLOW RATE (CFS) = 3088.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*MEMORY BANK # 3 IS EMPTY - PROCESS IGNORED.\*\*\*

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FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 42.55  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.551  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
AGRICULTURAL POOR COVER  
"FALLOW" B 2.55 0.30 1.000 86  
AGRICULTURAL POOR COVER  
"FALLOW" B 0.01 0.30 1.000 86  
AGRICULTURAL POOR COVER  
"FALLOW" B 1.35 0.30 1.000 86  
NATURAL FAIR COVER  
"GRASS" B 0.44 0.30 1.000 69  
NATURAL FAIR COVER  
"GRASS" B 0.67 0.30 1.000 69  
NATURAL FAIR COVER  
"OPEN BRUSH" B 1.06 0.30 1.000 66  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 6.08 SUBAREA RUNOFF (CFS) = 6.85  
EFFECTIVE AREA (ACRES) = 2590.36 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 3802.3 PEAK FLOW RATE (CFS) = 3088.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 42.55  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.551  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
NATURAL FAIR COVER  
"OPEN BRUSH" B 2.16 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 2.45 0.30 1.000 66  
NATURAL FAIR COVER  
"OPEN BRUSH" B 6.15 0.30 1.000 66  
AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 1.34 0.30 1.000 81

AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 18.46 0.30 1.000 81  
AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 4.13 0.30 1.000 81  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 34.69 SUBAREA RUNOFF (CFS) = 39.07  
EFFECTIVE AREA (ACRES) = 2625.05 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 3837.0 PEAK FLOW RATE (CFS) = 3088.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc (MIN.) = 42.55  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.551  
SUBAREA LOSS RATE DATA (AMC II):  
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
AGRICULTURAL POOR COVER  
"ROW CROPS, STRAIGHT ROW" B 8.69 0.30 1.000 81  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.73 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 0.41 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 1.37 0.30 1.000 65  
NATURAL FAIR COVER  
"WOODLAND, GRASS" B 3.11 0.30 1.000 65  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA AREA (ACRES) = 14.31 SUBAREA RUNOFF (CFS) = 16.12  
EFFECTIVE AREA (ACRES) = 2639.36 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
TOTAL AREA (ACRES) = 3851.3 PEAK FLOW RATE (CFS) = 3088.56  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13683.00 TO NODE 13685.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 208.53 DOWNSTREAM (FEET) = 194.24  
CHANNEL LENGTH THRU SUBAREA (FEET) = 289.01 CHANNEL SLOPE = 0.0494  
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040  
\* ESTIMATED CHANNEL HEIGHT (FEET) = 4.13  
CHANNEL FLOW THRU SUBAREA (CFS) = 3088.56  
FLOW VELOCITY (FEET/SEC.) = 17.64 FLOW DEPTH (FEET) = 4.13  
TRAVEL TIME (MIN.) = 0.27 Tc (MIN.) = 42.82  
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13685.00 = 39866.53 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM Q Tc Intensity Fp (Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	2775.64	23.66	2.168	0.30 ( 0.27)	0.90	1478.9
2	2878.61	26.07	2.036	0.30 ( 0.27)	0.90	1653.5
3	2888.47	27.21	1.985	0.30 ( 0.27)	0.90	1729.4
4	2912.70	30.22	1.855	0.30 ( 0.27)	0.91	1909.7
5	3088.56	42.82	1.546	0.30 ( 0.28)	0.93	2639.4
6	3029.46	47.98	1.435	0.30 ( 0.28)	0.93	2820.5
7	2905.42	81.85	1.130	0.30 ( 0.28)	0.93	3788.4
8	2757.26	90.21	1.074	0.30 ( 0.28)	0.93	3851.3

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 3088.56 Tc(MIN.) = 42.82  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2639.36

\*\*\*\*\*

FLOW PROCESS FROM NODE 13685.00 TO NODE 13410.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084  
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.60  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.476

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	0.23	0.30	1.000	-
USER-DEFINED	-	1.52	0.30	1.000	-
USER-DEFINED	-	0.06	0.30	1.000	-
USER-DEFINED	-	0.13	0.30	1.000	-
USER-DEFINED	-	6.45	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3093.00

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.41

AVERAGE FLOW DEPTH(FEET) = 6.60 TRAVEL TIME(MIN.) = 3.27

Tc(MIN.) = 46.09

SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 8.88

EFFECTIVE AREA(ACRES) = 2647.75 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93

TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 3088.56

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 6.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 6.60 FLOW VELOCITY(FEET/SEC.) = 9.40

LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2775.64	27.02	1.993	0.30 ( 0.27)	0.90	1487.3	110.00
2	2878.61	29.40	1.888	0.30 ( 0.27)	0.90	1661.9	100.00

3	2888.47	30.54	1.847	0.30 ( 0.27)	0.90	1737.8	100.00
4	2912.70	33.54	1.771	0.30 ( 0.27)	0.91	1918.1	130.00
5	3088.56	46.09	1.476	0.30 ( 0.28)	0.93	2647.7	20100.00
6	3029.46	51.26	1.378	0.30 ( 0.28)	0.93	2828.9	13600.00
7	2905.42	85.17	1.108	0.30 ( 0.28)	0.93	3796.8	13510.00
8	2757.26	93.58	1.059	0.30 ( 0.28)	0.93	3859.7	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 3088.56 Tc(MIN.) = 46.09  
 AREA-AVERAGED Fm(INCH/HR) = 0.28 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.93 EFFECTIVE AREA(ACRES) = 2647.75

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 46.09  
 EFFECTIVE AREA(ACRES) = 2647.75 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.928  
 PEAK FLOW RATE(CFS) = 3088.56

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2775.64	27.02	1.993	0.30 ( 0.27)	0.90	1487.3	110.00
2	2878.61	29.40	1.888	0.30 ( 0.27)	0.90	1661.9	100.00
3	2888.47	30.54	1.847	0.30 ( 0.27)	0.90	1737.8	100.00
4	2912.70	33.54	1.771	0.30 ( 0.27)	0.91	1918.1	130.00
5	3088.56	46.09	1.476	0.30 ( 0.28)	0.93	2647.7	20100.00
6	3029.46	51.26	1.378	0.30 ( 0.28)	0.93	2828.9	13600.00
7	2905.42	85.17	1.108	0.30 ( 0.28)	0.93	3796.8	13510.00
8	2757.26	93.58	1.059	0.30 ( 0.28)	0.93	3859.7	13500.00

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
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\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S37- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV37.DAT  
TIME/DATE OF STUDY: 14:04 04/03/2019

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USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

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--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.768
- 2) 10.00; 3.736
- 3) 15.00; 2.899
- 4) 20.00; 2.397
- 5) 25.00; 2.080
- 6) 30.00; 1.859
- 7) 40.00; 1.604
- 8) 50.00; 1.391
- 9) 60.00; 1.276
- 10) 90.00; 1.073
- 11) 120.00; 0.936
- 12) 180.00; 0.780
- 13) 360.00; 0.574
- 14) 1200.00; 0.249

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0312	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV34.DNA  
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29047.65	14.90	0.30 ( 0.24)	0.79	4520.0	300.00
2	31517.12	19.75	0.30 ( 0.24)	0.79	6149.8	210.00
3	34327.25	27.39	0.30 ( 0.24)	0.79	8723.6	110.00
4	39969.83	42.90	0.30 ( 0.24)	0.82	16232.0	50260.00
5	42662.60	53.14	0.30 ( 0.25)	0.84	21602.5	390.00
6	45196.62	64.23	0.30 ( 0.26)	0.87	27413.3	13100.00
7	46871.01	70.73	0.30 ( 0.26)	0.88	30518.0	11801.00
8	49354.20	79.99	0.30 ( 0.27)	0.89	35561.8	11530.00
9	50672.47	85.49	0.30 ( 0.27)	0.90	39302.2	13510.00
10	51747.49	90.26	0.30 ( 0.27)	0.91	42440.3	13010.00
11	52891.66	95.32	0.30 ( 0.27)	0.91	45805.4	11330.00
12	53544.39	101.60	0.30 ( 0.28)	0.92	50236.4	11130.00
13	52972.41	109.22	0.30 ( 0.28)	0.93	54230.3	12330.00
14	52335.71	115.88	0.30 ( 0.28)	0.93	57573.5	12400.00
15	51328.23	124.60	0.30 ( 0.28)	0.93	60942.3	12201.00
16	49849.16	134.02	0.30 ( 0.28)	0.93	63396.4	12101.10
17	49177.75	138.08	0.30 ( 0.28)	0.94	64245.5	10400.00
18	47353.58	146.22	0.30 ( 0.28)	0.94	65560.6	12010.00
19	45852.54	152.19	0.30 ( 0.28)	0.94	65874.3	10210.00
20	41535.88	178.55	0.30 ( 0.28)	0.94	66607.1	10100.00
TOTAL AREA(ACRES) =						66607.1

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0  
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>>>>MEMORY BANK # 3 COPIED ONTO MAIN-STREAM MEMORY<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29047.65	14.90	0.30 ( 0.24)	0.79	4520.0	300.00
2	31517.12	19.75	0.30 ( 0.24)	0.79	6149.8	210.00
3	34327.25	27.39	0.30 ( 0.24)	0.79	8723.6	110.00
4	39969.83	42.90	0.30 ( 0.24)	0.82	16232.0	50260.00
5	42662.60	53.14	0.30 ( 0.25)	0.84	21602.5	390.00
6	45196.62	64.23	0.30 ( 0.26)	0.87	27413.3	13100.00
7	46871.01	70.73	0.30 ( 0.26)	0.88	30518.0	11801.00
8	49354.20	79.99	0.30 ( 0.27)	0.89	35561.8	11530.00
9	50672.47	85.49	0.30 ( 0.27)	0.90	39302.2	13510.00
10	51747.49	90.26	0.30 ( 0.27)	0.91	42440.3	13010.00
11	52891.66	95.32	0.30 ( 0.27)	0.91	45805.4	11330.00
12	53544.39	101.60	0.30 ( 0.28)	0.92	50236.4	11130.00
13	52972.41	109.22	0.30 ( 0.28)	0.93	54230.3	12330.00

14 52335.71 115.88 0.30( 0.28) 0.93 57573.5 12400.00  
 15 51328.23 124.60 0.30( 0.28) 0.93 60942.3 12201.00  
 16 49849.16 134.02 0.30( 0.28) 0.93 63396.4 12101.10  
 17 49177.75 138.08 0.30( 0.28) 0.94 64245.5 10400.00  
 18 47353.58 146.22 0.30( 0.28) 0.94 65560.6 12010.00  
 19 45852.54 152.19 0.30( 0.28) 0.94 65874.3 10210.00  
 20 41535.88 178.55 0.30( 0.28) 0.94 66607.1 10100.00  
 TOTAL AREA(ACRES) = 66607.1

\*\*\*\*\*

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM( FEET ) = 170.00 DOWNSTREAM( FEET ) = 165.51  
 CHANNEL LENGTH THRU SUBAREA( FEET ) = 1891.83 CHANNEL SLOPE = 0.0024  
 GIVEN CHANNEL BASE( FEET ) = 200.00 CHANNEL FREEBOARD( FEET ) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT( FEET ) = 15.36  
 CHANNEL FLOW THRU SUBAREA( CFS ) = 53544.39  
 FLOW VELOCITY( FEET/SEC. ) = 12.59 FLOW DEPTH( FEET ) = 15.36  
 TRAVEL TIME( MIN. ) = 2.50 Tc( MIN. ) = 104.11  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

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FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

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FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506102b.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	406.54	14.41	2.998	0.30( 0.29)	0.96	189.8	10230.00
2	372.26	23.72	2.161	0.30( 0.29)	0.95	240.3	10200.00
3	368.40	24.34	2.122	0.30( 0.29)	0.95	241.8	10250.00
4	339.08	28.10	1.943	0.30( 0.29)	0.95	246.3	10220.00
TOTAL AREA(ACRES) =							246.3

\*\*\*\*\*

FLOW PROCESS FROM NODE 13720.00 TO NODE 13720.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29047.65	17.93	2.605	0.30( 0.24)	0.79	4520.0	300.00
2	31517.12	22.70	2.226	0.30( 0.24)	0.79	6149.8	210.00
3	34327.25	30.27	1.852	0.30( 0.24)	0.79	8723.6	110.00

4	39969.83	45.64	1.484	0.30( 0.24)	0.82	16232.0	50260.00
5	42662.60	55.82	1.324	0.30( 0.25)	0.84	21602.5	390.00
6	45196.62	66.86	1.230	0.30( 0.26)	0.87	27413.3	13100.00
7	46871.01	73.34	1.186	0.30( 0.26)	0.88	30518.0	11801.00
8	49354.20	82.56	1.123	0.30( 0.27)	0.89	35561.8	11530.00
9	50672.47	88.04	1.086	0.30( 0.27)	0.90	39302.2	13510.00
10	51747.49	92.79	1.060	0.30( 0.27)	0.91	42440.3	13010.00
11	52891.66	97.84	1.037	0.30( 0.27)	0.91	45805.4	11330.00
12	53544.39	104.11	1.009	0.30( 0.28)	0.92	50236.4	11130.00
13	52972.41	111.73	0.974	0.30( 0.28)	0.93	54230.3	12330.00
14	52335.71	118.40	0.943	0.30( 0.28)	0.93	57573.5	12400.00
15	51328.23	127.14	0.917	0.30( 0.28)	0.93	60942.3	12201.00
16	49849.16	136.58	0.893	0.30( 0.28)	0.93	63396.4	12101.10
17	49177.75	140.65	0.882	0.30( 0.28)	0.94	64245.5	10400.00
18	47353.58	148.82	0.861	0.30( 0.28)	0.94	65560.6	12010.00
19	45852.54	154.81	0.845	0.30( 0.28)	0.94	65874.3	10210.00
20	41535.88	181.26	0.779	0.30( 0.28)	0.94	66607.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	406.54	14.41	2.998	0.30( 0.29)	0.96	189.8	10230.00
2	372.26	23.72	2.161	0.30( 0.29)	0.95	240.3	10200.00
3	368.40	24.34	2.122	0.30( 0.29)	0.95	241.8	10250.00
4	339.08	28.10	1.943	0.30( 0.29)	0.95	246.3	10220.00

LONGEST FLOWPATH FROM NODE 10200.00 TO NODE 13720.00 = 9099.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27625.87	14.41	2.998	0.30( 0.24)	0.80	3823.2	10230.00
2	29441.25	17.93	2.605	0.30( 0.24)	0.80	4728.9	300.00
3	31893.14	22.70	2.226	0.30( 0.24)	0.79	6384.6	210.00
4	32267.45	23.72	2.161	0.30( 0.24)	0.79	6736.4	10200.00
5	32495.12	24.34	2.122	0.30( 0.24)	0.79	6950.0	10250.00
6	33862.11	28.10	1.943	0.30( 0.24)	0.79	8233.3	10220.00
7	34647.75	30.27	1.852	0.30( 0.24)	0.79	8969.8	110.00
8	40214.97	45.64	1.484	0.30( 0.25)	0.82	16478.3	50260.00
9	42875.03	55.82	1.324	0.30( 0.25)	0.85	21848.8	390.00
10	45389.70	66.86	1.230	0.30( 0.26)	0.87	27659.6	13100.00
11	47055.12	73.34	1.186	0.30( 0.26)	0.88	30764.3	11801.00
12	49525.55	82.56	1.123	0.30( 0.27)	0.89	35808.0	11530.00
13	50836.23	88.04	1.086	0.30( 0.27)	0.90	39548.4	13510.00
14	51905.92	92.79	1.060	0.30( 0.27)	0.91	42686.6	13010.00
15	53045.38	97.84	1.037	0.30( 0.27)	0.91	46051.6	11330.00
16	53692.25	104.11	1.009	0.30( 0.28)	0.92	50482.6	11130.00
17	53113.14	111.73	0.974	0.30( 0.28)	0.93	54476.6	12330.00
18	52470.21	118.40	0.943	0.30( 0.28)	0.93	57819.8	12400.00
19	51457.44	127.14	0.917	0.30( 0.28)	0.93	61188.5	12201.00
20	49973.35	136.58	0.893	0.30( 0.28)	0.93	63642.7	12101.10
21	49299.77	140.65	0.882	0.30( 0.28)	0.94	64491.8	10400.00
22	47471.25	148.82	0.861	0.30( 0.28)	0.94	65806.9	12010.00
23	45967.02	154.81	0.845	0.30( 0.28)	0.94	66120.6	10210.00
24	41636.66	181.26	0.779	0.30( 0.28)	0.94	66853.3	10100.00
TOTAL AREA(ACRES) =							66853.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 53692.25 Tc(MIN.) = 104.106  
 EFFECTIVE AREA(ACRES) = 50482.61 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89  
 TOTAL AREA(ACRES) = 66853.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13720.00 = 126443.80 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 165.51 DOWNSTREAM(FEET) = 161.03  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2067.54 CHANNEL SLOPE = 0.0022  
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 15.77  
 CHANNEL FLOW THRU SUBAREA(CFS) = 53692.25  
 FLOW VELOCITY(FEET/SEC.) = 12.21 FLOW DEPTH(FEET) = 15.77  
 TRAVEL TIME(MIN.) = 2.82 Tc(MIN.) = 106.93  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

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 FLOW PROCESS FROM NODE 13720.00 TO NODE 13740.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506103b.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	810.21	17.74	0.30( 0.23)	0.76	399.5	10300.00
2	813.53	18.53	0.30( 0.23)	0.76	413.0	10380.00
3	800.95	20.83	0.30( 0.23)	0.76	438.9	10320.00
4	771.92	23.06	0.30( 0.23)	0.76	451.6	10360.00
5	728.08	25.86	0.30( 0.23)	0.76	460.8	10340.00
TOTAL AREA(ACRES) =						460.8

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 FLOW PROCESS FROM NODE 13740.00 TO NODE 13740.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	27625.87	17.88	2.610	0.30( 0.24)	0.80	3823.2	10230.00
2	29441.25	21.33	2.313	0.30( 0.24)	0.80	4728.9	300.00
3	31893.14	26.02	2.035	0.30( 0.24)	0.79	6384.6	210.00
4	32267.45	27.02	1.991	0.30( 0.24)	0.79	6736.4	10200.00
5	32495.12	27.64	1.963	0.30( 0.24)	0.79	6950.0	10250.00

6	33862.11	31.35	1.824	0.30( 0.24)	0.79	8233.3	10220.00
7	34647.75	33.50	1.770	0.30( 0.24)	0.79	8969.8	110.00
8	40214.97	48.72	1.418	0.30( 0.25)	0.82	16478.3	50260.00
9	42875.03	58.84	1.289	0.30( 0.25)	0.85	21848.8	390.00
10	45389.70	69.83	1.209	0.30( 0.26)	0.87	27659.6	13100.00
11	47055.12	76.28	1.166	0.30( 0.26)	0.88	30764.3	11801.00
12	49525.55	85.45	1.104	0.30( 0.27)	0.89	35808.0	11530.00
13	50836.23	90.91	1.069	0.30( 0.27)	0.90	39548.4	13510.00
14	51905.92	95.64	1.047	0.30( 0.27)	0.91	42686.6	13010.00
15	53045.38	100.67	1.024	0.30( 0.27)	0.91	46051.6	11330.00
16	53692.25	106.93	0.996	0.30( 0.28)	0.92	50482.6	11130.00
17	53113.14	114.56	0.961	0.30( 0.28)	0.93	54476.6	12330.00
18	52470.21	121.25	0.933	0.30( 0.28)	0.93	57819.8	12400.00
19	51457.44	130.00	0.910	0.30( 0.28)	0.93	61188.5	12201.00
20	49973.35	139.46	0.885	0.30( 0.28)	0.93	63642.7	12101.10
21	49299.77	143.55	0.875	0.30( 0.28)	0.94	64491.8	10400.00
22	47471.25	151.75	0.853	0.30( 0.28)	0.94	65806.9	12010.00
23	45967.02	157.77	0.838	0.30( 0.28)	0.94	66120.6	10210.00
24	41636.66	184.31	0.775	0.30( 0.28)	0.94	66853.3	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	810.21	17.74	2.623	0.30( 0.23)	0.76	399.5	10300.00
2	813.53	18.53	2.544	0.30( 0.23)	0.76	413.0	10380.00
3	800.95	20.83	2.345	0.30( 0.23)	0.76	438.9	10320.00
4	771.92	23.06	2.203	0.30( 0.23)	0.76	451.6	10360.00
5	728.08	25.86	2.042	0.30( 0.23)	0.76	460.8	10340.00

LONGEST FLOWPATH FROM NODE 10320.00 TO NODE 13740.00 = 8457.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28383.60	17.74	2.623	0.30( 0.24)	0.79	4193.5	10300.00
2	28436.65	17.88	2.610	0.30( 0.24)	0.79	4225.0	10230.00
3	28783.67	18.53	2.544	0.30( 0.24)	0.79	4408.0	10380.00
4	29978.59	20.83	2.345	0.30( 0.24)	0.79	5036.3	10320.00
5	30235.67	21.33	2.313	0.30( 0.24)	0.79	5170.7	300.00
6	31116.14	23.06	2.203	0.30( 0.24)	0.79	5790.3	10360.00
7	32540.97	25.86	2.042	0.30( 0.24)	0.79	6791.2	10340.00
8	32618.49	26.02	2.035	0.30( 0.24)	0.79	6845.4	210.00
9	32974.96	27.02	1.991	0.30( 0.24)	0.79	7197.2	10200.00
10	33191.70	27.64	1.963	0.30( 0.24)	0.79	7410.8	10250.00
11	34502.89	31.35	1.824	0.30( 0.24)	0.79	8694.1	10220.00
12	35266.60	33.50	1.770	0.30( 0.24)	0.79	9430.6	110.00
13	40692.62	48.72	1.418	0.30( 0.24)	0.82	16939.1	50260.00
14	43300.88	58.84	1.289	0.30( 0.25)	0.84	22309.6	390.00
15	45783.48	69.83	1.209	0.30( 0.26)	0.87	28120.4	13100.00
16	47431.39	76.28	1.166	0.30( 0.26)	0.88	31225.1	11801.00
17	49876.89	85.45	1.104	0.30( 0.27)	0.89	36268.8	11530.00
18	51173.53	90.91	1.069	0.30( 0.27)	0.90	40009.2	13510.00
19	52234.54	95.64	1.047	0.30( 0.27)	0.91	43147.4	13010.00
20	53364.78	100.67	1.024	0.30( 0.27)	0.91	46512.4	11330.00
21	54000.17	106.93	0.996	0.30( 0.28)	0.92	50943.4	11130.00
22	53407.07	114.56	0.961	0.30( 0.28)	0.93	54937.4	12330.00
23	52752.85	121.25	0.933	0.30( 0.28)	0.93	58280.6	12400.00
24	51730.95	130.00	0.910	0.30( 0.28)	0.93	61649.3	12201.00



25 50236.97 139.46 0.885 0.30( 0.28) 0.93 64103.5 12101.10  
 26 49559.13 143.55 0.875 0.30( 0.28) 0.93 64952.6 10400.00  
 27 47722.04 151.75 0.853 0.30( 0.28) 0.94 66267.7 12010.00  
 28 46211.52 157.77 0.838 0.30( 0.28) 0.94 66581.4 10210.00  
 29 41855.96 184.31 0.775 0.30( 0.28) 0.94 67314.1 10100.00  
 TOTAL AREA (ACRES) = 67314.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 54000.17 Tc(MIN.) = 106.929  
 EFFECTIVE AREA(ACRES) = 50943.41 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88  
 TOTAL AREA(ACRES) = 67314.1  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13740.00 = 128511.34 FEET.

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FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 161.03 DOWNSTREAM(FEET) = 141.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 364.08 CHANNEL SLOPE = 0.0550  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 9.17  
 CHANNEL FLOW THRU SUBAREA(CFS) = 54000.17  
 FLOW VELOCITY(FEET/SEC.) = 43.06 FLOW DEPTH(FEET) = 9.17  
 TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 107.07  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

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FLOW PROCESS FROM NODE 13740.00 TO NODE 13741.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

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FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506104b.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	82.60	19.10	0.30( 0.24)	0.80	44.3	10400.00
TOTAL AREA(ACRES) =						44.3

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FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28383.60	17.92	2.606	0.30( 0.24)	0.79	4193.5	10300.00

2	28436.65	18.05	2.592	0.30( 0.24)	0.79	4225.0	10230.00
3	28783.67	18.71	2.527	0.30( 0.24)	0.79	4408.0	10380.00
4	29978.59	21.00	2.334	0.30( 0.24)	0.79	5036.3	10320.00
5	30235.67	21.50	2.302	0.30( 0.24)	0.79	5170.7	300.00
6	31116.14	23.22	2.193	0.30( 0.24)	0.79	5790.3	10360.00
7	32540.97	26.03	2.035	0.30( 0.24)	0.79	6791.2	10340.00
8	32618.49	26.18	2.028	0.30( 0.24)	0.79	6845.4	210.00
9	32974.96	27.19	1.983	0.30( 0.24)	0.79	7197.2	10200.00
10	33191.70	27.80	1.956	0.30( 0.24)	0.79	7410.8	10250.00
11	34502.89	31.52	1.820	0.30( 0.24)	0.79	8694.1	10220.00
12	35266.60	33.66	1.766	0.30( 0.24)	0.79	9430.6	110.00
13	40692.62	48.87	1.415	0.30( 0.24)	0.82	16939.1	50260.00
14	43300.88	58.99	1.288	0.30( 0.25)	0.84	22309.6	390.00
15	45783.48	69.98	1.208	0.30( 0.26)	0.87	28120.4	13100.00
16	47431.39	76.42	1.165	0.30( 0.26)	0.88	31225.1	11801.00
17	49876.89	85.59	1.103	0.30( 0.27)	0.89	36268.8	11530.00
18	51173.53	91.05	1.068	0.30( 0.27)	0.90	40009.2	13510.00
19	52234.54	95.78	1.047	0.30( 0.27)	0.91	43147.4	13010.00
20	53364.78	100.81	1.024	0.30( 0.27)	0.91	46512.4	11330.00
21	54000.17	107.07	0.995	0.30( 0.28)	0.92	50943.4	11130.00
22	53407.07	114.70	0.960	0.30( 0.28)	0.93	54937.4	12330.00
23	52752.85	121.39	0.932	0.30( 0.28)	0.93	58280.6	12400.00
24	51730.95	130.14	0.910	0.30( 0.28)	0.93	61649.3	12201.00
25	50236.97	139.60	0.885	0.30( 0.28)	0.93	64103.5	12101.10
26	49559.13	143.69	0.874	0.30( 0.28)	0.93	64952.6	10400.00
27	47722.04	151.90	0.853	0.30( 0.28)	0.94	66267.7	12010.00
28	46211.52	157.92	0.837	0.30( 0.28)	0.94	66581.4	10210.00
29	41855.96	184.46	0.775	0.30( 0.28)	0.94	67314.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	82.60	19.10	2.487	0.30( 0.24)	0.80	44.3	10400.00
LONGEST FLOWPATH FROM NODE 10400.00 TO NODE 13741.00 =							6237.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28465.17	17.92	2.606	0.30( 0.24)	0.79	4235.0	10300.00
2	28518.37	18.05	2.592	0.30( 0.24)	0.79	4266.9	10230.00
3	28865.99	18.71	2.527	0.30( 0.24)	0.79	4451.3	10380.00
4	29072.00	19.10	2.487	0.30( 0.24)	0.79	4560.4	10400.00
5	30055.55	21.00	2.334	0.30( 0.24)	0.79	5080.6	10320.00
6	30311.46	21.50	2.302	0.30( 0.24)	0.79	5215.0	300.00
7	31187.92	23.22	2.193	0.30( 0.24)	0.79	5834.6	10360.00
8	32606.93	26.03	2.035	0.30( 0.24)	0.79	6835.5	10340.00
9	32684.21	26.18	2.028	0.30( 0.24)	0.79	6889.7	210.00
10	33039.04	27.19	1.983	0.30( 0.24)	0.79	7241.5	10200.00
11	33254.79	27.80	1.956	0.30( 0.24)	0.79	7455.1	10250.00
12	34560.99	31.52	1.820	0.30( 0.24)	0.79	8738.4	10220.00
13	35322.68	33.66	1.766	0.30( 0.24)	0.79	9474.9	110.00
14	40735.82	48.87	1.415	0.30( 0.24)	0.82	16983.4	50260.00
15	43339.39	58.99	1.288	0.30( 0.25)	0.84	22353.9	390.00
16	45819.08	69.98	1.208	0.30( 0.26)	0.87	28164.7	13100.00
17	47465.39	76.42	1.165	0.30( 0.26)	0.88	31269.4	11801.00
18	49908.62	85.59	1.103	0.30( 0.27)	0.89	36313.1	11530.00
19	51203.98	91.05	1.068	0.30( 0.27)	0.90	40053.6	13510.00

20	52264.20	95.78	1.047	0.30	( 0.27)	0.91	43191.7	13010.00
21	53393.60	100.81	1.024	0.30	( 0.27)	0.91	46556.7	11330.00
22	54027.93	107.07	0.995	0.30	( 0.28)	0.92	50987.7	11130.00
23	53433.55	114.70	0.960	0.30	( 0.28)	0.93	54981.7	12330.00
24	52778.32	121.39	0.932	0.30	( 0.28)	0.93	58324.9	12400.00
25	51755.57	130.14	0.910	0.30	( 0.28)	0.93	61693.6	12201.00
26	50260.69	139.60	0.885	0.30	( 0.28)	0.93	64147.8	12101.10
27	49582.46	143.69	0.874	0.30	( 0.28)	0.93	64996.9	10400.00
28	47744.59	151.90	0.853	0.30	( 0.28)	0.94	66312.0	12010.00
29	46233.50	157.92	0.837	0.30	( 0.28)	0.94	66625.7	10210.00
30	41875.64	184.46	0.775	0.30	( 0.28)	0.94	67358.4	10100.00

TOTAL AREA (ACRES) = 67358.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 54027.93 Tc (MIN.) = 107.070  
EFFECTIVE AREA (ACRES) = 50987.71 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 67358.4  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13741.00 = 128875.41 FEET.

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FLOW PROCESS FROM NODE 13741.00 TO NODE 13802.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 141.00 DOWNSTREAM (FEET) = 135.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1533.41 CHANNEL SLOPE = 0.0039  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 18.43  
CHANNEL FLOW THRU SUBAREA (CFS) = 54027.93  
FLOW VELOCITY (FEET/SEC.) = 16.88 FLOW DEPTH (FEET) = 18.43  
TRAVEL TIME (MIN.) = 1.51 Tc (MIN.) = 108.58  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 3 <<<<

PEAK FLOWRATE TABLE FILE NAME: 0506105i.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	447.60	14.36	0.30 ( 0.27)	0.90	208.7	10520.00
2	533.75	30.45	0.30 ( 0.28)	0.93	403.6	10500.00
TOTAL AREA (ACRES) =						403.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	28465.17	19.73	2.424	0.30 ( 0.24)	0.79	4235.0	10300.00
2	28518.37	19.87	2.410	0.30 ( 0.24)	0.79	4266.9	10230.00
3	28865.99	20.52	2.364	0.30 ( 0.24)	0.79	4451.3	10380.00
4	29072.00	20.91	2.340	0.30 ( 0.24)	0.79	4560.4	10400.00
5	30055.55	22.79	2.220	0.30 ( 0.24)	0.79	5080.6	10320.00
6	30311.46	23.28	2.189	0.30 ( 0.24)	0.79	5215.0	300.00
7	31187.92	24.99	2.081	0.30 ( 0.24)	0.79	5834.6	10360.00
8	32606.93	27.78	1.957	0.30 ( 0.24)	0.79	6835.5	10340.00
9	32684.21	27.93	1.951	0.30 ( 0.24)	0.79	6889.7	210.00
10	33039.04	28.93	1.906	0.30 ( 0.24)	0.79	7241.5	10200.00
11	33254.79	29.54	1.879	0.30 ( 0.24)	0.79	7455.1	10250.00
12	34560.99	33.23	1.777	0.30 ( 0.24)	0.79	8738.4	10220.00
13	35322.68	35.36	1.722	0.30 ( 0.24)	0.79	9474.9	110.00
14	40735.82	50.51	1.385	0.30 ( 0.24)	0.82	16983.4	50260.00
15	43339.39	60.60	1.272	0.30 ( 0.25)	0.84	22353.9	390.00
16	45819.08	71.57	1.198	0.30 ( 0.26)	0.87	28164.7	13100.00
17	47465.39	77.99	1.154	0.30 ( 0.26)	0.88	31269.4	11801.00
18	49908.62	87.14	1.092	0.30 ( 0.27)	0.89	36313.1	11530.00
19	51203.98	92.59	1.061	0.30 ( 0.27)	0.90	40053.6	13510.00
20	52264.20	97.31	1.040	0.30 ( 0.27)	0.91	43191.7	13010.00
21	53393.60	102.33	1.017	0.30 ( 0.27)	0.91	46556.7	11330.00
22	54027.93	108.58	0.988	0.30 ( 0.28)	0.92	50987.7	11130.00
23	53433.55	116.22	0.953	0.30 ( 0.28)	0.93	54981.7	12330.00
24	52778.32	122.91	0.928	0.30 ( 0.28)	0.93	58324.9	12400.00
25	51755.57	131.67	0.906	0.30 ( 0.28)	0.93	61693.6	12201.00
26	50260.69	141.15	0.881	0.30 ( 0.28)	0.93	64147.8	12101.10
27	49582.46	145.24	0.870	0.30 ( 0.28)	0.93	64996.9	10400.00
28	47744.59	153.46	0.849	0.30 ( 0.28)	0.94	66312.0	12010.00
29	46233.50	159.50	0.833	0.30 ( 0.28)	0.94	66625.7	10210.00
30	41875.64	186.09	0.773	0.30 ( 0.28)	0.94	67358.4	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	447.60	14.36	3.006	0.30 ( 0.27)	0.90	208.7	10520.00
2	533.75	30.45	1.848	0.30 ( 0.28)	0.93	403.6	10500.00

LONGEST FLOWPATH FROM NODE 10500.00 TO NODE 13802.00 = 12187.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26681.04	14.36	3.006	0.30 ( 0.24)	0.80	3291.1	10520.00
2	28941.54	19.73	2.424	0.30 ( 0.24)	0.80	4508.8	10300.00
3	28995.46	19.87	2.410	0.30 ( 0.24)	0.80	4542.3	10230.00
4	29346.53	20.52	2.364	0.30 ( 0.24)	0.80	4734.6	10380.00
5	29554.64	20.91	2.340	0.30 ( 0.24)	0.80	4848.4	10400.00
6	30548.25	22.79	2.220	0.30 ( 0.24)	0.80	5391.4	10320.00
7	30806.82	23.28	2.189	0.30 ( 0.24)	0.80	5531.8	300.00
8	31692.44	24.99	2.081	0.30 ( 0.24)	0.80	6172.1	10360.00
9	33126.36	27.78	1.957	0.30 ( 0.24)	0.80	7206.7	10340.00
10	33204.45	27.93	1.951	0.30 ( 0.24)	0.80	7262.8	210.00

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
11	33564.64	28.93	1.906	0.30 ( 0.24)	0.80	7626.7	10200.00
12	33783.66	29.54	1.879	0.30 ( 0.24)	0.80	7847.6	10250.00
13	34110.51	30.45	1.848	0.30 ( 0.24)	0.80	8175.0	10500.00
14	35070.59	33.23	1.777	0.30 ( 0.24)	0.80	9142.0	10220.00
15	35813.82	35.36	1.722	0.30 ( 0.24)	0.80	9878.5	110.00
16	41112.32	50.51	1.385	0.30 ( 0.25)	0.82	17387.0	50260.00
17	43677.39	60.60	1.272	0.30 ( 0.25)	0.85	22757.5	390.00
18	46131.85	71.57	1.198	0.30 ( 0.26)	0.87	28568.3	13100.00
19	47763.38	77.99	1.154	0.30 ( 0.26)	0.88	31673.0	11801.00
20	50185.55	87.14	1.092	0.30 ( 0.27)	0.89	36716.7	11530.00
21	51470.32	92.59	1.061	0.30 ( 0.27)	0.90	40457.2	13510.00
22	52523.20	97.31	1.040	0.30 ( 0.27)	0.91	43595.3	13010.00
23	53644.80	102.33	1.017	0.30 ( 0.27)	0.91	46960.3	11330.00
24	54269.43	108.58	0.988	0.30 ( 0.28)	0.92	51391.3	11130.00
25	53663.20	116.22	0.953	0.30 ( 0.28)	0.93	55385.3	12330.00
26	52999.51	122.91	0.928	0.30 ( 0.28)	0.93	58728.5	12400.00
27	51969.02	131.67	0.906	0.30 ( 0.28)	0.93	62097.2	12201.00
28	50465.76	141.15	0.881	0.30 ( 0.28)	0.93	64551.4	12101.10
29	49783.91	145.24	0.870	0.30 ( 0.28)	0.93	65400.5	10400.00
30	47938.77	153.46	0.849	0.30 ( 0.28)	0.94	66715.6	12010.00
31	46422.34	159.50	0.833	0.30 ( 0.28)	0.94	67029.3	10210.00
32	42043.99	186.09	0.773	0.30 ( 0.28)	0.94	67762.0	10100.00

TOTAL AREA (ACRES) = 67762.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 54269.43 Tc (MIN.) = 108.585  
EFFECTIVE AREA (ACRES) = 51391.32 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 67762.0  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13802.00 = 130408.82 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 135.00 DOWNSTREAM (FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA (FEET) = 207.23 CHANNEL SLOPE = 0.0097  
GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 14.65  
CHANNEL FLOW THRU SUBAREA (CFS) = 54269.43  
FLOW VELOCITY (FEET/SEC.) = 23.37 FLOW DEPTH (FEET) = 14.65  
TRAVEL TIME (MIN.) = 0.15 Tc (MIN.) = 108.73  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12  
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>>>>CLEAR MEMORY BANK # 3 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
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>>>>DEFINE MEMORY BANK # 3 <<<<<

PEAK FLOWRATE TABLE FILE NAME: 0506106b.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.36	17.31	0.30 ( 0.20)	0.67		36.9	10600.00

TOTAL AREA (ACRES) = 36.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11  
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>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26681.04	14.55	2.975	0.30 ( 0.24)	0.80	3291.1	10520.00
2	28941.54	19.91	2.406	0.30 ( 0.24)	0.80	4508.8	10300.00
3	28995.46	20.05	2.394	0.30 ( 0.24)	0.80	4542.3	10230.00
4	29346.53	20.69	2.353	0.30 ( 0.24)	0.80	4734.6	10380.00
5	29554.64	21.08	2.328	0.30 ( 0.24)	0.80	4848.4	10400.00
6	30548.25	22.96	2.209	0.30 ( 0.24)	0.80	5391.4	10320.00
7	30806.82	23.46	2.178	0.30 ( 0.24)	0.80	5531.8	300.00
8	31692.44	25.16	2.073	0.30 ( 0.24)	0.80	6172.1	10360.00
9	33126.36	27.95	1.950	0.30 ( 0.24)	0.80	7206.7	10340.00
10	33204.45	28.10	1.943	0.30 ( 0.24)	0.80	7262.8	210.00
11	33564.64	29.10	1.899	0.30 ( 0.24)	0.80	7626.7	10200.00
12	33783.66	29.71	1.872	0.30 ( 0.24)	0.80	7847.6	10250.00
13	34110.51	30.62	1.843	0.30 ( 0.24)	0.80	8175.0	10500.00
14	35070.59	33.40	1.772	0.30 ( 0.24)	0.80	9142.0	10220.00
15	35813.82	35.53	1.718	0.30 ( 0.24)	0.80	9878.5	110.00
16	41112.32	50.67	1.383	0.30 ( 0.25)	0.82	17387.0	50260.00
17	43677.39	60.76	1.271	0.30 ( 0.25)	0.85	22757.5	390.00
18	46131.85	71.72	1.197	0.30 ( 0.26)	0.87	28568.3	13100.00
19	47763.38	78.15	1.153	0.30 ( 0.26)	0.88	31673.0	11801.00
20	50185.55	87.29	1.091	0.30 ( 0.27)	0.89	36716.7	11530.00
21	51470.32	92.74	1.060	0.30 ( 0.27)	0.90	40457.2	13510.00
22	52523.20	97.46	1.039	0.30 ( 0.27)	0.91	43595.3	13010.00
23	53644.80	102.48	1.016	0.30 ( 0.27)	0.91	46960.3	11330.00
24	54269.43	108.73	0.987	0.30 ( 0.28)	0.92	51391.3	11130.00
25	53663.20	116.37	0.953	0.30 ( 0.28)	0.93	55385.3	12330.00
26	52999.51	123.06	0.928	0.30 ( 0.28)	0.93	58728.5	12400.00
27	51969.02	131.82	0.905	0.30 ( 0.28)	0.93	62097.2	12201.00
28	50465.76	141.30	0.881	0.30 ( 0.28)	0.93	64551.4	12101.10
29	49783.91	145.39	0.870	0.30 ( 0.28)	0.93	65400.5	10400.00
30	47938.77	153.62	0.849	0.30 ( 0.28)	0.94	66715.6	12010.00
31	46422.34	159.66	0.833	0.30 ( 0.28)	0.94	67029.3	10210.00
32	42043.99	186.25	0.773	0.30 ( 0.28)	0.94	67762.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

\*\* MEMORY BANK # 3 CONFLUENCE DATA \*\*

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.36	17.31	2.667	0.30 ( 0.20)	0.67	36.9	10600.00

LONGEST FLOWPATH FROM NODE 10600.00 TO NODE 13803.00 = 1713.00 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

Stream	Q	Tc	Intensity	Fp (Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	26750.38	14.55	2.975	0.30 ( 0.24)	0.80	3322.1 10520.00
2	27918.46	17.31	2.667	0.30 ( 0.24)	0.80	3955.1 10600.00
3	29007.12	19.91	2.406	0.30 ( 0.24)	0.80	4545.7 10300.00
4	29060.69	20.05	2.394	0.30 ( 0.24)	0.80	4579.2 10230.00
5	29410.55	20.69	2.353	0.30 ( 0.24)	0.80	4771.5 10380.00
6	29617.92	21.08	2.328	0.30 ( 0.24)	0.80	4885.3 10400.00
7	30607.99	22.96	2.209	0.30 ( 0.24)	0.80	5428.3 10320.00
8	30865.63	23.46	2.178	0.30 ( 0.24)	0.80	5568.7 300.00
9	31748.11	25.16	2.073	0.30 ( 0.24)	0.80	6209.0 10360.00
10	33178.38	27.95	1.950	0.30 ( 0.24)	0.80	7243.6 10340.00
11	33256.27	28.10	1.943	0.30 ( 0.24)	0.80	7299.7 210.00
12	33615.14	29.10	1.899	0.30 ( 0.24)	0.80	7663.6 10200.00
13	33833.36	29.71	1.872	0.30 ( 0.24)	0.80	7884.5 10250.00
14	34159.36	30.62	1.843	0.30 ( 0.24)	0.80	8211.9 10500.00
15	35117.33	33.40	1.772	0.30 ( 0.24)	0.80	9178.9 10220.00
16	35858.94	35.53	1.718	0.30 ( 0.24)	0.80	9915.4 110.00
17	41147.48	50.67	1.383	0.30 ( 0.25)	0.82	17423.9 50260.00
18	43709.21	60.76	1.271	0.30 ( 0.25)	0.84	22794.4 390.00
19	46161.47	71.72	1.197	0.30 ( 0.26)	0.87	28605.2 13100.00
20	47791.70	78.15	1.153	0.30 ( 0.26)	0.88	31709.9 11801.00
21	50212.04	87.29	1.091	0.30 ( 0.27)	0.89	36753.6 11530.00
22	51495.89	92.74	1.060	0.30 ( 0.27)	0.90	40494.1 13510.00
23	52548.13	97.46	1.039	0.30 ( 0.27)	0.91	43632.2 13010.00
24	53669.05	102.48	1.016	0.30 ( 0.27)	0.91	46997.2 11330.00
25	54292.82	108.73	0.987	0.30 ( 0.28)	0.92	51428.2 11130.00
26	53685.55	116.37	0.953	0.30 ( 0.28)	0.92	55422.2 12330.00
27	53021.14	123.06	0.928	0.30 ( 0.28)	0.93	58765.4 12400.00
28	51989.96	131.82	0.905	0.30 ( 0.28)	0.93	62134.1 12201.00
29	50485.97	141.30	0.881	0.30 ( 0.28)	0.93	64588.3 12101.10
30	49803.81	145.39	0.870	0.30 ( 0.28)	0.93	65437.4 10400.00
31	47958.04	153.62	0.849	0.30 ( 0.28)	0.94	66752.5 12010.00
32	46441.13	159.66	0.833	0.30 ( 0.28)	0.94	67066.2 10210.00
33	42061.00	186.25	0.773	0.30 ( 0.28)	0.94	67798.9 10100.00
TOTAL AREA (ACRES) = 67798.9						

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 54292.82 Tc (MIN.) = 108.732  
EFFECTIVE AREA (ACRES) = 51428.21 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
TOTAL AREA (ACRES) = 67798.9  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

=====  
END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 67798.9 TC (MIN.) = 108.73  
EFFECTIVE AREA (ACRES) = 51428.21 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.920  
PEAK FLOW RATE (CFS) = 54292.82

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26750.38	14.55	2.975	0.30 ( 0.24)	0.80	3322.1	10520.00
2	27918.46	17.31	2.667	0.30 ( 0.24)	0.80	3955.1	10600.00
3	29007.12	19.91	2.406	0.30 ( 0.24)	0.80	4545.7	10300.00
4	29060.69	20.05	2.394	0.30 ( 0.24)	0.80	4579.2	10230.00
5	29410.55	20.69	2.353	0.30 ( 0.24)	0.80	4771.5	10380.00
6	29617.92	21.08	2.328	0.30 ( 0.24)	0.80	4885.3	10400.00

7	30607.99	22.96	2.209	0.30 ( 0.24)	0.80	5428.3	10320.00
8	30865.63	23.46	2.178	0.30 ( 0.24)	0.80	5568.7	300.00
9	31748.11	25.16	2.073	0.30 ( 0.24)	0.80	6209.0	10360.00
10	33178.38	27.95	1.950	0.30 ( 0.24)	0.80	7243.6	10340.00
11	33256.27	28.10	1.943	0.30 ( 0.24)	0.80	7299.7	210.00
12	33615.14	29.10	1.899	0.30 ( 0.24)	0.80	7663.6	10200.00
13	33833.36	29.71	1.872	0.30 ( 0.24)	0.80	7884.5	10250.00
14	34159.36	30.62	1.843	0.30 ( 0.24)	0.80	8211.9	10500.00
15	35117.33	33.40	1.772	0.30 ( 0.24)	0.80	9178.9	10220.00
16	35858.94	35.53	1.718	0.30 ( 0.24)	0.80	9915.4	110.00
17	41147.48	50.67	1.383	0.30 ( 0.25)	0.82	17423.9	50260.00
18	43709.21	60.76	1.271	0.30 ( 0.25)	0.84	22794.4	390.00
19	46161.47	71.72	1.197	0.30 ( 0.26)	0.87	28605.2	13100.00
20	47791.70	78.15	1.153	0.30 ( 0.26)	0.88	31709.9	11801.00
21	50212.04	87.29	1.091	0.30 ( 0.27)	0.89	36753.6	11530.00
22	51495.89	92.74	1.060	0.30 ( 0.27)	0.90	40494.1	13510.00
23	52548.13	97.46	1.039	0.30 ( 0.27)	0.91	43632.2	13010.00
24	53669.05	102.48	1.016	0.30 ( 0.27)	0.91	46997.2	11330.00
25	54292.82	108.73	0.987	0.30 ( 0.28)	0.92	51428.2	11130.00
26	53685.55	116.37	0.953	0.30 ( 0.28)	0.92	55422.2	12330.00
27	53021.14	123.06	0.928	0.30 ( 0.28)	0.93	58765.4	12400.00
28	51989.96	131.82	0.905	0.30 ( 0.28)	0.93	62134.1	12201.00
29	50485.97	141.30	0.881	0.30 ( 0.28)	0.93	64588.3	12101.10
30	49803.81	145.39	0.870	0.30 ( 0.28)	0.93	65437.4	10400.00
31	47958.04	153.62	0.849	0.30 ( 0.28)	0.94	66752.5	12010.00
32	46441.13	159.66	0.833	0.30 ( 0.28)	0.94	67066.2	10210.00
33	42061.00	186.25	0.773	0.30 ( 0.28)	0.94	67798.9	10100.00

=====  
END OF RATIONAL METHOD ANALYSIS  
=====



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S38- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV38.DAT  
TIME/DATE OF STUDY: 14:04 04/03/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90  
\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.750
- 2) 10.00; 3.727
- 3) 15.00; 2.893
- 4) 20.00; 2.393
- 5) 25.00; 2.078
- 6) 30.00; 1.857
- 7) 40.00; 1.601
- 8) 50.00; 1.389
- 9) 60.00; 1.274
- 10) 90.00; 1.070
- 11) 120.00; 0.933
- 12) 180.00; 0.777
- 13) 360.00; 0.572
- 14) 1200.00; 0.248

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES WIDTH (FT)	LIP (FT)	HIKE (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1  
-----

>>>>DEFINE MEMORY BANK # 1 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RU00EV37.DNA  
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31748.11	25.16	0.30 ( 0.24)	0.80	6209.0	10360.00
2	34159.36	30.62	0.30 ( 0.24)	0.80	8211.9	10500.00
3	35858.94	35.53	0.30 ( 0.24)	0.80	9915.4	110.00
4	41147.48	50.67	0.30 ( 0.25)	0.82	17423.9	50260.00
5	43709.21	60.76	0.30 ( 0.25)	0.84	22794.4	390.00
6	46161.47	71.72	0.30 ( 0.26)	0.87	28605.2	13100.00
7	47791.70	78.15	0.30 ( 0.26)	0.88	31709.9	11801.00
8	50212.04	87.29	0.30 ( 0.27)	0.89	36753.6	11530.00
9	51495.89	92.74	0.30 ( 0.27)	0.90	40494.1	13510.00
10	52548.13	97.46	0.30 ( 0.27)	0.91	43632.2	13010.00
11	53669.05	102.48	0.30 ( 0.27)	0.91	46997.2	11330.00
12	54292.82	108.73	0.30 ( 0.28)	0.92	51428.2	11130.00
13	53685.55	116.37	0.30 ( 0.28)	0.92	55422.2	12330.00
14	53021.14	123.06	0.30 ( 0.28)	0.93	58765.4	12400.00
15	51989.96	131.82	0.30 ( 0.28)	0.93	62134.1	12201.00
16	50485.97	141.30	0.30 ( 0.28)	0.93	64588.3	12101.10
17	49803.81	145.39	0.30 ( 0.28)	0.93	65437.4	10400.00
18	47958.04	153.62	0.30 ( 0.28)	0.94	66752.5	12010.00
19	46441.13	159.66	0.30 ( 0.28)	0.94	67066.2	10210.00
20	42061.00	186.25	0.30 ( 0.28)	0.94	67798.9	10100.00
TOTAL AREA (ACRES) =						67798.9

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0  
-----

>>>>MEMORY BANK # 1 COPIED ONTO MAIN-STREAM MEMORY<<<<<

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MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31748.11	25.16	0.30 ( 0.24)	0.80	6209.0	10360.00
2	34159.36	30.62	0.30 ( 0.24)	0.80	8211.9	10500.00
3	35858.94	35.53	0.30 ( 0.24)	0.80	9915.4	110.00
4	41147.48	50.67	0.30 ( 0.25)	0.82	17423.9	50260.00
5	43709.21	60.76	0.30 ( 0.25)	0.84	22794.4	390.00
6	46161.47	71.72	0.30 ( 0.26)	0.87	28605.2	13100.00
7	47791.70	78.15	0.30 ( 0.26)	0.88	31709.9	11801.00
8	50212.04	87.29	0.30 ( 0.27)	0.89	36753.6	11530.00
9	51495.89	92.74	0.30 ( 0.27)	0.90	40494.1	13510.00
10	52548.13	97.46	0.30 ( 0.27)	0.91	43632.2	13010.00
11	53669.05	102.48	0.30 ( 0.27)	0.91	46997.2	11330.00
12	54292.82	108.73	0.30 ( 0.28)	0.92	51428.2	11130.00
13	53685.55	116.37	0.30 ( 0.28)	0.92	55422.2	12330.00

14 53021.14 123.06 0.30( 0.28) 0.93 58765.4 12400.00  
 15 51989.96 131.82 0.30( 0.28) 0.93 62134.1 12201.00  
 16 50485.97 141.30 0.30( 0.28) 0.93 64588.3 12101.10  
 17 49803.81 145.39 0.30( 0.28) 0.93 65437.4 10400.00  
 18 47958.04 153.62 0.30( 0.28) 0.94 66752.5 12010.00  
 19 46441.13 159.66 0.30( 0.28) 0.94 67066.2 10210.00  
 20 42061.00 186.25 0.30( 0.28) 0.94 67798.9 10100.00  
 TOTAL AREA (ACRES) = 67798.9

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 140.00 DOWNSTREAM(FEET) = 137.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 926.91 CHANNEL SLOPE = 0.0032  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 19.39

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.980

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.44	0.30	0.983	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.983

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54302.52

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.77

AVERAGE FLOW DEPTH(FEET) = 19.39 TRAVEL TIME(MIN.) = 0.98

Tc(MIN.) = 109.71

SUBAREA AREA(ACRES) = 31.44 SUBAREA RUNOFF(CFS) = 19.39

EFFECTIVE AREA(ACRES) = 51459.66 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92

TOTAL AREA(ACRES) = 67830.4 PEAK FLOW RATE(CFS) = 54292.82

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

\*ESTIMATED CHANNEL HEIGHT(FEET) = 19.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 19.38 FLOW VELOCITY(FEET/SEC.) = 15.78

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 109.71

RAINFALL INTENSITY(INCH/HR) = 0.98

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.92

EFFECTIVE STREAM AREA(ACRES) = 51459.66

TOTAL STREAM AREA(ACRES) = 67830.36

PEAK FLOW RATE(CFS) AT CONFLUENCE = 54292.82

\*\*\*\*\*

FLOW PROCESS FROM NODE 13810.00 TO NODE 13811.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 648.54

ELEVATION DATA: UPSTREAM(FEET) = 756.46 DOWNSTREAM(FEET) = 586.02

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.293

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.345

SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	-	5.58	0.30	1.000	0	12.29

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF(CFS) = 15.29

TOTAL AREA(ACRES) = 5.58 PEAK FLOW RATE(CFS) = 15.29

\*\*\*\*\*

FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 586.02 DOWNSTREAM(FEET) = 437.69  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 696.28 CHANNEL SLOPE = 0.2130

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.49

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.044

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.79	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33.60

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.45

AVERAGE FLOW DEPTH(FEET) = 0.48 TRAVEL TIME(MIN.) = 1.80

Tc(MIN.) = 14.09

SUBAREA AREA(ACRES) = 14.79 SUBAREA RUNOFF(CFS) = 36.53

EFFECTIVE AREA(ACRES) = 20.37 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 20.4 PEAK FLOW RATE(CFS) = 50.31

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.60 FLOW VELOCITY(FEET/SEC.) = 7.49

LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

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FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 437.69 DOWNSTREAM(FEET) = 402.36
CHANNEL LENGTH THRU SUBAREA(FEET) = 681.04 CHANNEL SLOPE = 0.0519
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.12
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.768
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 18.41 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 70.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.27
AVERAGE FLOW DEPTH(FEET) = 1.10 TRAVEL TIME(MIN.) = 2.16
Tc(MIN.) = 16.25
SUBAREA AREA(ACRES) = 18.41 SUBAREA RUNOFF(CFS) = 40.90
EFFECTIVE AREA(ACRES) = 38.78 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 38.8 PEAK FLOW RATE(CFS) = 86.15
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.23 FLOW VELOCITY(FEET/SEC.) = 5.60
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13812.00 = 2025.86 FEET.

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*****
FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 402.36 DOWNSTREAM(FEET) = 259.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 1282.56 CHANNEL SLOPE = 0.1112
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.18
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.500
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 27.87 0.30 0.858 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.858
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 114.30
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.96
AVERAGE FLOW DEPTH(FEET) = 1.16 TRAVEL TIME(MIN.) = 2.68
Tc(MIN.) = 18.93
SUBAREA AREA(ACRES) = 27.87 SUBAREA RUNOFF(CFS) = 56.24
EFFECTIVE AREA(ACRES) = 66.65 AREA-AVERAGED Fm(INCH/HR) = 0.28

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AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66.7 PEAK FLOW RATE(CFS) = 133.02
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.27

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.27 FLOW VELOCITY(FEET/SEC.) = 8.34
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

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*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00
FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 27.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 22.94
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 133.02
PIPE TRAVEL TIME(MIN.) = 1.75 Tc(MIN.) = 20.69
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

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*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
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MAINLINE Tc(MIN.) = 20.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.350
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 83.64 0.30 0.570 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570
SUBAREA AREA(ACRES) = 83.64 SUBAREA RUNOFF(CFS) = 164.01
EFFECTIVE AREA(ACRES) = 150.29 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 150.3 PEAK FLOW RATE(CFS) = 288.03

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*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
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TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 20.69
RAINFALL INTENSITY(INCH/HR) = 2.35
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.73
EFFECTIVE STREAM AREA(ACRES) = 150.29
TOTAL STREAM AREA(ACRES) = 150.29

```



PEAK FLOW RATE(CFS) AT CONFLUENCE = 288.03

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31748.11	26.30	2.020	0.30 ( 0.24)	0.80	6240.4	10360.00
1	34159.36	31.73	1.813	0.30 ( 0.24)	0.80	8243.3	10500.00
1	35858.94	36.63	1.687	0.30 ( 0.24)	0.80	9946.8	110.00
1	41147.48	51.73	1.369	0.30 ( 0.25)	0.82	17455.3	50260.00
1	43709.21	61.80	1.262	0.30 ( 0.25)	0.85	22825.8	390.00
1	46161.47	72.75	1.187	0.30 ( 0.26)	0.87	28636.6	13100.00
1	47791.70	79.16	1.144	0.30 ( 0.26)	0.88	31741.3	11801.00
1	50212.04	88.29	1.082	0.30 ( 0.27)	0.89	36785.1	11530.00
1	51495.89	93.73	1.053	0.30 ( 0.27)	0.90	40525.5	13510.00
1	52548.13	98.45	1.031	0.30 ( 0.27)	0.91	43663.6	13010.00
1	53669.05	103.46	1.009	0.30 ( 0.27)	0.91	47028.7	11330.00
1	54292.82	109.71	0.980	0.30 ( 0.28)	0.92	51459.7	11130.00
1	53685.55	117.35	0.945	0.30 ( 0.28)	0.92	55453.6	12330.00
1	53021.14	124.05	0.922	0.30 ( 0.28)	0.93	58796.8	12400.00
1	51989.96	132.81	0.900	0.30 ( 0.28)	0.93	62165.6	12201.00
1	50485.97	142.30	0.875	0.30 ( 0.28)	0.93	64619.7	12101.10
1	49803.81	146.40	0.864	0.30 ( 0.28)	0.93	65468.8	10400.00
1	47958.04	154.63	0.843	0.30 ( 0.28)	0.94	66783.9	12010.00
1	46441.13	160.68	0.827	0.30 ( 0.28)	0.94	67097.6	10210.00
1	42061.00	187.30	0.769	0.30 ( 0.28)	0.94	67830.4	10100.00
2	288.03	20.69	2.350	0.30 ( 0.22)	0.73	150.3	13810.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29875.72	20.69	2.350	0.30 ( 0.24)	0.80	5058.4	13810.00
2	31991.61	26.30	2.020	0.30 ( 0.24)	0.80	6390.7	10360.00
3	34374.74	31.73	1.813	0.30 ( 0.24)	0.80	8393.6	10500.00
4	36057.37	36.63	1.687	0.30 ( 0.24)	0.80	10097.1	110.00
5	41302.88	51.73	1.369	0.30 ( 0.25)	0.82	17605.6	50260.00
6	43850.09	61.80	1.262	0.30 ( 0.25)	0.84	22976.1	390.00
7	46292.27	72.75	1.187	0.30 ( 0.26)	0.87	28786.9	13100.00
8	47916.61	79.16	1.144	0.30 ( 0.26)	0.88	31891.6	11801.00
9	50328.55	88.29	1.082	0.30 ( 0.27)	0.89	36935.4	11530.00
10	51608.52	93.73	1.053	0.30 ( 0.27)	0.90	40675.8	13510.00
11	52657.85	98.45	1.031	0.30 ( 0.27)	0.91	43813.9	13010.00
12	53775.67	103.46	1.009	0.30 ( 0.27)	0.91	47179.0	11330.00
13	54395.59	109.71	0.980	0.30 ( 0.28)	0.92	51609.9	11130.00
14	53783.59	117.35	0.945	0.30 ( 0.28)	0.92	55603.9	12330.00
15	53116.12	124.05	0.922	0.30 ( 0.28)	0.93	58947.1	12400.00
16	52081.86	132.81	0.900	0.30 ( 0.28)	0.93	62315.9	12201.00
17	50574.54	142.30	0.875	0.30 ( 0.28)	0.93	64770.0	12101.10
18	49890.93	146.40	0.864	0.30 ( 0.28)	0.93	65619.1	10400.00
19	48042.26	154.63	0.843	0.30 ( 0.28)	0.93	66934.2	12010.00
20	46523.23	160.68	0.827	0.30 ( 0.28)	0.94	67247.9	10210.00
21	42135.18	187.30	0.769	0.30 ( 0.28)	0.94	67980.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 54395.59 Tc(MIN.) = 109.71  
EFFECTIVE AREA(ACRES) = 51609.95 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 67980.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13820.00 = 131542.95 FEET.

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FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 56

-----  
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 137.00 DOWNSTREAM(FEET) = 133.00  
CHANNEL LENGTH THRU SUBAREA(FEET) = 1261.34 CHANNEL SLOPE = 0.0032  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 19.51  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.974  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	31.60	0.30	0.683	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.683  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54406.52  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.67  
AVERAGE FLOW DEPTH(FEET) = 19.51 TRAVEL TIME(MIN.) = 1.34  
Tc(MIN.) = 111.05

SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 21.87  
EFFECTIVE AREA(ACRES) = 51641.55 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68012.2 PEAK FLOW RATE(CFS) = 54395.59  
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 19.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 19.50 FLOW VELOCITY(FEET/SEC.) = 15.67  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

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FLOW PROCESS FROM NODE 13820.00 TO NODE 13840.00 IS CODE = 1

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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

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TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION(MIN.) = 111.05  
RAINFALL INTENSITY(INCH/HR) = 0.97  
AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92  
EFFECTIVE STREAM AREA(ACRES) = 51641.55  
TOTAL STREAM AREA(ACRES) = 68012.25  
PEAK FLOW RATE(CFS) AT CONFLUENCE = 54395.59

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FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

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>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
=====
INITIAL SUBAREA FLOW-LENGTH (FEET) = 744.71
ELEVATION DATA: UPSTREAM (FEET) = 1100.95 DOWNSTREAM (FEET) = 959.21

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)] ** 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.858
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.083
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" - 5.06 0.30 1.000 0 13.86
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 12.68
TOTAL AREA (ACRES) = 5.06 PEAK FLOW RATE (CFS) = 12.68

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FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM (FEET) = 959.21 DOWNSTREAM (FEET) = 832.83
CHANNEL LENGTH THRU SUBAREA (FEET) = 1076.71 CHANNEL SLOPE = 0.1174
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.74
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.711
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.57 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 48.16
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.06
AVERAGE FLOW DEPTH (FEET) = 0.70 TRAVEL TIME (MIN.) = 2.96
Tc (MIN.) = 16.82
SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 70.68
EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 81.66
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.95

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.95 FLOW VELOCITY (FEET/SEC.) = 7.23
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

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FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM (FEET) = 832.83 DOWNSTREAM (FEET) = 572.49
CHANNEL LENGTH THRU SUBAREA (FEET) = 1883.58 CHANNEL SLOPE = 0.1382
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.11
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.361
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.23 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 111.59
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.49
AVERAGE FLOW DEPTH (FEET) = 1.08 TRAVEL TIME (MIN.) = 3.70
Tc (MIN.) = 20.51
SUBAREA AREA (ACRES) = 32.23 SUBAREA RUNOFF (CFS) = 59.77
EFFECTIVE AREA (ACRES) = 69.86 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 69.9 PEAK FLOW RATE (CFS) = 129.56
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.18

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.18 FLOW VELOCITY (FEET/SEC.) = 8.90
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

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FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
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ELEVATION DATA: UPSTREAM (FEET) = 572.49 DOWNSTREAM (FEET) = 471.65
CHANNEL LENGTH THRU SUBAREA (FEET) = 943.78 CHANNEL SLOPE = 0.1068
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.40
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.246
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 27.51 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 153.65
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.62
AVERAGE FLOW DEPTH (FEET) = 1.39 TRAVEL TIME (MIN.) = 1.82
Tc (MIN.) = 22.34
SUBAREA AREA (ACRES) = 27.51 SUBAREA RUNOFF (CFS) = 48.18
EFFECTIVE AREA (ACRES) = 97.37 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 97.4 PEAK FLOW RATE (CFS) = 170.51
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.48

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.48 FLOW VELOCITY (FEET/SEC.) = 8.91  
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

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FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 471.65 DOWNSTREAM (FEET) = 347.06  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1647.45 CHANNEL SLOPE = 0.0756  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.02

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.058

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	94.21	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 245.10

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.82

AVERAGE FLOW DEPTH (FEET) = 1.99 TRAVEL TIME (MIN.) = 3.11

Tc (MIN.) = 25.45

SUBAREA AREA (ACRES) = 94.21 SUBAREA RUNOFF (CFS) = 149.07

EFFECTIVE AREA (ACRES) = 191.58 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 191.6 PEAK FLOW RATE (CFS) = 303.14

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 2.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 2.23 FLOW VELOCITY (FEET/SEC.) = 9.39

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 347.06 DOWNSTREAM (FEET) = 269.29  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1696.71 CHANNEL SLOPE = 0.0458  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.28

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.918

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	233.25	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 473.04

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.90  
AVERAGE FLOW DEPTH (FEET) = 3.23 TRAVEL TIME (MIN.) = 3.18  
Tc (MIN.) = 28.63  
SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 339.58  
EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 618.49  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 3.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.71 FLOW VELOCITY (FEET/SEC.) = 9.59

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87  
CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.42

\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.766

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.70	0.30	0.880	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 709.58

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.58

AVERAGE FLOW DEPTH (FEET) = 4.40 TRAVEL TIME (MIN.) = 4.91

Tc (MIN.) = 33.54

SUBAREA AREA (ACRES) = 134.70 SUBAREA RUNOFF (CFS) = 182.13

EFFECTIVE AREA (ACRES) = 559.53 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97

TOTAL AREA (ACRES) = 559.5 PEAK FLOW RATE (CFS) = 742.79

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

\*ESTIMATED CHANNEL HEIGHT (FEET) = 4.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 4.50 FLOW VELOCITY (FEET/SEC.) = 8.69

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13837.00 = 10522.15 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM (FEET) = 191.87 DOWNSTREAM (FEET) = 133.00  
FLOW LENGTH (FEET) = 1151.02 MANNING'S N = 0.013  
DEPTH OF FLOW IN 69.0 INCH PIPE IS 51.9 INCHES

PIPE-FLOW VELOCITY (FEET/SEC.) = 35.42  
 ESTIMATED PIPE DIAMETER (INCH) = 69.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 742.79  
 PIPE TRAVEL TIME (MIN.) = 0.54 Tc (MIN.) = 34.08  
 LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13840.00 = 11673.17 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

MAINLINE Tc (MIN.) = 34.08  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.752  
 SUBAREA LOSS RATE DATA (AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 5.97 0.30 0.622 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.622  
 SUBAREA AREA (ACRES) = 5.97 SUBAREA RUNOFF (CFS) = 8.41  
 EFFECTIVE AREA (ACRES) = 565.50 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97  
 TOTAL AREA (ACRES) = 565.5 PEAK FLOW RATE (CFS) = 744.23

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13837.00 TO NODE 13840.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 34.08  
 RAINFALL INTENSITY (INCH/HR) = 1.75  
 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.97  
 EFFECTIVE STREAM AREA (ACRES) = 565.50  
 TOTAL STREAM AREA (ACRES) = 565.50  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 744.23

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	29875.72	22.27	2.250	0.30 (0.24)	0.80	5090.0	13810.00
1	31991.61	27.86	1.952	0.30 (0.24)	0.80	6422.3	10360.00
1	34374.74	33.26	1.774	0.30 (0.24)	0.80	8425.2	10500.00
1	36057.37	38.14	1.649	0.30 (0.24)	0.80	10128.7	110.00
1	41302.88	53.18	1.352	0.30 (0.25)	0.82	17637.2	50260.00
1	43850.09	63.23	1.252	0.30 (0.25)	0.84	23007.7	390.00
1	46292.27	74.15	1.178	0.30 (0.26)	0.87	28818.5	13100.00
1	47916.61	80.55	1.134	0.30 (0.26)	0.88	31923.2	11801.00
1	50328.55	89.66	1.072	0.30 (0.27)	0.89	36967.0	11530.00
1	51608.52	95.10	1.047	0.30 (0.27)	0.90	40707.4	13510.00
1	52657.85	99.80	1.025	0.30 (0.27)	0.91	43845.5	13010.00
1	53775.67	104.81	1.002	0.30 (0.27)	0.91	47210.6	11330.00
1	54395.59	111.05	0.974	0.30 (0.28)	0.92	51641.5	11130.00
1	53783.59	118.70	0.939	0.30 (0.28)	0.92	55635.5	12330.00

1	53116.12	125.40	0.919	0.30 (0.28)	0.93	58978.7	12400.00
1	52081.86	134.17	0.896	0.30 (0.28)	0.93	62347.5	12201.00
1	50574.54	143.67	0.871	0.30 (0.28)	0.93	64801.6	12101.10
1	49890.93	147.77	0.861	0.30 (0.28)	0.93	65650.7	10400.00
1	48042.26	156.02	0.839	0.30 (0.28)	0.93	66965.8	12010.00
1	46523.23	162.08	0.824	0.30 (0.28)	0.94	67279.5	10210.00
1	42135.18	188.74	0.767	0.30 (0.28)	0.94	68012.2	10100.00
2	744.23	34.08	1.752	0.30 (0.29)	0.97	565.5	13830.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30527.47	22.27	2.250	0.30 (0.24)	0.81	5459.5	13810.00
2	32682.76	27.86	1.952	0.30 (0.24)	0.81	6884.5	10360.00
3	35111.44	33.26	1.774	0.30 (0.24)	0.81	8977.0	10500.00
4	35403.73	34.08	1.752	0.30 (0.24)	0.81	9279.0	13830.00
5	36748.81	38.14	1.649	0.30 (0.24)	0.81	10694.2	110.00
6	41843.53	53.18	1.352	0.30 (0.25)	0.82	18202.7	50260.00
7	44339.65	63.23	1.252	0.30 (0.25)	0.85	23573.2	390.00
8	46744.02	74.15	1.178	0.30 (0.26)	0.87	29384.0	13100.00
9	48346.21	80.55	1.134	0.30 (0.26)	0.88	32488.7	11801.00
10	50726.61	89.66	1.072	0.30 (0.27)	0.89	37532.5	11530.00
11	51993.57	95.10	1.047	0.30 (0.27)	0.90	41272.9	13510.00
12	53031.96	99.80	1.025	0.30 (0.27)	0.91	44411.0	13010.00
13	54138.15	104.81	1.002	0.30 (0.27)	0.91	47776.1	11330.00
14	54743.55	111.05	0.974	0.30 (0.28)	0.92	52207.0	11130.00
15	54113.80	118.70	0.939	0.30 (0.28)	0.92	56201.0	12330.00
16	53436.15	125.40	0.919	0.30 (0.28)	0.93	59544.2	12400.00
17	52390.28	134.17	0.896	0.30 (0.28)	0.93	62913.0	12201.00
18	50870.39	143.67	0.871	0.30 (0.28)	0.93	65367.1	12101.10
19	50181.36	147.77	0.861	0.30 (0.28)	0.93	66216.2	10400.00
20	48321.77	156.02	0.839	0.30 (0.28)	0.94	67531.3	12010.00
21	46794.72	162.08	0.824	0.30 (0.28)	0.94	67845.0	10210.00
22	42377.89	188.74	0.767	0.30 (0.28)	0.94	68577.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 54743.55 Tc (MIN.) = 111.05  
 EFFECTIVE AREA (ACRES) = 52207.05 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 68577.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13840.00 = 132804.30 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 133.00 DOWNSTREAM (FEET) = 130.00  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 654.44 CHANNEL SLOPE = 0.0046  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 17.83  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 0.971  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 6.61 0.30 0.975 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54745.57  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.93  
 AVERAGE FLOW DEPTH(FEET) = 17.83 TRAVEL TIME(MIN.) = 0.61  
 Tc(MIN.) = 111.66  
 SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 4.04  
 EFFECTIVE AREA(ACRES) = 52213.66 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 68584.4 PEAK FLOW RATE(CFS) = 54743.55  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 17.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 17.83 FLOW VELOCITY(FEET/SEC.) = 17.93  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13840.00 TO NODE 13860.00 IS CODE = 1

-----  
 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
 -----

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
 TIME OF CONCENTRATION(MIN.) = 111.66  
 RAINFALL INTENSITY(INCH/HR) = 0.97  
 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.92  
 EFFECTIVE STREAM AREA(ACRES) = 52213.66  
 TOTAL STREAM AREA(ACRES) = 68584.36  
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 54743.55

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21

-----  
 >>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<  
 -----

INITIAL SUBAREA FLOW-LENGTH(FEET) = 617.57  
 ELEVATION DATA: UPSTREAM(FEET) = 646.95 DOWNSTREAM(FEET) = 490.10

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.137  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.371  
 SUBAREA Tc AND LOSS RATE DATA(AMC II):  
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)  
 NATURAL FAIR COVER  
 "CHAPARRAL,BROADLEAF" - 4.95 0.30 1.000 0 12.14  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 SUBAREA RUNOFF(CFS) = 13.68

TOTAL AREA(ACRES) = 4.95 PEAK FLOW RATE(CFS) = 13.68

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<  
 -----

ELEVATION DATA: UPSTREAM(FEET) = 490.10 DOWNSTREAM(FEET) = 440.98  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 351.14 CHANNEL SLOPE = 0.1399  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.38  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.160  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 4.02 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 18.85  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.63  
 AVERAGE FLOW DEPTH(FEET) = 0.38 TRAVEL TIME(MIN.) = 1.26  
 Tc(MIN.) = 13.40

SUBAREA AREA(ACRES) = 4.02 SUBAREA RUNOFF(CFS) = 10.35  
 EFFECTIVE AREA(ACRES) = 8.97 AREA-AVERAGED Fm(INCH/HR) = 0.30  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
 TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 23.09  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 0.43 FLOW VELOCITY(FEET/SEC.) = 4.94  
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 56

-----  
 >>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<  
 -----

ELEVATION DATA: UPSTREAM(FEET) = 440.98 DOWNSTREAM(FEET) = 395.76  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 512.91 CHANNEL SLOPE = 0.0882  
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 0.60  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.873  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 7.17 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 31.40  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.76  
 AVERAGE FLOW DEPTH(FEET) = 0.59 TRAVEL TIME(MIN.) = 1.80  
 Tc(MIN.) = 15.20

SUBAREA AREA (ACRES) = 7.17 SUBAREA RUNOFF (CFS) = 16.60  
EFFECTIVE AREA (ACRES) = 16.14 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 16.1 PEAK FLOW RATE (CFS) = 37.38  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.65 FLOW VELOCITY (FEET/SEC.) = 5.06  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 395.76 DOWNSTREAM (FEET) = 354.94  
CHANNEL LENGTH THRU SUBAREA (FEET) = 443.69 CHANNEL SLOPE = 0.0920  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.72  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.738

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	6.76	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 44.80  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.49  
AVERAGE FLOW DEPTH (FEET) = 0.71 TRAVEL TIME (MIN.) = 1.35  
Tc (MIN.) = 16.55

SUBAREA AREA (ACRES) = 6.76 SUBAREA RUNOFF (CFS) = 14.84  
EFFECTIVE AREA (ACRES) = 22.90 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 22.9 PEAK FLOW RATE (CFS) = 50.26  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.77

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.77 FLOW VELOCITY (FEET/SEC.) = 5.69  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13853.00 = 1925.31 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13853.00 TO NODE 13854.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 354.94 DOWNSTREAM (FEET) = 263.57  
CHANNEL LENGTH THRU SUBAREA (FEET) = 962.09 CHANNEL SLOPE = 0.0950  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.92  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.487

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	18.16	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 68.15  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.38  
AVERAGE FLOW DEPTH (FEET) = 0.91 TRAVEL TIME (MIN.) = 2.51  
Tc (MIN.) = 19.06

SUBAREA AREA (ACRES) = 18.16 SUBAREA RUNOFF (CFS) = 35.74  
EFFECTIVE AREA (ACRES) = 41.06 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA (ACRES) = 41.1 PEAK FLOW RATE (CFS) = 80.82  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.00 FLOW VELOCITY (FEET/SEC.) = 6.72  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13854.00 = 2887.40 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13854.00 TO NODE 13855.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 263.57 DOWNSTREAM (FEET) = 188.74  
CHANNEL LENGTH THRU SUBAREA (FEET) = 1228.77 CHANNEL SLOPE = 0.0609  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.41  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.254

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	38.75	0.30	0.879	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.879  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 115.55  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.50  
AVERAGE FLOW DEPTH (FEET) = 1.39 TRAVEL TIME (MIN.) = 3.15  
Tc (MIN.) = 22.21

SUBAREA AREA (ACRES) = 38.75 SUBAREA RUNOFF (CFS) = 69.40  
EFFECTIVE AREA (ACRES) = 79.81 AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94  
TOTAL AREA (ACRES) = 79.8 PEAK FLOW RATE (CFS) = 141.59  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 1.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 1.56 FLOW VELOCITY (FEET/SEC.) = 6.92  
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13855.00 = 4116.17 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 31

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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 188.74 DOWNSTREAM(FEET) = 130.00
FLOW LENGTH(FEET) = 2092.67 MANNING'S N = 0.013
DEPTH OF FLOW IN 42.0 INCH PIPE IS 30.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.77
ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 141.59
PIPE TRAVEL TIME(MIN.) = 1.86 Tc(MIN.) = 24.07
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13860.00 = 6208.84 FEET.

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FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 24.07
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.136
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 43.41 0.30 0.707 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707
SUBAREA AREA(ACRES) = 43.41 SUBAREA RUNOFF(CFS) = 75.19
EFFECTIVE AREA(ACRES) = 123.22 AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 123.2 PEAK FLOW RATE(CFS) = 208.37

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*****
FLOW PROCESS FROM NODE 13855.00 TO NODE 13860.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 24.07
RAINFALL INTENSITY(INCH/HR) = 2.14
AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.86
EFFECTIVE STREAM AREA(ACRES) = 123.22
TOTAL STREAM AREA(ACRES) = 123.22
PEAK FLOW RATE(CFS) AT CONFLUENCE = 208.37

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** CONFLUENCE DATA **
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 30527.47 22.99 2.204 0.30( 0.24) 0.81 5466.1 13810.00
1 32682.76 28.56 1.921 0.30( 0.24) 0.81 6891.2 10360.00
1 35111.44 33.95 1.756 0.30( 0.24) 0.81 8983.6 10500.00
1 35403.73 34.77 1.735 0.30( 0.24) 0.81 9285.6 13830.00
1 36748.81 38.82 1.631 0.30( 0.24) 0.81 10700.8 110.00
1 41843.53 53.83 1.345 0.30( 0.25) 0.82 18209.3 50260.00
1 44339.65 63.87 1.248 0.30( 0.25) 0.85 23579.8 390.00

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1 46744.02 74.79 1.173 0.30( 0.26) 0.87 29390.6 13100.00
1 48346.21 81.18 1.130 0.30( 0.26) 0.88 32495.3 11801.00
1 50726.61 90.29 1.069 0.30( 0.27) 0.89 37539.1 11530.00
1 51993.57 95.71 1.044 0.30( 0.27) 0.90 41279.5 13510.00
1 53031.96 100.42 1.022 0.30( 0.27) 0.91 44417.6 13010.00
1 54138.15 105.42 1.000 0.30( 0.27) 0.91 47782.7 11330.00
1 54743.55 111.66 0.971 0.30( 0.28) 0.92 52213.7 11130.00
1 54113.80 119.31 0.936 0.30( 0.28) 0.92 56207.6 12330.00
1 53436.15 126.01 0.917 0.30( 0.28) 0.93 59550.8 12400.00
1 52390.28 134.79 0.895 0.30( 0.28) 0.93 62919.6 12201.00
1 50870.39 144.29 0.870 0.30( 0.28) 0.93 65373.7 12101.10
1 50181.36 148.39 0.859 0.30( 0.28) 0.93 66222.8 10400.00
1 48321.77 156.65 0.838 0.30( 0.28) 0.94 67537.9 12010.00
1 46794.72 162.72 0.822 0.30( 0.28) 0.94 67851.6 10210.00
1 42377.89 189.39 0.766 0.30( 0.28) 0.94 68584.4 10100.00
2 208.37 24.07 2.136 0.30( 0.26) 0.86 123.2 13850.00

```

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
CONFLUENCE FORMULA USED FOR 2 STREAMS.

```

** PEAK FLOW RATE TABLE **
STREAM Q Tc Intensity Fp(Fm) Ap Ae HEADWATER
NUMBER (CFS) (MIN.) (INCH/HR) (INCH/HR) (ACRES) NODE
1 30733.70 22.99 2.204 0.30( 0.24) 0.81 5583.8 13810.00
2 31153.40 24.07 2.136 0.30( 0.24) 0.81 5865.4 13850.00
3 32867.18 28.56 1.921 0.30( 0.24) 0.81 7014.4 10360.00
4 35277.60 33.95 1.756 0.30( 0.24) 0.81 9106.9 10500.00
5 35567.55 34.77 1.735 0.30( 0.24) 0.81 9408.8 13830.00
6 36901.15 38.82 1.631 0.30( 0.24) 0.81 10824.1 110.00
7 41964.11 53.83 1.345 0.30( 0.25) 0.82 18332.5 50260.00
8 44449.45 63.87 1.248 0.30( 0.25) 0.85 23703.1 390.00
9 46845.59 74.79 1.173 0.30( 0.26) 0.87 29513.9 13100.00
10 48442.96 81.18 1.130 0.30( 0.26) 0.88 32618.6 11801.00
11 50816.56 90.29 1.069 0.30( 0.27) 0.89 37662.3 11530.00
12 52080.78 95.71 1.044 0.30( 0.27) 0.90 41402.7 13510.00
13 53116.78 100.42 1.022 0.30( 0.27) 0.91 44540.8 13010.00
14 54220.44 105.42 1.000 0.30( 0.27) 0.91 47905.9 11330.00
15 54822.68 111.66 0.971 0.30( 0.28) 0.92 52336.9 11130.00
16 54189.05 119.31 0.936 0.30( 0.28) 0.92 56330.8 12330.00
17 53509.32 126.01 0.917 0.30( 0.28) 0.93 59674.0 12400.00
18 52460.92 134.79 0.895 0.30( 0.28) 0.93 63042.8 12201.00
19 50938.29 144.29 0.870 0.30( 0.28) 0.93 65496.9 12101.10
20 50248.07 148.39 0.859 0.30( 0.28) 0.93 66346.0 10400.00
21 48386.11 156.65 0.838 0.30( 0.28) 0.93 67661.1 12010.00
22 46857.31 162.72 0.822 0.30( 0.28) 0.94 67974.9 10210.00
23 42434.31 189.39 0.766 0.30( 0.28) 0.94 68707.6 10100.00

```

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:  
PEAK FLOW RATE(CFS) = 54822.68 Tc(MIN.) = 111.66  
EFFECTIVE AREA(ACRES) = 52336.88 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 68707.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13860.00 = 133458.73 FEET.

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*****
FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

```

>>>>TRAVELTIME THRU SUBAREA<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 130.00 DOWNSTREAM(FEET) = 120.57
CHANNEL LENGTH THRU SUBAREA(FEET) = 610.77 CHANNEL SLOPE = 0.0154
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.02
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.969
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -       4.89     0.30     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 54824.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 27.69
AVERAGE FLOW DEPTH(FEET) = 13.02 TRAVEL TIME(MIN.) = 0.37
Tc(MIN.) = 112.03
SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 2.95
EFFECTIVE AREA(ACRES) = 52341.77 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 68712.5 PEAK FLOW RATE(CFS) = 54822.68
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.02

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 13.02 FLOW VELOCITY(FEET/SEC.) = 27.69  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13860.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 112.03
RAINFALL INTENSITY(INCH/HR) = 0.97
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.92
EFFECTIVE STREAM AREA(ACRES) = 52341.77
TOTAL STREAM AREA(ACRES) = 68712.47
PEAK FLOW RATE(CFS) AT CONFLUENCE = 54822.68

```

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13870.00 TO NODE 13871.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

```

=====
INITIAL SUBAREA FLOW-LENGTH(FEET) = 872.65
ELEVATION DATA: UPSTREAM(FEET) = 558.52 DOWNSTREAM(FEET) = 436.47

```

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 15.704

```

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.823
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS   Tc
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"GRASS"              -       7.32     0.30     1.000    0   15.70
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 16.62
TOTAL AREA(ACRES) = 7.32 PEAK FLOW RATE(CFS) = 16.62

```

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 436.47 DOWNSTREAM(FEET) = 337.62
CHANNEL LENGTH THRU SUBAREA(FEET) = 827.95 CHANNEL SLOPE = 0.1194
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.54
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.555
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -       13.01    0.30     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.16
AVERAGE FLOW DEPTH(FEET) = 0.52 TRAVEL TIME(MIN.) = 2.67
Tc(MIN.) = 18.38
SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 26.41
EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 41.27
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.63

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH(FEET) = 0.63 FLOW VELOCITY(FEET/SEC.) = 5.81  
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88
CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.315
SUBAREA LOSS RATE DATA(AMC II):

```



DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
 USER-DEFINED - 32.99 0.30 0.923 -  
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.923  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 71.56  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.11  
 AVERAGE FLOW DEPTH (FEET) = 0.98 TRAVEL TIME (MIN.) = 2.86  
 Tc (MIN.) = 21.24  
 SUBAREA AREA (ACRES) = 32.99 SUBAREA RUNOFF (CFS) = 60.51  
 EFFECTIVE AREA (ACRES) = 53.32 AREA-AVERAGED Fm (INCH/HR) = 0.29  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95  
 TOTAL AREA (ACRES) = 53.3 PEAK FLOW RATE (CFS) = 97.38  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.17 FLOW VELOCITY (FEET/SEC.) = 6.74  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 253.88 DOWNSTREAM (FEET) = 160.73  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1518.60 CHANNEL SLOPE = 0.0613  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.16  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.133  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	30.94	0.30	0.900	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 123.34  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.74  
 AVERAGE FLOW DEPTH (FEET) = 1.15 TRAVEL TIME (MIN.) = 2.89  
 Tc (MIN.) = 24.13  
 SUBAREA AREA (ACRES) = 30.94 SUBAREA RUNOFF (CFS) = 51.87  
 EFFECTIVE AREA (ACRES) = 84.26 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 84.3 PEAK FLOW RATE (CFS) = 140.50  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 1.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 1.23 FLOW VELOCITY (FEET/SEC.) = 9.14  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 56  
 -----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 160.73 DOWNSTREAM (FEET) = 158.14  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 582.74 CHANNEL SLOPE = 0.0044  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.08  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.010  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	73.67	0.30	0.930	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 197.90  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 4.03  
 AVERAGE FLOW DEPTH (FEET) = 3.05 TRAVEL TIME (MIN.) = 2.41  
 Tc (MIN.) = 26.54  
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 114.76  
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93  
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 245.95  
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 3.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH (FEET) = 3.41 FLOW VELOCITY (FEET/SEC.) = 4.28  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31  
 -----

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57  
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013  
 DEPTH OF FLOW IN 54.0 INCH PIPE IS 41.1 INCHES  
 PIPE-FLOW VELOCITY (FEET/SEC.) = 18.95  
 ESTIMATED PIPE DIAMETER (INCH) = 54.00 NUMBER OF PIPES = 1  
 PIPE-FLOW (CFS) = 245.95  
 PIPE TRAVEL TIME (MIN.) = 1.63 Tc (MIN.) = 28.17  
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81  
 -----

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc (MIN.) = 28.17  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.938  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	34.90	0.30	0.743	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743  
 SUBAREA AREA (ACRES) = 34.90 SUBAREA RUNOFF (CFS) = 53.86  
 EFFECTIVE AREA (ACRES) = 192.83 AREA-AVERAGED Fm (INCH/HR) = 0.27  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90  
 TOTAL AREA (ACRES) = 192.8 PEAK FLOW RATE (CFS) = 289.56

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<  
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:  
 TIME OF CONCENTRATION (MIN.) = 28.17  
 RAINFALL INTENSITY (INCH/HR) = 1.94  
 AREA-AVERAGED Fm (INCH/HR) = 0.27  
 AREA-AVERAGED Fp (INCH/HR) = 0.30  
 AREA-AVERAGED Ap = 0.90  
 EFFECTIVE STREAM AREA (ACRES) = 192.83  
 TOTAL STREAM AREA (ACRES) = 192.83  
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 289.56

\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	30733.70	23.43	2.177	0.30 ( 0.24)	0.81	5588.7	13810.00
1	31153.40	24.51	2.109	0.30 ( 0.24)	0.81	5870.3	13850.00
1	32867.18	28.99	1.902	0.30 ( 0.24)	0.81	7019.3	10360.00
1	35277.60	34.37	1.745	0.30 ( 0.24)	0.81	9111.7	10500.00
1	35567.55	35.19	1.724	0.30 ( 0.24)	0.81	9413.7	13830.00
1	36901.15	39.23	1.621	0.30 ( 0.24)	0.81	10829.0	110.00
1	41964.11	54.23	1.340	0.30 ( 0.25)	0.82	18337.4	50260.00
1	44449.45	64.26	1.245	0.30 ( 0.25)	0.85	23707.9	390.00
1	46845.59	75.17	1.171	0.30 ( 0.26)	0.87	29518.8	13100.00
1	48442.96	81.56	1.127	0.30 ( 0.26)	0.88	32623.5	11801.00
1	50816.56	90.66	1.067	0.30 ( 0.27)	0.89	37667.2	11530.00
1	52080.78	96.09	1.042	0.30 ( 0.27)	0.90	41407.6	13510.00
1	53116.78	100.79	1.021	0.30 ( 0.27)	0.91	44545.7	13010.00
1	54220.44	105.79	0.998	0.30 ( 0.27)	0.91	47910.8	11330.00
1	54822.68	112.03	0.969	0.30 ( 0.28)	0.92	52341.8	11130.00
1	54189.05	119.67	0.934	0.30 ( 0.28)	0.92	56335.7	12330.00
1	53509.32	126.38	0.916	0.30 ( 0.28)	0.93	59678.9	12400.00
1	52460.92	135.16	0.894	0.30 ( 0.28)	0.93	63047.7	12201.00
1	50938.29	144.66	0.869	0.30 ( 0.28)	0.93	65501.8	12101.10
1	50248.07	148.77	0.858	0.30 ( 0.28)	0.93	66350.9	10400.00
1	48386.11	157.03	0.837	0.30 ( 0.28)	0.93	67666.0	12010.00
1	46857.31	163.10	0.821	0.30 ( 0.28)	0.94	67979.7	10210.00
1	42434.31	189.79	0.766	0.30 ( 0.28)	0.94	68712.5	10100.00
2	289.56	28.17	1.938	0.30 ( 0.27)	0.90	192.8	13870.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31009.02	23.43	2.177	0.30 ( 0.24)	0.81	5749.1	13810.00

2	31431.14	24.51	2.109	0.30 ( 0.24)	0.81	6038.1	13850.00
3	32844.80	28.17	1.938	0.30 ( 0.24)	0.81	7003.0	13870.00
4	33150.48	28.99	1.902	0.30 ( 0.24)	0.81	7212.1	10360.00
5	35533.76	34.37	1.745	0.30 ( 0.24)	0.81	9304.6	10500.00
6	35820.05	35.19	1.724	0.30 ( 0.24)	0.81	9606.6	13830.00
7	37135.71	39.23	1.621	0.30 ( 0.24)	0.81	11021.8	110.00
8	42150.00	54.23	1.340	0.30 ( 0.25)	0.82	18530.2	50260.00
9	44618.80	64.26	1.245	0.30 ( 0.25)	0.85	23900.8	390.00
10	47002.07	75.17	1.171	0.30 ( 0.26)	0.87	29711.6	13100.00
11	48591.89	81.56	1.127	0.30 ( 0.26)	0.88	32816.3	11801.00
12	50955.02	90.66	1.067	0.30 ( 0.27)	0.89	37860.0	11530.00
13	52214.94	96.09	1.042	0.30 ( 0.27)	0.90	41600.4	13510.00
14	53247.20	100.79	1.021	0.30 ( 0.27)	0.91	44738.6	13010.00
15	54346.91	105.79	0.998	0.30 ( 0.27)	0.91	48103.6	11330.00
16	54944.20	112.03	0.969	0.30 ( 0.28)	0.92	52534.6	11130.00
17	54304.52	119.67	0.934	0.30 ( 0.28)	0.92	56528.6	12330.00
18	53621.65	126.38	0.916	0.30 ( 0.28)	0.93	59871.7	12400.00
19	52569.28	135.16	0.894	0.30 ( 0.28)	0.93	63240.5	12201.00
20	51042.36	144.66	0.869	0.30 ( 0.28)	0.93	65694.7	12101.10
21	50350.29	148.77	0.858	0.30 ( 0.28)	0.93	66543.7	10400.00
22	48484.61	157.03	0.837	0.30 ( 0.28)	0.93	67858.9	12010.00
23	46953.07	163.10	0.821	0.30 ( 0.28)	0.94	68172.6	10210.00
24	42520.50	189.79	0.766	0.30 ( 0.28)	0.94	68905.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 54944.20 Tc (MIN.) = 112.03  
 EFFECTIVE AREA (ACRES) = 52534.59 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 68905.3  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13880.00 = 134069.50 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 120.57 DOWNSTREAM (FEET) = 119.70  
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1190.21 CHANNEL SLOPE = 0.0007  
 GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT (FEET) = 28.13  
 \* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 0.960  
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 54983.52  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.20  
 AVERAGE FLOW DEPTH (FEET) = 28.12 TRAVEL TIME (MIN.) = 2.16  
 Tc (MIN.) = 114.19  
 SUBAREA AREA (ACRES) = 117.69 SUBAREA RUNOFF (CFS) = 78.64  
 EFFECTIVE AREA (ACRES) = 52652.29 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA (ACRES) = 69023.0 PEAK FLOW RATE (CFS) = 54944.20  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 28.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 28.11 FLOW VELOCITY (FEET/SEC.) = 9.20  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

\*\*\*\*\*

FLOW PROCESS FROM NODE 13880.00 TO NODE 13910.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2  
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:  
TIME OF CONCENTRATION (MIN.) = 114.19  
RAINFALL INTENSITY (INCH/HR) = 0.96  
AREA-AVERAGED Fm (INCH/HR) = 0.28  
AREA-AVERAGED Fp (INCH/HR) = 0.30  
AREA-AVERAGED Ap = 0.92  
EFFECTIVE STREAM AREA (ACRES) = 52652.29  
TOTAL STREAM AREA (ACRES) = 69022.98  
PEAK FLOW RATE (CFS) AT CONFLUENCE = 54944.20

\*\*\*\*\*

FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 447.89  
ELEVATION DATA: UPSTREAM (FEET) = 564.89 DOWNSTREAM (FEET) = 421.92

Tc = K \* [(LENGTH\*\* 3.00) / (ELEVATION CHANGE)] \*\* 0.20  
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 6.976  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.951  
SUBAREA Tc AND LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
PUBLIC PARK	-	3.03	0.30	0.960	0	6.98

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.960  
SUBAREA RUNOFF (CFS) = 12.71  
TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 12.71

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FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64  
CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.49  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.410  
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS  
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN  
USER-DEFINED - 8.12 0.30 0.986 -  
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.986  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 27.80  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.43  
AVERAGE FLOW DEPTH (FEET) = 0.47 TRAVEL TIME (MIN.) = 1.34  
Tc (MIN.) = 8.31

SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 30.07  
EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.29  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98  
TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 41.31  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.59 FLOW VELOCITY (FEET/SEC.) = 6.26  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

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FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 392.64 DOWNSTREAM (FEET) = 324.46  
CHANNEL LENGTH THRU SUBAREA (FEET) = 662.40 CHANNEL SLOPE = 0.1029  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.68  
\* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.868

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	12.50	0.30	1.000	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30  
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 61.43  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.24  
AVERAGE FLOW DEPTH (FEET) = 0.66 TRAVEL TIME (MIN.) = 1.34  
Tc (MIN.) = 9.65  
SUBAREA AREA (ACRES) = 12.50 SUBAREA RUNOFF (CFS) = 40.14  
EFFECTIVE AREA (ACRES) = 23.65 AREA-AVERAGED Fm (INCH/HR) = 0.30  
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99  
TOTAL AREA (ACRES) = 23.6 PEAK FLOW RATE (CFS) = 76.00  
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT (FEET) = 0.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
DEPTH (FEET) = 0.74 FLOW VELOCITY (FEET/SEC.) = 8.88  
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

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FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 56

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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 324.46 DOWNSTREAM(FEET) = 240.82
CHANNEL LENGTH THRU SUBAREA(FEET) = 980.03 CHANNEL SLOPE = 0.0853
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.485
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 15.87 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 98.76
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.09
AVERAGE FLOW DEPTH(FEET) = 0.92 TRAVEL TIME(MIN.) = 1.80
Tc(MIN.) = 11.45
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 45.49
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 113.35
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.99

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.99 FLOW VELOCITY(FEET/SEC.) = 9.50
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

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FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 240.82 DOWNSTREAM(FEET) = 163.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1144.35 CHANNEL SLOPE = 0.0680
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.26
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.157
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 28.41 0.30 0.985 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 149.96
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.68
AVERAGE FLOW DEPTH(FEET) = 1.24 TRAVEL TIME(MIN.) = 1.97
Tc(MIN.) = 13.42
SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 73.16
EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 174.82
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

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"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.36 FLOW VELOCITY(FEET/SEC.) = 10.15
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

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FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31
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>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013
DEPTH OF FLOW IN 48.0 INCH PIPE IS 34.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 18.39
ESTIMATED PIPE DIAMETER(INCH) = 48.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 174.82
PIPE TRAVEL TIME(MIN.) = 1.72 Tc(MIN.) = 15.14
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

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*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 15.14
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.879
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 11.69 0.30 0.634 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.634
SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 28.29
EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 186.13

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*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1
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>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 15.14
RAINFALL INTENSITY(INCH/HR) = 2.88
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 79.62
TOTAL STREAM AREA(ACRES) = 79.62
PEAK FLOW RATE(CFS) AT CONFLUENCE = 186.13

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\*\* CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	31009.02	25.94	2.036	0.30 ( 0.24)	0.81	5866.8	13810.00
1	31431.14	27.01	1.989	0.30 ( 0.24)	0.81	6155.8	13850.00
1	32844.80	30.65	1.840	0.30 ( 0.24)	0.81	7120.7	13870.00
1	33150.48	31.46	1.820	0.30 ( 0.24)	0.81	7329.8	10360.00
1	35533.76	36.79	1.683	0.30 ( 0.24)	0.81	9422.3	10500.00
1	35820.05	37.61	1.662	0.30 ( 0.24)	0.81	9724.3	13830.00
1	37135.71	41.62	1.567	0.30 ( 0.24)	0.81	11139.5	110.00
1	42150.00	56.55	1.314	0.30 ( 0.25)	0.82	18647.9	50260.00
1	44618.80	66.54	1.230	0.30 ( 0.25)	0.85	24018.5	390.00
1	47002.07	77.42	1.156	0.30 ( 0.26)	0.87	29829.3	13100.00
1	48591.89	83.79	1.112	0.30 ( 0.26)	0.88	32934.0	11801.00
1	50955.02	92.86	1.057	0.30 ( 0.27)	0.89	37977.7	11530.00
1	52214.94	98.27	1.032	0.30 ( 0.27)	0.90	41718.1	13510.00
1	53247.20	102.96	1.011	0.30 ( 0.27)	0.91	44856.2	13010.00
1	54346.91	107.95	0.988	0.30 ( 0.27)	0.91	48221.3	11330.00
1	54944.20	114.19	0.960	0.30 ( 0.28)	0.92	52652.3	11130.00
1	54304.52	121.84	0.928	0.30 ( 0.28)	0.92	56646.2	12330.00
1	53621.65	128.55	0.911	0.30 ( 0.28)	0.93	59989.4	12400.00
1	52569.28	137.34	0.888	0.30 ( 0.28)	0.93	63358.2	12201.00
1	51042.36	146.86	0.863	0.30 ( 0.28)	0.93	65812.3	12101.10
1	50350.29	150.98	0.852	0.30 ( 0.28)	0.93	66661.4	10400.00
1	48484.61	159.26	0.831	0.30 ( 0.28)	0.93	67976.6	12010.00
1	46953.07	165.35	0.815	0.30 ( 0.28)	0.93	68290.3	10210.00
1	42520.50	192.10	0.763	0.30 ( 0.28)	0.94	69023.0	10100.00
2	186.13	15.14	2.879	0.30 ( 0.28)	0.94	79.6	13889.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO  
CONFLUENCE FORMULA USED FOR 2 STREAMS.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26787.88	15.14	2.879	0.30 ( 0.24)	0.81	3503.7	13889.00
2	31134.78	25.94	2.036	0.30 ( 0.24)	0.81	5946.4	13810.00
3	31553.52	27.01	1.989	0.30 ( 0.24)	0.81	6235.4	13850.00
4	32956.52	30.65	1.840	0.30 ( 0.24)	0.81	7200.3	13870.00
5	33260.71	31.46	1.820	0.30 ( 0.24)	0.81	7409.4	10360.00
6	35634.21	36.79	1.683	0.30 ( 0.24)	0.81	9501.9	10500.00
7	35919.00	37.61	1.662	0.30 ( 0.24)	0.81	9803.9	13830.00
8	37227.80	41.62	1.567	0.30 ( 0.24)	0.81	11219.1	110.00
9	42223.98	56.55	1.314	0.30 ( 0.25)	0.82	18727.5	50260.00
10	44686.75	66.54	1.230	0.30 ( 0.25)	0.85	24098.1	390.00
11	47064.71	77.42	1.156	0.30 ( 0.26)	0.87	29908.9	13100.00
12	48651.43	83.79	1.112	0.30 ( 0.26)	0.88	33013.6	11801.00
13	51010.59	92.86	1.057	0.30 ( 0.27)	0.89	38057.3	11530.00
14	52268.75	98.27	1.032	0.30 ( 0.27)	0.90	41797.7	13510.00
15	53299.48	102.96	1.011	0.30 ( 0.27)	0.91	44935.9	13010.00
16	54397.55	107.95	0.988	0.30 ( 0.27)	0.91	48300.9	11330.00
17	54992.80	114.19	0.960	0.30 ( 0.28)	0.92	52731.9	11130.00
18	54350.87	121.84	0.928	0.30 ( 0.28)	0.92	56725.9	12330.00
19	53666.75	128.55	0.911	0.30 ( 0.28)	0.93	60069.1	12400.00
20	52612.75	137.34	0.888	0.30 ( 0.28)	0.93	63437.8	12201.00
21	51084.05	146.86	0.863	0.30 ( 0.28)	0.93	65892.0	12101.10
22	50391.22	150.98	0.852	0.30 ( 0.28)	0.93	66741.0	10400.00
23	48523.99	159.26	0.831	0.30 ( 0.28)	0.93	68056.2	12010.00
24	46991.32	165.35	0.815	0.30 ( 0.28)	0.93	68369.9	10210.00

25 42555.03 192.10 0.763 0.30 ( 0.28) 0.94 69102.6 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 54992.80 Tc(MIN.) = 114.19  
EFFECTIVE AREA(ACRES) = 52731.91 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
TOTAL AREA(ACRES) = 69102.6  
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69102.6 TC(MIN.) = 114.19  
EFFECTIVE AREA(ACRES) = 52731.91 AREA-AVERAGED Fm(INCH/HR) = 0.28  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.919  
PEAK FLOW RATE(CFS) = 54992.80

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26787.88	15.14	2.879	0.30 ( 0.24)	0.81	3503.7	13889.00
2	31134.78	25.94	2.036	0.30 ( 0.24)	0.81	5946.4	13810.00
3	31553.52	27.01	1.989	0.30 ( 0.24)	0.81	6235.4	13850.00
4	32956.52	30.65	1.840	0.30 ( 0.24)	0.81	7200.3	13870.00
5	33260.71	31.46	1.820	0.30 ( 0.24)	0.81	7409.4	10360.00
6	35634.21	36.79	1.683	0.30 ( 0.24)	0.81	9501.9	10500.00
7	35919.00	37.61	1.662	0.30 ( 0.24)	0.81	9803.9	13830.00
8	37227.80	41.62	1.567	0.30 ( 0.24)	0.81	11219.1	110.00
9	42223.98	56.55	1.314	0.30 ( 0.25)	0.82	18727.5	50260.00
10	44686.75	66.54	1.230	0.30 ( 0.25)	0.85	24098.1	390.00
11	47064.71	77.42	1.156	0.30 ( 0.26)	0.87	29908.9	13100.00
12	48651.43	83.79	1.112	0.30 ( 0.26)	0.88	33013.6	11801.00
13	51010.59	92.86	1.057	0.30 ( 0.27)	0.89	38057.3	11530.00
14	52268.75	98.27	1.032	0.30 ( 0.27)	0.90	41797.7	13510.00
15	53299.48	102.96	1.011	0.30 ( 0.27)	0.91	44935.9	13010.00
16	54397.55	107.95	0.988	0.30 ( 0.27)	0.91	48300.9	11330.00
17	54992.80	114.19	0.960	0.30 ( 0.28)	0.92	52731.9	11130.00
18	54350.87	121.84	0.928	0.30 ( 0.28)	0.92	56725.9	12330.00
19	53666.75	128.55	0.911	0.30 ( 0.28)	0.93	60069.1	12400.00
20	52612.75	137.34	0.888	0.30 ( 0.28)	0.93	63437.8	12201.00
21	51084.05	146.86	0.863	0.30 ( 0.28)	0.93	65892.0	12101.10
22	50391.22	150.98	0.852	0.30 ( 0.28)	0.93	66741.0	10400.00
23	48523.99	159.26	0.831	0.30 ( 0.28)	0.93	68056.2	12010.00
24	46991.32	165.35	0.815	0.30 ( 0.28)	0.93	68369.9	10210.00
25	42555.03	192.10	0.763	0.30 ( 0.28)	0.94	69102.6	10100.00

END OF RATIONAL METHOD ANALYSIS



\*\*\*\*\*  
RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE  
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)  
(c) Copyright 1983-2013 Advanced Engineering Software (aes)  
Ver. 20.0 Release Date: 06/01/2013 License ID 1264

Analysis prepared by:

Michael Baker International  
5 Hutton Centre Drive, Suite 500  
Santa Ana, CA 92707

\*\*\*\*\* DESCRIPTION OF STUDY \*\*\*\*\*  
\* RANCHO MISSION VIEJO - PA3 & PA4 ROMP \*  
\* REGIONAL WATERSHED S39- FREE DRAINING - ULTIMATE CONDITION \*  
\* 100-YR RM EV DECEMBER 2018 FKAZI \*  
\*\*\*\*\*

FILE NAME: RU00EV39.DAT  
TIME/DATE OF STUDY: 14:04 04/03/2019

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--\*TIME-OF-CONCENTRATION MODEL\*--

USER SPECIFIED STORM EVENT(YEAR) = 100.00  
SPECIFIED MINIMUM PIPE SIZE(INCH) = 36.00  
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90

\*USER-DEFINED TABLED RAINFALL USED\*  
NUMBER OF [TIME,INTENSITY] DATA PAIRS = 14

- 1) 5.00; 5.744
- 2) 10.00; 3.724
- 3) 15.00; 2.891
- 4) 20.00; 2.392
- 5) 25.00; 2.077
- 6) 30.00; 1.856
- 7) 40.00; 1.601
- 8) 50.00; 1.389
- 9) 60.00; 1.273
- 10) 90.00; 1.070
- 11) 120.00; 0.932
- 12) 180.00; 0.777
- 13) 360.00; 0.571
- 14) 1200.00; 0.248

\*ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD\*

\*USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL\*

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0313 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:  
1. Relative Flow-Depth = 0.00 FEET  
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)

2. (Depth)\*(Velocity) Constraint = 6.0 (FT\*FT/S)  
\*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN  
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.\*  
\*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13900.00 TO NODE 13901.00 IS CODE = 21  
-----

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<  
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65  
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K\*[(LENGTH\*\* 3.00)/(ELEVATION CHANGE)]\*\*0.20  
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.581  
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
AGRICULTURAL POOR COVER "FALLOW"	-	4.00	0.30	1.000	0	10.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
SUBAREA RUNOFF(CFS) = 11.81  
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 11.81

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 56  
-----

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 385.16 DOWNSTREAM(FEET) = 288.21  
CHANNEL LENGTH THRU SUBAREA(FEET) = 647.42 CHANNEL SLOPE = 0.1497  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.34  
\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.307  
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	8.47	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000  
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.29  
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.56  
AVERAGE FLOW DEPTH(FEET) = 0.33 TRAVEL TIME(MIN.) = 1.64  
Tc(MIN.) = 12.50  
SUBAREA AREA(ACRES) = 8.47 SUBAREA RUNOFF(CFS) = 22.92  
EFFECTIVE AREA(ACRES) = 12.47 AREA-AVERAGED Fm(INCH/HR) = 0.30  
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00  
TOTAL AREA(ACRES) = 12.5 PEAK FLOW RATE(CFS) = 33.75  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0  
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040  
\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.41 FLOW VELOCITY(FEET/SEC.) = 7.51  
LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13902.00 = 1248.07 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13902.00 TO NODE 13903.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 288.21 DOWNSTREAM(FEET) = 184.89  
CHANNEL LENGTH THRU SUBAREA(FEET) = 669.27 CHANNEL SLOPE = 0.1544  
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.61

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.113

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	23.85	0.30	0.982	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.982

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 64.02

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.56

AVERAGE FLOW DEPTH(FEET) = 0.60 TRAVEL TIME(MIN.) = 1.17

Tc(MIN.) = 13.67

SUBAREA AREA(ACRES) = 23.85 SUBAREA RUNOFF(CFS) = 60.49

EFFECTIVE AREA(ACRES) = 36.32 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 36.3 PEAK FLOW RATE(CFS) = 92.06

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040

\*ESTIMATED CHANNEL HEIGHT(FEET) = 0.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 10.79

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13903.00 = 1917.34 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 184.89 DOWNSTREAM(FEET) = 155.08

FLOW LENGTH(FEET) = 876.66 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000

DEPTH OF FLOW IN 36.0 INCH PIPE IS 24.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 18.29

ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 92.06

PIPE TRAVEL TIME(MIN.) = 0.80 Tc(MIN.) = 14.47

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13904.00 = 2794.00 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13903.00 TO NODE 13904.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 14.47

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.980

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	21.29	0.30	0.996	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996

SUBAREA AREA(ACRES) = 21.29 SUBAREA RUNOFF(CFS) = 51.37

EFFECTIVE AREA(ACRES) = 57.61 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 57.6 PEAK FLOW RATE(CFS) = 139.07

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<  
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 155.08 DOWNSTREAM(FEET) = 118.00

FLOW LENGTH(FEET) = 1961.38 MANNING'S N = 0.013

DEPTH OF FLOW IN 45.0 INCH PIPE IS 32.8 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 16.12

ESTIMATED PIPE DIAMETER(INCH) = 45.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 139.07

PIPE TRAVEL TIME(MIN.) = 2.03 Tc(MIN.) = 16.50

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

MAINLINE Tc(MIN.) = 16.50

\* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.742

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	43.53	0.30	0.649	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.649

SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 99.78

EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 226.52

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

>>>>DEFINE MEMORY BANK # 2 <<<<<

PEAK FLOWRATE TABLE FILE NAME: RU00EV38.DNA



MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26787.88	15.14	0.30 ( 0.24)	0.81	3503.7	13889.00
2	33260.71	31.46	0.30 ( 0.24)	0.81	7409.4	10360.00
3	37227.80	41.62	0.30 ( 0.24)	0.81	11219.1	110.00
4	42223.98	56.55	0.30 ( 0.25)	0.82	18727.5	50260.00
5	44686.75	66.54	0.30 ( 0.25)	0.85	24098.1	390.00
6	47064.71	77.42	0.30 ( 0.26)	0.87	29908.9	13100.00
7	48651.43	83.79	0.30 ( 0.26)	0.88	33013.6	11801.00
8	51010.59	92.86	0.30 ( 0.27)	0.89	38057.3	11530.00
9	52268.75	98.27	0.30 ( 0.27)	0.90	41797.7	13510.00
10	53299.48	102.96	0.30 ( 0.27)	0.91	44935.9	13010.00
11	54397.55	107.95	0.30 ( 0.27)	0.91	48300.9	11330.00
12	54992.80	114.19	0.30 ( 0.28)	0.92	52731.9	11130.00
13	54350.87	121.84	0.30 ( 0.28)	0.92	56725.9	12330.00
14	53666.75	128.55	0.30 ( 0.28)	0.93	60069.1	12400.00
15	52612.75	137.34	0.30 ( 0.28)	0.93	63437.8	12201.00
16	51084.05	146.86	0.30 ( 0.28)	0.93	65892.0	12101.10
17	50391.22	150.98	0.30 ( 0.28)	0.93	66741.0	10400.00
18	48523.99	159.26	0.30 ( 0.28)	0.93	68056.2	12010.00
19	46991.32	165.35	0.30 ( 0.28)	0.93	68369.9	10210.00
20	42555.03	192.10	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

>>>>MEMORY BANK # 2 COPIED ONTO MAIN-STREAM MEMORY<<<<<

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26787.88	15.14	0.30 ( 0.24)	0.81	3503.7	13889.00
2	33260.71	31.46	0.30 ( 0.24)	0.81	7409.4	10360.00
3	37227.80	41.62	0.30 ( 0.24)	0.81	11219.1	110.00
4	42223.98	56.55	0.30 ( 0.25)	0.82	18727.5	50260.00
5	44686.75	66.54	0.30 ( 0.25)	0.85	24098.1	390.00
6	47064.71	77.42	0.30 ( 0.26)	0.87	29908.9	13100.00
7	48651.43	83.79	0.30 ( 0.26)	0.88	33013.6	11801.00
8	51010.59	92.86	0.30 ( 0.27)	0.89	38057.3	11530.00
9	52268.75	98.27	0.30 ( 0.27)	0.90	41797.7	13510.00
10	53299.48	102.96	0.30 ( 0.27)	0.91	44935.9	13010.00
11	54397.55	107.95	0.30 ( 0.27)	0.91	48300.9	11330.00
12	54992.80	114.19	0.30 ( 0.28)	0.92	52731.9	11130.00
13	54350.87	121.84	0.30 ( 0.28)	0.92	56725.9	12330.00
14	53666.75	128.55	0.30 ( 0.28)	0.93	60069.1	12400.00
15	52612.75	137.34	0.30 ( 0.28)	0.93	63437.8	12201.00
16	51084.05	146.86	0.30 ( 0.28)	0.93	65892.0	12101.10
17	50391.22	150.98	0.30 ( 0.28)	0.93	66741.0	10400.00
18	48523.99	159.26	0.30 ( 0.28)	0.93	68056.2	12010.00
19	46991.32	165.35	0.30 ( 0.28)	0.93	68369.9	10210.00
20	42555.03	192.10	0.30 ( 0.28)	0.94	69102.6	10100.00
TOTAL AREA (ACRES) =						69102.6

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 24.78
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.949
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 96.09 0.30 0.535 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.535
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 55026.91
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.15
AVERAGE FLOW DEPTH(FEET) = 24.78 TRAVEL TIME(MIN.) = 2.06
Tc(MIN.) = 116.24
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 68.22
EFFECTIVE AREA(ACRES) = 52828.00 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 69198.7 PEAK FLOW RATE(CFS) = 54992.80
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 24.77
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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 24.77 FLOW VELOCITY(FEET/SEC.) = 11.15

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 11

>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<

\*\* MAIN STREAM CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26787.88	17.64	2.627	0.30 ( 0.24)	0.81	3599.8	13889.00
2	33260.71	33.82	1.759	0.30 ( 0.24)	0.81	7505.5	10360.00
3	37227.80	43.91	1.518	0.30 ( 0.24)	0.81	11315.2	110.00
4	42223.98	58.76	1.287	0.30 ( 0.25)	0.82	18823.6	50260.00
5	44686.75	68.72	1.214	0.30 ( 0.25)	0.85	24194.2	390.00
6	47064.71	79.56	1.141	0.30 ( 0.26)	0.87	30005.0	13100.00
7	48651.43	85.91	1.098	0.30 ( 0.26)	0.88	33109.7	11801.00
8	51010.59	94.96	1.047	0.30 ( 0.27)	0.89	38153.4	11530.00
9	52268.75	100.36	1.022	0.30 ( 0.27)	0.90	41893.8	13510.00
10	53299.48	105.04	1.001	0.30 ( 0.27)	0.90	45032.0	13010.00
11	54397.55	110.01	0.978	0.30 ( 0.27)	0.91	48397.0	11330.00
12	54992.80	116.24	0.949	0.30 ( 0.28)	0.92	52828.0	11130.00
13	54350.87	123.90	0.922	0.30 ( 0.28)	0.92	56822.0	12330.00
14	53666.75	130.62	0.905	0.30 ( 0.28)	0.93	60165.1	12400.00
15	52612.75	139.42	0.882	0.30 ( 0.28)	0.93	63533.9	12201.00
16	51084.05	148.96	0.857	0.30 ( 0.28)	0.93	65988.1	12101.10

17 50391.22 153.08 0.847 0.30( 0.28) 0.93 66837.1 10400.00  
 18 48523.99 161.39 0.825 0.30( 0.28) 0.93 68152.3 12010.00  
 19 46991.32 167.50 0.809 0.30( 0.28) 0.93 68466.0 10210.00  
 20 42555.03 194.30 0.761 0.30( 0.28) 0.93 69198.7 10100.00  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\* MEMORY BANK # 1 CONFLUENCE DATA \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	226.52	16.50	2.742	0.30( 0.25)	0.84	101.1	13900.00

LONGEST FLOWPATH FROM NODE 13900.00 TO NODE 13920.00 = 4755.38 FEET.

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26474.87	16.50	2.742	0.30( 0.24)	0.81	3466.9	13900.00
2	27003.98	17.64	2.627	0.30( 0.24)	0.81	3701.0	13889.00
3	33397.76	33.82	1.759	0.30( 0.24)	0.81	7606.6	10360.00
4	37342.95	43.91	1.518	0.30( 0.24)	0.81	11416.3	110.00
5	42318.13	58.76	1.287	0.30( 0.25)	0.82	18924.8	50260.00
6	44774.21	68.72	1.214	0.30( 0.25)	0.85	24295.3	390.00
7	47145.50	79.56	1.141	0.30( 0.26)	0.87	30106.1	13100.00
8	48728.31	85.91	1.098	0.30( 0.26)	0.88	33210.8	11801.00
9	51082.88	94.96	1.047	0.30( 0.27)	0.89	38254.6	11530.00
10	52338.77	100.36	1.022	0.30( 0.27)	0.90	41995.0	13510.00
11	53367.54	105.04	1.001	0.30( 0.27)	0.90	45133.1	13010.00
12	54463.53	110.01	0.978	0.30( 0.27)	0.91	48498.1	11330.00
13	55056.17	116.24	0.949	0.30( 0.28)	0.92	52929.1	11130.00
14	54411.75	123.90	0.922	0.30( 0.28)	0.92	56923.1	12330.00
15	53726.05	130.62	0.905	0.30( 0.28)	0.93	60266.3	12400.00
16	52669.98	139.42	0.882	0.30( 0.28)	0.93	63635.1	12201.00
17	51139.04	148.96	0.857	0.30( 0.28)	0.93	66089.2	12101.10
18	50445.24	153.08	0.847	0.30( 0.28)	0.93	66938.3	10400.00
19	48576.05	161.39	0.825	0.30( 0.28)	0.93	68253.4	12010.00
20	47041.95	167.50	0.809	0.30( 0.28)	0.93	68567.1	10210.00
21	42601.23	194.30	0.761	0.30( 0.28)	0.93	69299.8	10100.00

TOTAL AREA (ACRES) = 69299.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 55056.17 Tc(MIN.) = 116.242  
 EFFECTIVE AREA(ACRES) = 52929.14 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91  
 TOTAL AREA(ACRES) = 69299.8  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13920.00 = 136635.97 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13920.00 TO NODE 13921.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 118.00 DOWNSTREAM(FEET) = 115.28  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 335.44 CHANNEL SLOPE = 0.0081  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 15.45  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.948  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	134.30	0.30	0.658	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.658  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 55101.54  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 22.05  
 AVERAGE FLOW DEPTH(FEET) = 15.45 TRAVEL TIME(MIN.) = 0.25  
 Tc(MIN.) = 116.50  
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 90.75  
 EFFECTIVE AREA(ACRES) = 53063.44 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69434.1 PEAK FLOW RATE(CFS) = 55056.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 15.44

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 15.44 FLOW VELOCITY(FEET/SEC.) = 22.05  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13921.00 = 136971.41 FEET.

\*\*\*\*\*  
 FLOW PROCESS FROM NODE 13921.00 TO NODE 14010.00 IS CODE = 56  
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<  
 >>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 115.28 DOWNSTREAM(FEET) = 100.00  
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1396.08 CHANNEL SLOPE = 0.0109  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 14.29  
 \* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.944  
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.27	0.30	0.723	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30  
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.723  
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 55087.66  
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 24.54  
 AVERAGE FLOW DEPTH(FEET) = 14.29 TRAVEL TIME(MIN.) = 0.95  
 Tc(MIN.) = 117.44  
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 62.98  
 EFFECTIVE AREA(ACRES) = 53159.71 AREA-AVERAGED Fm(INCH/HR) = 0.28  
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92  
 TOTAL AREA(ACRES) = 69530.4 PEAK FLOW RATE(CFS) = 55056.17  
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE  
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0  
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030  
 \*ESTIMATED CHANNEL HEIGHT(FEET) = 14.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:  
 DEPTH(FEET) = 14.28 FLOW VELOCITY(FEET/SEC.) = 24.54  
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 69530.4 TC (MIN.) = 117.44  
 EFFECTIVE AREA (ACRES) = 53159.71 AREA-AVERAGED Fm (INCH/HR) = 0.28  
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.917  
 PEAK FLOW RATE (CFS) = 55056.17

\*\* PEAK FLOW RATE TABLE \*\*

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26474.87	17.99	2.593	0.30 ( 0.24)	0.80	3697.5	13900.00
2	27003.98	19.12	2.479	0.30 ( 0.24)	0.80	3931.5	13889.00
3	33397.76	35.21	1.723	0.30 ( 0.24)	0.81	7837.2	10360.00
4	37342.95	45.25	1.490	0.30 ( 0.24)	0.80	11646.9	110.00
5	42318.13	60.05	1.273	0.30 ( 0.25)	0.82	19155.3	50260.00
6	44774.21	69.99	1.205	0.30 ( 0.25)	0.84	24525.9	390.00
7	47145.50	80.82	1.132	0.30 ( 0.26)	0.87	30336.7	13100.00
8	48728.31	87.16	1.089	0.30 ( 0.26)	0.88	33441.4	11801.00
9	51082.88	96.19	1.042	0.30 ( 0.27)	0.89	38485.1	11530.00
10	52338.77	101.58	1.017	0.30 ( 0.27)	0.90	42225.5	13510.00
11	53367.54	106.25	0.995	0.30 ( 0.27)	0.90	45363.7	13010.00
12	54463.53	111.22	0.972	0.30 ( 0.27)	0.91	48728.7	11330.00
13	55056.17	117.44	0.944	0.30 ( 0.28)	0.92	53159.7	11130.00
14	54411.75	125.11	0.919	0.30 ( 0.28)	0.92	57153.7	12330.00
15	53726.05	131.83	0.901	0.30 ( 0.28)	0.93	60496.9	12400.00
16	52669.98	140.64	0.879	0.30 ( 0.28)	0.93	63865.6	12201.00
17	51139.04	150.19	0.854	0.30 ( 0.28)	0.93	66319.8	12101.10
18	50445.24	154.32	0.843	0.30 ( 0.28)	0.93	67168.8	10400.00
19	48576.05	162.63	0.822	0.30 ( 0.28)	0.93	68484.0	12010.00
20	47041.95	168.75	0.806	0.30 ( 0.28)	0.93	68797.7	10210.00
21	42601.23	195.60	0.759	0.30 ( 0.28)	0.93	69530.4	10100.00

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 END OF RATIONAL METHOD ANALYSIS