

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

Michael Baker
INTERNATIONAL

TECHNICAL APPENDIX E.2

**Rational Method Expected Value – Complex
(10-, 25-, 50- and 100-year)**

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- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV26.DAT
TIME/DATE OF STUDY: 09:16 06/14/2019

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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

FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: RI00EV19.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

FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 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	29570.59	32.04	0.30 (0.30)	0.99	12005.8	40100.00
2	31252.79	37.20	0.30 (0.30)	0.99	13857.0	11831.00
3	32067.32	39.75	0.30 (0.30)	0.99	14809.9	11801.00
4	35190.11	49.76	0.30 (0.30)	0.99	19106.7	11530.00
5	37652.28	58.70	0.30 (0.30)	0.99	24112.3	11910.00
6	39865.90	66.10	0.30 (0.30)	0.99	28694.0	11330.00
7	41015.88	72.60	0.30 (0.30)	0.99	33125.0	11130.00
8	40995.41	80.17	0.30 (0.30)	0.99	37118.9	12330.00
9	40963.71	82.76	0.30 (0.30)	0.99	38533.8	12410.00
10	40817.93	86.78	0.30 (0.30)	0.99	40462.1	12400.00
11	40699.58	89.16	0.30 (0.30)	0.99	41523.1	11111.00
12	40360.44	95.38	0.30 (0.30)	0.99	43830.9	12201.00
13	39933.41	99.27	0.30 (0.30)	0.99	44915.6	12111.00

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

FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 56

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

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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

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

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

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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						

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

 >>>>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	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.

FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 56

>>>>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

FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 56

>>>>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 = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 75.39
 RAINFALL INTENSITY(INCH/HR) = 1.22
 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.99
 EFFECTIVE STREAM AREA(ACRES) = 33187.47
 TOTAL STREAM AREA(ACRES) = 49558.19
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 41056.48

 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN.) = 9.39 RAINFALL INTENSITY(INCH/HR) = 4.17
 EFFECTIVE AREA(ACRES) = 102.60
 TOTAL AREA(ACRES) = 171.00 PEAK FLOW RATE(CFS) = 232.50
 AREA-AVERAGED Fm(INCH/HR) = 0.17 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.58
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.39
 RAINFALL INTENSITY(INCH/HR) = 4.17

AREA-AVERAGED Fm(INCH/HR) = 0.17
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.58
 EFFECTIVE STREAM AREA(ACRES) = 102.60
 TOTAL STREAM AREA(ACRES) = 171.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 232.50

** CONFLUENCE DATA **

STREAM 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
1	29636.68	35.15	1.768	0.30(0.30)	0.99	12068.3	40100.00
1	31313.15	40.25	1.638	0.30(0.30)	0.99	13919.5	11831.00
1	32125.01	42.77	1.582	0.30(0.30)	0.99	14872.4	11801.00
1	35238.60	52.70	1.392	0.30(0.30)	0.99	19169.2	11530.00
1	37696.93	61.57	1.309	0.30(0.30)	0.99	24174.8	11910.00
1	39908.40	68.92	1.260	0.30(0.30)	0.99	28756.5	11330.00
1	41056.48	75.39	1.217	0.30(0.30)	0.99	33187.5	11130.00
1	41033.80	82.96	1.166	0.30(0.30)	0.99	37181.4	12330.00
1	41001.34	85.56	1.149	0.30(0.30)	0.99	38596.3	12410.00
1	40854.39	89.58	1.122	0.30(0.30)	0.99	40524.6	12400.00
1	40735.38	91.96	1.110	0.30(0.30)	0.99	41585.6	11111.00
1	40395.02	98.18	1.082	0.30(0.30)	0.99	43893.4	12201.00
1	39967.22	102.08	1.064	0.30(0.30)	0.99	44978.1	12111.00
1	39687.64	104.44	1.054	0.30(0.30)	0.99	45617.9	10700.00
1	39364.32	107.37	1.040	0.30(0.30)	0.99	46347.5	12101.10
1	38864.18	111.32	1.022	0.30(0.30)	0.99	47196.6	10400.00
1	37361.57	119.13	0.987	0.30(0.30)	0.99	48511.8	12010.00
1	36087.82	124.81	0.970	0.30(0.30)	0.99	48825.5	10210.00
1	35727.89	127.43	0.964	0.30(0.30)	0.99	48936.3	12000.00
1	32778.28	150.31	0.904	0.30(0.30)	0.99	49558.2	10100.00
2	232.50	9.39	4.170	0.30(0.17)	0.58	102.6	12603.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21033.85	9.39	4.170	0.30(0.29)	0.98	3164.2	12603.00
2	24747.61	18.25	2.654	0.30(0.30)	0.99	6052.8	600.00
3	29729.45	35.15	1.768	0.30(0.30)	0.99	12170.9	40100.00
4	31398.36	40.25	1.638	0.30(0.30)	0.99	14022.1	11831.00
5	32206.92	42.77	1.582	0.30(0.30)	0.99	14975.0	11801.00
6	35309.50	52.70	1.392	0.30(0.30)	0.99	19271.8	11530.00
7	37763.01	61.57	1.309	0.30(0.30)	0.99	24277.4	11910.00
8	39971.61	68.92	1.260	0.30(0.30)	0.99	28859.1	11330.00
9	41117.16	75.39	1.217	0.30(0.30)	0.99	33290.1	11130.00
10	41091.54	82.96	1.166	0.30(0.30)	0.99	37284.0	12330.00
11	41058.07	85.56	1.149	0.30(0.30)	0.99	38698.9	12410.00
12	40909.54	89.58	1.122	0.30(0.30)	0.99	40627.2	12400.00
13	40789.86	91.96	1.110	0.30(0.30)	0.99	41688.2	11111.00
14	40447.85	98.18	1.082	0.30(0.30)	0.99	43996.0	12201.00
15	40019.02	102.08	1.064	0.30(0.30)	0.99	45080.7	12111.00
16	39738.82	104.44	1.054	0.30(0.30)	0.99	45720.5	10700.00
17	39414.73	107.37	1.040	0.30(0.30)	0.99	46450.1	12101.10
18	38913.55	111.32	1.022	0.30(0.30)	0.99	47299.2	10400.00
19	37408.88	119.13	0.987	0.30(0.30)	0.99	48614.4	12010.00

20 36134.16 124.81 0.970 0.30(0.30) 0.99 48928.1 10210.00
 21 35773.84 127.43 0.964 0.30(0.30) 0.99 49038.9 12000.00
 22 32820.74 150.31 0.904 0.30(0.30) 0.99 49660.8 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41117.16 Tc(MIN.) = 75.39
 EFFECTIVE AREA(ACRES) = 33290.07 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<<<<

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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) = 33333.47 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) = 41117.16
 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
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) = 33334.37 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) = 41117.16

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) = 33346.57 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) = 41117.16
 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) = 33357.37 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) = 41117.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 75.39
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.217
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "OPEN BRUSH" B 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) = 33361.47 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) = 41117.16
 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) = 10.02
 CHANNEL FLOW THRU SUBAREA (CFS) = 41117.16
 FLOW VELOCITY (FEET/SEC.) = 16.40 FLOW DEPTH (FEET) = 10.02
 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	21033.85	9.97	3.913	0.30 (0.29)	0.98	3235.6	12603.00
2	24747.61	18.80	2.594	0.30 (0.30)	0.99	6124.2	600.00
3	29729.45	35.67	1.755	0.30 (0.30)	0.99	12242.3	40100.00
4	31398.36	40.76	1.627	0.30 (0.30)	0.99	14093.5	11831.00
5	32206.92	43.28	1.570	0.30 (0.30)	0.99	15046.4	11801.00
6	35309.50	53.19	1.387	0.30 (0.30)	0.99	19343.2	11530.00
7	37763.01	62.05	1.306	0.30 (0.30)	0.99	24348.8	11910.00
8	39971.61	69.39	1.257	0.30 (0.30)	0.99	28930.5	11330.00
9	41117.16	75.85	1.214	0.30 (0.30)	0.99	33361.5	11130.00

10	41091.54	83.43	1.163	0.30 (0.30)	0.99	37355.4	12330.00
11	41058.07	86.02	1.146	0.30 (0.30)	0.99	38770.3	12410.00
12	40909.54	90.05	1.119	0.30 (0.30)	0.99	40698.6	12400.00
13	40789.86	92.43	1.108	0.30 (0.30)	0.99	41759.6	11111.00
14	40447.85	98.65	1.080	0.30 (0.30)	0.99	44067.4	12201.00
15	40019.02	102.55	1.062	0.30 (0.30)	0.99	45152.1	12111.00
16	39738.82	104.91	1.051	0.30 (0.30)	0.99	45791.9	10700.00
17	39414.73	107.84	1.038	0.30 (0.30)	0.99	46521.5	12101.10
18	38913.55	111.80	1.020	0.30 (0.30)	0.99	47370.6	10400.00
19	37408.88	119.61	0.985	0.30 (0.30)	0.99	48685.8	12010.00
20	36134.16	125.29	0.969	0.30 (0.30)	0.99	48999.5	10210.00
21	35773.84	127.92	0.962	0.30 (0.30)	0.99	49110.3	12000.00
22	32820.74	150.81	0.902	0.30 (0.30)	0.99	49732.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 41117.16 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) = 33361.47

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

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

MAINLINE Tc (MIN.) = 75.85
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.214
 SUBAREA 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) = 1.32
 EFFECTIVE AREA (ACRES) = 33363.07 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) = 41117.16
 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) = 11.01
 CHANNEL FLOW THRU SUBAREA (CFS) = 41117.16
 FLOW VELOCITY (FEET/SEC.) = 14.65 FLOW DEPTH (FEET) = 11.01
 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	21033.85	10.58	3.797	0.30 (0.29)	0.98	3237.2	12603.00
2	24747.61	19.38	2.532	0.30 (0.30)	0.99	6125.8	600.00
3	29729.45	36.21	1.741	0.30 (0.30)	0.99	12243.9	40100.00
4	31398.36	41.29	1.615	0.30 (0.30)	0.99	14095.1	11831.00
5	32206.92	43.81	1.558	0.30 (0.30)	0.99	15048.0	11801.00
6	35309.50	53.70	1.382	0.30 (0.30)	0.99	19344.8	11530.00
7	37763.01	62.55	1.303	0.30 (0.30)	0.99	24350.4	11910.00
8	39971.61	69.88	1.254	0.30 (0.30)	0.99	28932.1	11330.00
9	41117.16	76.34	1.211	0.30 (0.30)	0.99	33363.1	11130.00
10	41091.54	83.92	1.160	0.30 (0.30)	0.99	37357.0	12330.00
11	41058.07	86.51	1.142	0.30 (0.30)	0.99	38771.9	12410.00
12	40909.54	90.53	1.117	0.30 (0.30)	0.99	40700.2	12400.00
13	40789.86	92.92	1.106	0.30 (0.30)	0.99	41761.2	11111.00
14	40447.85	99.14	1.078	0.30 (0.30)	0.99	44069.0	12201.00
15	40019.02	103.04	1.060	0.30 (0.30)	0.99	45153.7	12111.00
16	39738.82	105.40	1.049	0.30 (0.30)	0.99	45793.5	10700.00
17	39414.73	108.33	1.036	0.30 (0.30)	0.99	46523.1	12101.10
18	38913.55	112.29	1.018	0.30 (0.30)	0.99	47372.2	10400.00
19	37408.88	120.11	0.983	0.30 (0.30)	0.99	48687.4	12010.00
20	36134.16	125.80	0.968	0.30 (0.30)	0.99	49001.1	10210.00
21	35773.84	128.43	0.961	0.30 (0.30)	0.99	49111.9	12000.00
22	32820.74	151.34	0.901	0.30 (0.30)	0.99	49733.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41117.16 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) = 33363.07

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

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

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) = 33373.68 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) = 41117.16
 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<<<<

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) = 33378.48 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) = 41117.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.21
 CHANNEL FLOW THRU SUBAREA(CFS) = 41117.16
 FLOW VELOCITY(FEET/SEC.) = 18.14 FLOW DEPTH(FEET) = 9.21
 TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 78.33
 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	21033.85	13.06	3.352	0.30 (0.29)	0.98	3252.6	12603.00
2	24747.61	21.73	2.349	0.30 (0.30)	0.99	6141.2	600.00
3	29729.45	38.42	1.685	0.30 (0.30)	0.99	12259.3	40100.00
4	31398.36	43.46	1.566	0.30 (0.30)	0.99	14110.5	11831.00
5	32206.92	45.96	1.510	0.30 (0.30)	0.99	15063.4	11801.00
6	35309.50	55.79	1.362	0.30 (0.30)	0.99	19360.2	11530.00
7	37763.01	64.59	1.289	0.30 (0.30)	0.99	24365.8	11910.00
8	39971.61	71.89	1.240	0.30 (0.30)	0.99	28947.5	11330.00
9	41117.16	78.33	1.197	0.30 (0.30)	0.99	33378.5	11130.00
10	41091.54	85.90	1.146	0.30 (0.30)	0.99	37372.4	12330.00
11	41058.07	88.50	1.129	0.30 (0.30)	0.99	38787.3	12410.00
12	40909.54	92.52	1.108	0.30 (0.30)	0.99	40715.6	12400.00
13	40789.86	94.91	1.097	0.30 (0.30)	0.99	41776.6	11111.00
14	40447.85	101.14	1.069	0.30 (0.30)	0.99	44084.4	12201.00

15	40019.02	105.05	1.051	0.30	(0.30)	0.99	45169.1	12111.00
16	39738.82	107.41	1.040	0.30	(0.30)	0.99	45808.9	10700.00
17	39414.73	110.35	1.027	0.30	(0.30)	0.99	46538.5	12101.10
18	38913.55	114.31	1.009	0.30	(0.30)	0.99	47387.6	10400.00
19	37408.88	122.16	0.977	0.30	(0.30)	0.99	48702.8	12010.00
20	36134.16	127.87	0.962	0.30	(0.30)	0.99	49016.5	10210.00
21	35773.84	130.51	0.956	0.30	(0.30)	0.99	49127.3	12000.00
22	32820.74	153.48	0.895	0.30	(0.30)	0.99	49749.2	10100.00

NEW PEAK FLOW DATA ARE:
PEAK FLOW RATE(CFS) = 41117.16 Tc(MIN.) = 78.33
AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33378.48

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 78.33
RAINFALL INTENSITY(INCH/HR) = 1.20
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 33378.48
TOTAL STREAM AREA(ACRES) = 49817.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 41117.16

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

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USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 16.64 RAINFALL INTENSITY(INCH/HR) = 2.83
EFFECTIVE AREA(ACRES) = 463.30
TOTAL AREA(ACRES) = 553.80 PEAK FLOW RATE(CFS) = 912.70
AREA-AVERAGED Fm(INCH/HR) = 0.26 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.64
RAINFALL INTENSITY(INCH/HR) = 2.83
AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 463.30
TOTAL STREAM AREA(ACRES) = 553.80

PEAK FLOW RATE(CFS) AT CONFLUENCE = 912.70

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21033.85	13.06	3.352	0.30(0.29)	0.98	3252.6	12603.00
1	24747.61	21.73	2.349	0.30(0.30)	0.99	6141.2	600.00
1	29729.45	38.42	1.685	0.30(0.30)	0.99	12259.3	40100.00
1	31398.36	43.46	1.566	0.30(0.30)	0.99	14110.5	11831.00
1	32206.92	45.96	1.510	0.30(0.30)	0.99	15063.4	11801.00
1	35309.50	55.79	1.362	0.30(0.30)	0.99	19360.2	11530.00
1	37763.01	64.59	1.289	0.30(0.30)	0.99	24365.8	11910.00
1	39971.61	71.89	1.240	0.30(0.30)	0.99	28947.5	11330.00
1	41117.16	78.33	1.197	0.30(0.30)	0.99	33378.5	11130.00
1	41091.54	85.90	1.146	0.30(0.30)	0.99	37372.4	12330.00
1	41058.07	88.50	1.129	0.30(0.30)	0.99	38787.3	12410.00
1	40909.54	92.52	1.108	0.30(0.30)	0.99	40715.6	12400.00
1	40789.86	94.91	1.097	0.30(0.30)	0.99	41776.6	11111.00
1	40447.85	101.14	1.069	0.30(0.30)	0.99	44084.4	12201.00
1	40019.02	105.05	1.051	0.30(0.30)	0.99	45169.1	12111.00
1	39738.82	107.41	1.040	0.30(0.30)	0.99	45808.9	10700.00
1	39414.73	110.35	1.027	0.30(0.30)	0.99	46538.5	12101.10
1	38913.55	114.31	1.009	0.30(0.30)	0.99	47387.6	10400.00
1	37408.88	122.16	0.977	0.30(0.30)	0.99	48702.8	12010.00
1	36134.16	127.87	0.962	0.30(0.30)	0.99	49016.5	10210.00
1	35773.84	130.51	0.956	0.30(0.30)	0.99	49127.3	12000.00
1	32820.74	153.48	0.895	0.30(0.30)	0.99	49749.2	10100.00
2	912.70	16.64	2.828	0.30(0.26)	0.85	463.3	12606.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21896.36	13.06	3.352	0.30(0.29)	0.97	3616.4	12603.00
2	23479.56	16.64	2.828	0.30(0.29)	0.97	4908.3	12606.00
3	25490.43	21.73	2.349	0.30(0.29)	0.98	6604.5	600.00
4	30236.55	38.42	1.685	0.30(0.30)	0.98	12722.6	40100.00
5	31863.44	43.46	1.566	0.30(0.30)	0.99	14573.8	11831.00
6	32652.10	45.96	1.510	0.30(0.30)	0.99	15526.7	11801.00
7	35702.09	55.79	1.362	0.30(0.30)	0.99	19823.5	11530.00
8	38129.90	64.59	1.289	0.30(0.30)	0.99	24829.2	11910.00
9	40321.15	71.89	1.240	0.30(0.30)	0.99	29410.8	11330.00
10	41451.41	78.33	1.197	0.30(0.30)	0.99	33841.8	11130.00
11	41407.77	85.90	1.146	0.30(0.30)	0.99	37835.7	12330.00
12	41368.14	88.50	1.129	0.30(0.30)	0.99	39250.6	12410.00
13	41211.98	92.52	1.108	0.30(0.30)	0.99	41178.9	12400.00
14	41088.46	94.91	1.097	0.30(0.30)	0.99	42239.9	11111.00
15	40736.43	101.14	1.069	0.30(0.30)	0.99	44547.7	12201.00
16	40301.32	105.05	1.051	0.30(0.30)	0.99	45632.4	12111.00
17	40017.32	107.41	1.040	0.30(0.30)	0.99	46272.2	10700.00
18	39688.50	110.35	1.027	0.30(0.30)	0.99	47001.8	12101.10
19	39180.95	114.31	1.009	0.30(0.30)	0.99	47850.9	10400.00
20	37665.12	122.16	0.977	0.30(0.30)	0.99	49166.1	12010.00
21	36385.11	127.87	0.962	0.30(0.30)	0.99	49479.8	10210.00
22	36022.34	130.51	0.956	0.30(0.30)	0.99	49590.6	12000.00
23	33047.91	153.48	0.895	0.30(0.30)	0.99	50212.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41451.41 Tc(MIN.) = 78.33
 EFFECTIVE AREA(ACRES) = 33841.78 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<<<<<

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MAINLINE Tc(MIN.) = 78.33
 * 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.953
 SUBAREA AREA(ACRES) = 16.00 SUBAREA RUNOFF(CFS) = 13.12
 EFFECTIVE AREA(ACRES) = 33857.78 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) = 41451.41
 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.) = 78.33
 * 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
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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.978
 SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 13.50
 EFFECTIVE AREA(ACRES) = 33874.38 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) = 41451.41
 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.) = 78.33
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.197
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER					
"OPEN BRUSH"	B	1.80	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) = 1.80 SUBAREA RUNOFF(CFS) = 1.45
 EFFECTIVE AREA(ACRES) = 33876.18 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) = 41451.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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END OF STUDY SUMMARY:
 TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 78.33
 EFFECTIVE AREA(ACRES) = 33876.18 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
 PEAK FLOW RATE(CFS) = 41451.41

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21896.36	13.06	3.352	0.30(0.29)	0.97	3650.8	12603.00
2	23479.56	16.64	2.828	0.30(0.29)	0.97	4942.7	12606.00
3	25490.43	21.73	2.349	0.30(0.29)	0.98	6638.9	600.00
4	30236.55	38.42	1.685	0.30(0.30)	0.98	12757.0	40100.00
5	31863.44	43.46	1.566	0.30(0.30)	0.99	14608.2	11831.00
6	32652.10	45.96	1.510	0.30(0.30)	0.99	15561.1	11801.00
7	35702.09	55.79	1.362	0.30(0.30)	0.99	19857.9	11530.00
8	38129.90	64.59	1.289	0.30(0.30)	0.99	24863.6	11910.00
9	40321.15	71.89	1.240	0.30(0.30)	0.99	29445.2	11330.00
10	41451.41	78.33	1.197	0.30(0.30)	0.99	33876.2	11130.00
11	41407.77	85.90	1.146	0.30(0.30)	0.99	37870.1	12330.00
12	41368.14	88.50	1.129	0.30(0.30)	0.99	39285.0	12410.00
13	41211.98	92.52	1.108	0.30(0.30)	0.99	41213.3	12400.00
14	41088.46	94.91	1.097	0.30(0.30)	0.99	42274.3	11111.00
15	40736.43	101.14	1.069	0.30(0.30)	0.99	44582.1	12201.00
16	40301.32	105.05	1.051	0.30(0.30)	0.99	45666.8	12111.00
17	40017.32	107.41	1.040	0.30(0.30)	0.99	46306.6	10700.00
18	39688.50	110.35	1.027	0.30(0.30)	0.99	47036.2	12101.10
19	39180.95	114.31	1.009	0.30(0.30)	0.99	47885.3	10400.00
20	37665.12	122.16	0.977	0.30(0.30)	0.99	49200.5	12010.00
21	36385.11	127.87	0.962	0.30(0.30)	0.99	49514.2	10210.00
22	36022.34	130.51	0.956	0.30(0.30)	0.99	49625.0	12000.00

23 33047.91 153.48 0.895 0.30 (0.30) 0.99 50246.9 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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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- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV26.DAT
TIME/DATE OF STUDY: 09:17 06/14/2019

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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 CROSSFALL (FT)	TO STREET / SIDE	CROSSFALL IN- / SIDE	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 11929.00 TO NODE 11929.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: RI00EV19.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

FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 14.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM 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

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

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						

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.

 FLOW PROCESS FROM NODE 12601.00 TO NODE 12602.00 IS CODE = 56

>>>>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

FLOW PROCESS FROM NODE 12602.00 TO NODE 12603.00 IS CODE = 56

>>>>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 = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 75.39
 RAINFALL INTENSITY(INCH/HR) = 1.22
 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.99
 EFFECTIVE STREAM AREA(ACRES) = 33187.47
 TOTAL STREAM AREA(ACRES) = 49558.19
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 41056.48

 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

USER-SPECIFIED VALUES ARE AS FOLLOWS:

TC(MIN.) = 9.39 RAINFALL INTENSITY(INCH/HR) = 4.17
 EFFECTIVE AREA(ACRES) = 102.60
 TOTAL AREA(ACRES) = 171.00 PEAK FLOW RATE(CFS) = 232.50
 AREA-AVERAGED Fm(INCH/HR) = 0.17 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.58
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

 FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 9.39
 RAINFALL INTENSITY(INCH/HR) = 4.17

AREA-AVERAGED Fm(INCH/HR) = 0.17
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.58
 EFFECTIVE STREAM AREA(ACRES) = 102.60
 TOTAL STREAM AREA(ACRES) = 171.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 232.50

** CONFLUENCE DATA **

STREAM 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
1	29636.68	35.15	1.768	0.30(0.30)	0.99	12068.3	40100.00
1	31313.15	40.25	1.638	0.30(0.30)	0.99	13919.5	11831.00
1	32125.01	42.77	1.582	0.30(0.30)	0.99	14872.4	11801.00
1	35238.60	52.70	1.392	0.30(0.30)	0.99	19169.2	11530.00
1	37696.93	61.57	1.309	0.30(0.30)	0.99	24174.8	11910.00
1	39908.40	68.92	1.260	0.30(0.30)	0.99	28756.5	11330.00
1	41056.48	75.39	1.217	0.30(0.30)	0.99	33187.5	11130.00
1	41033.80	82.96	1.166	0.30(0.30)	0.99	37181.4	12330.00
1	41001.34	85.56	1.149	0.30(0.30)	0.99	38596.3	12410.00
1	40854.39	89.58	1.122	0.30(0.30)	0.99	40524.6	12400.00
1	40735.38	91.96	1.110	0.30(0.30)	0.99	41585.6	11111.00
1	40395.02	98.18	1.082	0.30(0.30)	0.99	43893.4	12201.00
1	39967.22	102.08	1.064	0.30(0.30)	0.99	44978.1	12111.00
1	39687.64	104.44	1.054	0.30(0.30)	0.99	45617.9	10700.00
1	39364.32	107.37	1.040	0.30(0.30)	0.99	46347.5	12101.10
1	38864.18	111.32	1.022	0.30(0.30)	0.99	47196.6	10400.00
1	37361.57	119.13	0.987	0.30(0.30)	0.99	48511.8	12010.00
1	36087.82	124.81	0.970	0.30(0.30)	0.99	48825.5	10210.00
1	35727.89	127.43	0.964	0.30(0.30)	0.99	48936.3	12000.00
1	32778.28	150.31	0.904	0.30(0.30)	0.99	49558.2	10100.00
2	232.50	9.39	4.170	0.30(0.17)	0.58	102.6	12603.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21033.85	9.39	4.170	0.30(0.29)	0.98	3164.2	12603.00
2	24747.61	18.25	2.654	0.30(0.30)	0.99	6052.8	600.00
3	29729.45	35.15	1.768	0.30(0.30)	0.99	12170.9	40100.00
4	31398.36	40.25	1.638	0.30(0.30)	0.99	14022.1	11831.00
5	32206.92	42.77	1.582	0.30(0.30)	0.99	14975.0	11801.00
6	35309.50	52.70	1.392	0.30(0.30)	0.99	19271.8	11530.00
7	37763.01	61.57	1.309	0.30(0.30)	0.99	24277.4	11910.00
8	39971.61	68.92	1.260	0.30(0.30)	0.99	28859.1	11330.00
9	41117.16	75.39	1.217	0.30(0.30)	0.99	33290.1	11130.00
10	41091.54	82.96	1.166	0.30(0.30)	0.99	37284.0	12330.00
11	41058.07	85.56	1.149	0.30(0.30)	0.99	38698.9	12410.00
12	40909.54	89.58	1.122	0.30(0.30)	0.99	40627.2	12400.00
13	40789.86	91.96	1.110	0.30(0.30)	0.99	41688.2	11111.00
14	40447.85	98.18	1.082	0.30(0.30)	0.99	43996.0	12201.00
15	40019.02	102.08	1.064	0.30(0.30)	0.99	45080.7	12111.00
16	39738.82	104.44	1.054	0.30(0.30)	0.99	45720.5	10700.00
17	39414.73	107.37	1.040	0.30(0.30)	0.99	46450.1	12101.10
18	38913.55	111.32	1.022	0.30(0.30)	0.99	47299.2	10400.00
19	37408.88	119.13	0.987	0.30(0.30)	0.99	48614.4	12010.00

20 36134.16 124.81 0.970 0.30(0.30) 0.99 48928.1 10210.00
 21 35773.84 127.43 0.964 0.30(0.30) 0.99 49038.9 12000.00
 22 32820.74 150.31 0.904 0.30(0.30) 0.99 49660.8 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41117.16 Tc(MIN.) = 75.39
 EFFECTIVE AREA(ACRES) = 33290.07 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<<<<

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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) = 33333.47 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) = 41117.16
 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
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) = 33334.37 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) = 41117.16

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) = 33346.57 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) = 41117.16
 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) = 33357.37 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) = 41117.16
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 75.39
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.217
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 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) = 33361.47 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) = 41117.16
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) = 10.02
CHANNEL FLOW THRU SUBAREA (CFS) = 41117.16
FLOW VELOCITY (FEET/SEC.) = 16.40 FLOW DEPTH (FEET) = 10.02
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	21033.85	9.97	3.913	0.30 (0.29)	0.98	3235.6	12603.00
2	24747.61	18.80	2.594	0.30 (0.30)	0.99	6124.2	600.00
3	29729.45	35.67	1.755	0.30 (0.30)	0.99	12242.3	40100.00
4	31398.36	40.76	1.627	0.30 (0.30)	0.99	14093.5	11831.00
5	32206.92	43.28	1.570	0.30 (0.30)	0.99	15046.4	11801.00
6	35309.50	53.19	1.387	0.30 (0.30)	0.99	19343.2	11530.00
7	37763.01	62.05	1.306	0.30 (0.30)	0.99	24348.8	11910.00
8	39971.61	69.39	1.257	0.30 (0.30)	0.99	28930.5	11330.00
9	41117.16	75.85	1.214	0.30 (0.30)	0.99	33361.5	11130.00

10	41091.54	83.43	1.163	0.30 (0.30)	0.99	37355.4	12330.00
11	41058.07	86.02	1.146	0.30 (0.30)	0.99	38770.3	12410.00
12	40909.54	90.05	1.119	0.30 (0.30)	0.99	40698.6	12400.00
13	40789.86	92.43	1.108	0.30 (0.30)	0.99	41759.6	11111.00
14	40447.85	98.65	1.080	0.30 (0.30)	0.99	44067.4	12201.00
15	40019.02	102.55	1.062	0.30 (0.30)	0.99	45152.1	12111.00
16	39738.82	104.91	1.051	0.30 (0.30)	0.99	45791.9	10700.00
17	39414.73	107.84	1.038	0.30 (0.30)	0.99	46521.5	12101.10
18	38913.55	111.80	1.020	0.30 (0.30)	0.99	47370.6	10400.00
19	37408.88	119.61	0.985	0.30 (0.30)	0.99	48685.8	12010.00
20	36134.16	125.29	0.969	0.30 (0.30)	0.99	48999.5	10210.00
21	35773.84	127.92	0.962	0.30 (0.30)	0.99	49110.3	12000.00
22	32820.74	150.81	0.902	0.30 (0.30)	0.99	49732.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE (CFS) = 41117.16 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) = 33361.47

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

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

MAINLINE Tc (MIN.) = 75.85
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.214
SUBAREA 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) = 1.32
EFFECTIVE AREA (ACRES) = 33363.07 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) = 41117.16
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) = 11.01
CHANNEL FLOW THRU SUBAREA (CFS) = 41117.16
FLOW VELOCITY (FEET/SEC.) = 14.65 FLOW DEPTH (FEET) = 11.01
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	21033.85	10.58	3.797	0.30 (0.29)	0.98	3237.2	12603.00
2	24747.61	19.38	2.532	0.30 (0.30)	0.99	6125.8	600.00
3	29729.45	36.21	1.741	0.30 (0.30)	0.99	12243.9	40100.00
4	31398.36	41.29	1.615	0.30 (0.30)	0.99	14095.1	11831.00
5	32206.92	43.81	1.558	0.30 (0.30)	0.99	15048.0	11801.00
6	35309.50	53.70	1.382	0.30 (0.30)	0.99	19344.8	11530.00
7	37763.01	62.55	1.303	0.30 (0.30)	0.99	24350.4	11910.00
8	39971.61	69.88	1.254	0.30 (0.30)	0.99	28932.1	11330.00
9	41117.16	76.34	1.211	0.30 (0.30)	0.99	33363.1	11130.00
10	41091.54	83.92	1.160	0.30 (0.30)	0.99	37357.0	12330.00
11	41058.07	86.51	1.142	0.30 (0.30)	0.99	38771.9	12410.00
12	40909.54	90.53	1.117	0.30 (0.30)	0.99	40700.2	12400.00
13	40789.86	92.92	1.106	0.30 (0.30)	0.99	41761.2	11111.00
14	40447.85	99.14	1.078	0.30 (0.30)	0.99	44069.0	12201.00
15	40019.02	103.04	1.060	0.30 (0.30)	0.99	45153.7	12111.00
16	39738.82	105.40	1.049	0.30 (0.30)	0.99	45793.5	10700.00
17	39414.73	108.33	1.036	0.30 (0.30)	0.99	46523.1	12101.10
18	38913.55	112.29	1.018	0.30 (0.30)	0.99	47372.2	10400.00
19	37408.88	120.11	0.983	0.30 (0.30)	0.99	48687.4	12010.00
20	36134.16	125.80	0.968	0.30 (0.30)	0.99	49001.1	10210.00
21	35773.84	128.43	0.961	0.30 (0.30)	0.99	49111.9	12000.00
22	32820.74	151.34	0.901	0.30 (0.30)	0.99	49733.8	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41117.16 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) = 33363.07

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

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

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) = 33373.68 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) = 41117.16
 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<<<<

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) = 33378.48 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) = 41117.16
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 305.00 DOWNSTREAM(FEET) = 286.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2159.47 CHANNEL SLOPE = 0.0088
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.21
 CHANNEL FLOW THRU SUBAREA(CFS) = 41117.16
 FLOW VELOCITY(FEET/SEC.) = 18.14 FLOW DEPTH(FEET) = 9.21
 TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 78.33
 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	21033.85	13.06	3.352	0.30 (0.29)	0.98	3252.6	12603.00
2	24747.61	21.73	2.349	0.30 (0.30)	0.99	6141.2	600.00
3	29729.45	38.42	1.685	0.30 (0.30)	0.99	12259.3	40100.00
4	31398.36	43.46	1.566	0.30 (0.30)	0.99	14110.5	11831.00
5	32206.92	45.96	1.510	0.30 (0.30)	0.99	15063.4	11801.00
6	35309.50	55.79	1.362	0.30 (0.30)	0.99	19360.2	11530.00
7	37763.01	64.59	1.289	0.30 (0.30)	0.99	24365.8	11910.00
8	39971.61	71.89	1.240	0.30 (0.30)	0.99	28947.5	11330.00
9	41117.16	78.33	1.197	0.30 (0.30)	0.99	33378.5	11130.00
10	41091.54	85.90	1.146	0.30 (0.30)	0.99	37372.4	12330.00
11	41058.07	88.50	1.129	0.30 (0.30)	0.99	38787.3	12410.00
12	40909.54	92.52	1.108	0.30 (0.30)	0.99	40715.6	12400.00
13	40789.86	94.91	1.097	0.30 (0.30)	0.99	41776.6	11111.00
14	40447.85	101.14	1.069	0.30 (0.30)	0.99	44084.4	12201.00

15	40019.02	105.05	1.051	0.30	(0.30)	0.99	45169.1	12111.00
16	39738.82	107.41	1.040	0.30	(0.30)	0.99	45808.9	10700.00
17	39414.73	110.35	1.027	0.30	(0.30)	0.99	46538.5	12101.10
18	38913.55	114.31	1.009	0.30	(0.30)	0.99	47387.6	10400.00
19	37408.88	122.16	0.977	0.30	(0.30)	0.99	48702.8	12010.00
20	36134.16	127.87	0.962	0.30	(0.30)	0.99	49016.5	10210.00
21	35773.84	130.51	0.956	0.30	(0.30)	0.99	49127.3	12000.00
22	32820.74	153.48	0.895	0.30	(0.30)	0.99	49749.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41117.16 Tc(MIN.) = 78.33
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33378.48

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 78.33
 RAINFALL INTENSITY(INCH/HR) = 1.20
 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.99
 EFFECTIVE STREAM AREA(ACRES) = 33378.48
 TOTAL STREAM AREA(ACRES) = 49817.59
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 41117.16

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

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USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN.) = 16.64 RAINFALL INTENSITY(INCH/HR) = 2.83
 EFFECTIVE AREA(ACRES) = 463.30
 TOTAL AREA(ACRES) = 553.80 PEAK FLOW RATE(CFS) = 912.70
 AREA-AVERAGED Fm(INCH/HR) = 0.26 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.85
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1

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

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TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 16.64
 RAINFALL INTENSITY(INCH/HR) = 2.83
 AREA-AVERAGED Fm(INCH/HR) = 0.26
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.85
 EFFECTIVE STREAM AREA(ACRES) = 463.30
 TOTAL STREAM AREA(ACRES) = 553.80

PEAK FLOW RATE(CFS) AT CONFLUENCE = 912.70

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21033.85	13.06	3.352	0.30(0.29)	0.98	3252.6	12603.00
1	24747.61	21.73	2.349	0.30(0.30)	0.99	6141.2	600.00
1	29729.45	38.42	1.685	0.30(0.30)	0.99	12259.3	40100.00
1	31398.36	43.46	1.566	0.30(0.30)	0.99	14110.5	11831.00
1	32206.92	45.96	1.510	0.30(0.30)	0.99	15063.4	11801.00
1	35309.50	55.79	1.362	0.30(0.30)	0.99	19360.2	11530.00
1	37763.01	64.59	1.289	0.30(0.30)	0.99	24365.8	11910.00
1	39971.61	71.89	1.240	0.30(0.30)	0.99	28947.5	11330.00
1	41117.16	78.33	1.197	0.30(0.30)	0.99	33378.5	11130.00
1	41091.54	85.90	1.146	0.30(0.30)	0.99	37372.4	12330.00
1	41058.07	88.50	1.129	0.30(0.30)	0.99	38787.3	12410.00
1	40909.54	92.52	1.108	0.30(0.30)	0.99	40715.6	12400.00
1	40789.86	94.91	1.097	0.30(0.30)	0.99	41776.6	11111.00
1	40447.85	101.14	1.069	0.30(0.30)	0.99	44084.4	12201.00
1	40019.02	105.05	1.051	0.30(0.30)	0.99	45169.1	12111.00
1	39738.82	107.41	1.040	0.30(0.30)	0.99	45808.9	10700.00
1	39414.73	110.35	1.027	0.30(0.30)	0.99	46538.5	12101.10
1	38913.55	114.31	1.009	0.30(0.30)	0.99	47387.6	10400.00
1	37408.88	122.16	0.977	0.30(0.30)	0.99	48702.8	12010.00
1	36134.16	127.87	0.962	0.30(0.30)	0.99	49016.5	10210.00
1	35773.84	130.51	0.956	0.30(0.30)	0.99	49127.3	12000.00
1	32820.74	153.48	0.895	0.30(0.30)	0.99	49749.2	10100.00
2	912.70	16.64	2.828	0.30(0.26)	0.85	463.3	12606.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21896.36	13.06	3.352	0.30(0.29)	0.97	3616.4	12603.00
2	23479.56	16.64	2.828	0.30(0.29)	0.97	4908.3	12606.00
3	25490.43	21.73	2.349	0.30(0.29)	0.98	6604.5	600.00
4	30236.55	38.42	1.685	0.30(0.30)	0.98	12722.6	40100.00
5	31863.44	43.46	1.566	0.30(0.30)	0.99	14573.8	11831.00
6	32652.10	45.96	1.510	0.30(0.30)	0.99	15526.7	11801.00
7	35702.09	55.79	1.362	0.30(0.30)	0.99	19823.5	11530.00
8	38129.90	64.59	1.289	0.30(0.30)	0.99	24829.2	11910.00
9	40321.15	71.89	1.240	0.30(0.30)	0.99	29410.8	11330.00
10	41451.41	78.33	1.197	0.30(0.30)	0.99	33841.8	11130.00
11	41407.77	85.90	1.146	0.30(0.30)	0.99	37835.7	12330.00
12	41368.14	88.50	1.129	0.30(0.30)	0.99	39250.6	12410.00
13	41211.98	92.52	1.108	0.30(0.30)	0.99	41178.9	12400.00
14	41088.46	94.91	1.097	0.30(0.30)	0.99	42239.9	11111.00
15	40736.43	101.14	1.069	0.30(0.30)	0.99	44547.7	12201.00
16	40301.32	105.05	1.051	0.30(0.30)	0.99	45632.4	12111.00
17	40017.32	107.41	1.040	0.30(0.30)	0.99	46272.2	10700.00
18	39688.50	110.35	1.027	0.30(0.30)	0.99	47001.8	12101.10
19	39180.95	114.31	1.009	0.30(0.30)	0.99	47850.9	10400.00
20	37665.12	122.16	0.977	0.30(0.30)	0.99	49166.1	12010.00
21	36385.11	127.87	0.962	0.30(0.30)	0.99	49479.8	10210.00
22	36022.34	130.51	0.956	0.30(0.30)	0.99	49590.6	12000.00
23	33047.91	153.48	0.895	0.30(0.30)	0.99	50212.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41451.41 Tc(MIN.) = 78.33
EFFECTIVE AREA(ACRES) = 33841.78 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.) = 78.33
* 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
"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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.953
SUBAREA AREA(ACRES) = 16.00 SUBAREA RUNOFF(CFS) = 13.12
EFFECTIVE AREA(ACRES) = 33857.78 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) = 41451.41
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.) = 78.33
* 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.978
SUBAREA AREA(ACRES) = 16.60 SUBAREA RUNOFF(CFS) = 13.50
EFFECTIVE AREA(ACRES) = 33874.38 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) = 41451.41
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.) = 78.33
* 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 1.45
EFFECTIVE AREA(ACRES) = 33876.18 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) = 41451.41
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 78.33
EFFECTIVE AREA(ACRES) = 33876.18 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
PEAK FLOW RATE(CFS) = 41451.41

** 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. It lists 22 stream segments with their respective flow characteristics.

23 33047.91 153.48 0.895 0.30 (0.30) 0.99 50246.9 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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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
 * RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
 * REGIONAL WATERSHED S27- COMPLEX - PHASE CONDITION NO PA5 *
 * 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV27.DAT
 TIME/DATE OF STUDY: 09:17 06/14/2019

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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; 6.027
- 2) 10.00; 3.864
- 3) 15.00; 2.981
- 4) 20.00; 2.449
- 5) 25.00; 2.118
- 6) 30.00; 1.891
- 7) 40.00; 1.635
- 8) 50.00; 1.412
- 9) 60.00; 1.310
- 10) 90.00; 1.109
- 11) 120.00; 0.972
- 12) 180.00; 0.816
- 13) 360.00; 0.607
- 14) 1200.00; 0.266

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: RI00EV26.DNA
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21896.36	13.06	0.30 (0.29)	0.97	3650.8	12603.00
2	23479.56	16.64	0.30 (0.29)	0.97	4942.7	12606.00
3	25490.43	21.73	0.30 (0.29)	0.98	6638.9	600.00
4	30236.55	38.42	0.30 (0.30)	0.98	12757.0	40100.00
5	32652.10	45.96	0.30 (0.30)	0.99	15561.1	11801.00
6	35702.09	55.79	0.30 (0.30)	0.99	19857.9	11530.00
7	38129.90	64.59	0.30 (0.30)	0.99	24863.6	11910.00
8	40321.15	71.89	0.30 (0.30)	0.99	29445.2	11330.00
9	41451.41	78.33	0.30 (0.30)	0.99	33876.2	11130.00
10	41407.77	85.90	0.30 (0.30)	0.99	37870.1	12330.00
11	41368.14	88.50	0.30 (0.30)	0.99	39285.0	12410.00
12	41211.98	92.52	0.30 (0.30)	0.99	41213.3	12400.00
13	40736.43	101.14	0.30 (0.30)	0.99	44582.1	12201.00
14	40301.32	105.05	0.30 (0.30)	0.99	45666.8	12111.00
15	39688.50	110.35	0.30 (0.30)	0.99	47036.2	12101.10
16	39180.95	114.31	0.30 (0.30)	0.99	47885.3	10400.00
17	37665.12	122.16	0.30 (0.30)	0.99	49200.5	12010.00
18	36385.11	127.87	0.30 (0.30)	0.99	49514.2	10210.00
19	36022.34	130.51	0.30 (0.30)	0.99	49625.0	12000.00
20	33047.91	153.48	0.30 (0.30)	0.99	50246.9	10100.00
TOTAL AREA (ACRES) =						50246.9

 FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 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	21896.36	13.06	0.30 (0.29)	0.97	3650.8	12603.00
2	23479.56	16.64	0.30 (0.29)	0.97	4942.7	12606.00
3	25490.43	21.73	0.30 (0.29)	0.98	6638.9	600.00
4	30236.55	38.42	0.30 (0.30)	0.98	12757.0	40100.00
5	32652.10	45.96	0.30 (0.30)	0.99	15561.1	11801.00
6	35702.09	55.79	0.30 (0.30)	0.99	19857.9	11530.00
7	38129.90	64.59	0.30 (0.30)	0.99	24863.6	11910.00
8	40321.15	71.89	0.30 (0.30)	0.99	29445.2	11330.00
9	41451.41	78.33	0.30 (0.30)	0.99	33876.2	11130.00
10	41407.77	85.90	0.30 (0.30)	0.99	37870.1	12330.00
11	41368.14	88.50	0.30 (0.30)	0.99	39285.0	12410.00
12	41211.98	92.52	0.30 (0.30)	0.99	41213.3	12400.00
13	40736.43	101.14	0.30 (0.30)	0.99	44582.1	12201.00

14	40301.32	105.05	0.30	(0.30)	0.99	45666.8	12111.00
15	39688.50	110.35	0.30	(0.30)	0.99	47036.2	12101.10
16	39180.95	114.31	0.30	(0.30)	0.99	47885.3	10400.00
17	37665.12	122.16	0.30	(0.30)	0.99	49200.5	12010.00
18	36385.11	127.87	0.30	(0.30)	0.99	49514.2	10210.00
19	36022.34	130.51	0.30	(0.30)	0.99	49625.0	12000.00
20	33047.91	153.48	0.30	(0.30)	0.99	50246.9	10100.00
TOTAL AREA (ACRES) =							50246.9

FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 286.00 DOWNSTREAM(FEET) = 276.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1260.19 CHANNEL SLOPE = 0.0079
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 9.53

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.179

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) = 41455.31

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.56

AVERAGE FLOW DEPTH(FEET) = 9.53 TRAVEL TIME(MIN.) = 1.20

Tc(MIN.) = 79.52

SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 7.81

EFFECTIVE AREA(ACRES) = 33883.73 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50254.4 PEAK FLOW RATE(CFS) = 41451.41

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 9.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.53 FLOW VELOCITY(FEET/SEC.) = 17.56

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	21896.36	14.54	3.062	0.30(0.29)	0.96	3658.3	12603.00
2	23479.56	18.08	2.653	0.30(0.29)	0.97	4950.3	12606.00
3	25490.43	23.13	2.242	0.30(0.29)	0.98	6646.5	600.00
4	30236.55	39.74	1.642	0.30(0.30)	0.98	12764.6	40100.00
5	32652.10	47.25	1.473	0.30(0.30)	0.99	15568.7	11801.00
6	35702.09	57.04	1.340	0.30(0.30)	0.99	19865.4	11530.00
7	38129.90	65.82	1.271	0.30(0.30)	0.99	24871.1	11910.00
8	40321.15	73.09	1.222	0.30(0.30)	0.99	29452.7	11330.00
9	41451.41	79.52	1.179	0.30(0.30)	0.99	33883.7	11130.00
10	41407.77	87.10	1.128	0.30(0.30)	0.99	37877.7	12330.00
11	41368.14	89.69	1.111	0.30(0.30)	0.99	39292.5	12410.00

12	41211.98	93.72	1.092	0.30(0.30)	0.99	41220.9	12400.00
13	40736.43	102.34	1.053	0.30(0.30)	0.99	44589.7	12201.00
14	40301.32	106.25	1.035	0.30(0.30)	0.99	45674.3	12111.00
15	39688.50	111.56	1.011	0.30(0.30)	0.99	47043.8	12101.10
16	39180.95	115.53	0.992	0.30(0.30)	0.99	47892.9	10400.00
17	37665.12	123.39	0.963	0.30(0.30)	0.99	49208.0	12010.00
18	36385.11	129.12	0.948	0.30(0.30)	0.99	49521.7	10210.00
19	36022.34	131.76	0.941	0.30(0.30)	0.99	49632.6	12000.00
20	33047.91	154.76	0.882	0.30(0.30)	0.99	50254.4	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41451.41 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) = 33883.73

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) = 1.179

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) = 24.94

EFFECTIVE AREA(ACRES) = 33915.13 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50285.8 PEAK FLOW RATE(CFS) = 41451.41

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) = 1.179

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) = 1.35

EFFECTIVE AREA(ACRES) = 33916.83 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 50287.5 PEAK FLOW RATE(CFS) = 41451.41
 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) = 9.97
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.178
 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 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) = 41452.02
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.65
 AVERAGE FLOW DEPTH(FEET) = 9.97 TRAVEL TIME(MIN.) = 0.15
 Tc(MIN.) = 79.67

SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 1.24
 EFFECTIVE AREA(ACRES) = 33918.32 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 50289.0 PEAK FLOW RATE(CFS) = 41451.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 9.97 FLOW VELOCITY(FEET/SEC.) = 16.65
 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	21896.36	14.73	3.029	0.30(0.29)	0.96	3692.9	12603.00
2	23479.56	18.26	2.634	0.30(0.29)	0.97	4984.9	12606.00
3	25490.43	23.30	2.230	0.30(0.29)	0.98	6681.0	600.00
4	30236.55	39.91	1.637	0.30(0.30)	0.98	12799.1	40100.00
5	32652.10	47.41	1.470	0.30(0.30)	0.99	15603.3	11801.00
6	35702.09	57.20	1.339	0.30(0.30)	0.99	19900.0	11530.00
7	38129.90	65.97	1.270	0.30(0.30)	0.99	24905.7	11910.00
8	40321.15	73.24	1.221	0.30(0.30)	0.99	29487.3	11330.00
9	41451.41	79.67	1.178	0.30(0.30)	0.99	33918.3	11130.00
10	41407.77	87.25	1.127	0.30(0.30)	0.99	37912.3	12330.00
11	41368.14	89.84	1.110	0.30(0.30)	0.99	39327.1	12410.00
12	41211.98	93.87	1.091	0.30(0.30)	0.99	41255.5	12400.00
13	40736.43	102.49	1.052	0.30(0.30)	0.99	44624.2	12201.00
14	40301.32	106.40	1.034	0.30(0.30)	0.99	45708.9	12111.00
15	39688.50	111.71	1.010	0.30(0.30)	0.99	47078.4	12101.10

16	39180.95	115.68	0.992	0.30(0.30)	0.99	47927.5	10400.00
17	37665.12	123.55	0.963	0.30(0.30)	0.99	49242.6	12010.00
18	36385.11	129.27	0.948	0.30(0.30)	0.99	49556.3	10210.00
19	36022.34	131.91	0.941	0.30(0.30)	0.99	49667.2	12000.00
20	33047.91	154.92	0.881	0.30(0.30)	0.99	50289.0	10100.00

NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) = 41451.41 Tc(MIN.) = 79.67
 AREA-AVERAGED Fm(INCH/HR) = 0.30 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.99 EFFECTIVE AREA(ACRES) = 33918.32

 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.) = 79.67
 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) = 33918.32
 TOTAL STREAM AREA(ACRES) = 50289.04
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 41451.41

 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) = 3.174
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 NATURAL FAIR COVER
 "GRASS" B 6.56 0.30 1.000 69 13.91
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA RUNOFF(CFS) = 16.97
 TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 16.97

 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) = 2.856
 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) = 48.03
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.63
 AVERAGE FLOW DEPTH (FEET) = 0.74 TRAVEL TIME (MIN.) = 2.27
 Tc (MIN.) = 16.18
 SUBAREA AREA (ACRES) = 26.94 SUBAREA RUNOFF (CFS) = 61.97
 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) = 77.05
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 0.97 FLOW VELOCITY (FEET/SEC.) = 6.62
 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) = 2.617
 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) = 94.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.62
 AVERAGE FLOW DEPTH (FEET) = 1.03 TRAVEL TIME (MIN.) = 2.24
 Tc (MIN.) = 18.42
 SUBAREA AREA (ACRES) = 14.73 SUBAREA RUNOFF (CFS) = 34.30
 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) = 104.16
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.09 FLOW VELOCITY (FEET/SEC.) = 7.88
 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) = 2.413
 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) = 217.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.04
 AVERAGE FLOW DEPTH (FEET) = 1.77 TRAVEL TIME (MIN.) = 2.12
 Tc (MIN.) = 20.54
 SUBAREA AREA (ACRES) = 105.64 SUBAREA RUNOFF (CFS) = 226.61
 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) = 321.93
 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.) = 10.16
 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) = 2.268
 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) = 449.97
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.94
 AVERAGE FLOW DEPTH (FEET) = 2.87 TRAVEL TIME (MIN.) = 2.20
 Tc (MIN.) = 22.74
 SUBAREA AREA (ACRES) = 127.13 SUBAREA RUNOFF (CFS) = 256.02

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) = 557.74
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 3.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 3.21 FLOW VELOCITY(FEET/SEC.) = 10.56
 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.) = 22.74
 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 = 557.74

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21896.36	14.73	3.029	0.30(0.29)	0.96	3692.9	12603.00
1	23479.56	18.26	2.634	0.30(0.29)	0.97	4984.9	12606.00
1	25490.43	23.30	2.230	0.30(0.29)	0.98	6681.0	600.00
1	30236.55	39.91	1.637	0.30(0.30)	0.98	12799.1	40100.00
1	32652.10	47.41	1.470	0.30(0.30)	0.99	15603.3	11801.00
1	35702.09	57.20	1.339	0.30(0.30)	0.99	19900.0	11530.00
1	38129.90	65.97	1.270	0.30(0.30)	0.99	24905.7	11910.00
1	40321.15	73.24	1.221	0.30(0.30)	0.99	29487.3	11330.00
1	41451.41	79.67	1.178	0.30(0.30)	0.99	33918.3	11130.00
1	41407.77	87.25	1.127	0.30(0.30)	0.99	37912.3	12330.00
1	41368.14	89.84	1.110	0.30(0.30)	0.99	39327.1	12410.00
1	41211.98	93.87	1.091	0.30(0.30)	0.99	41255.5	12400.00
1	40736.43	102.49	1.052	0.30(0.30)	0.99	44624.2	12201.00
1	40301.32	106.40	1.034	0.30(0.30)	0.99	45708.9	12111.00
1	39688.50	111.71	1.010	0.30(0.30)	0.99	47078.4	12101.10
1	39180.95	115.68	0.992	0.30(0.30)	0.99	47927.5	10400.00
1	37665.12	123.55	0.963	0.30(0.30)	0.99	49242.6	12010.00
1	36385.11	129.27	0.948	0.30(0.30)	0.99	49556.3	10210.00
1	36022.34	131.91	0.941	0.30(0.30)	0.99	49667.2	12000.00
1	33047.91	154.92	0.881	0.30(0.30)	0.99	50289.0	10100.00
2	557.74	22.74	2.268	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	22382.29	14.73	3.029	0.30(0.28)	0.93	3874.9
2	24001.87	18.26	2.634	0.30(0.28)	0.94	5210.5
3	25823.23	22.74	2.268	0.30(0.28)	0.94	6772.3
4	26038.73	23.30	2.230	0.30(0.28)	0.94	6962.0
5	30634.90	39.91	1.637	0.30(0.29)	0.97	13080.1
6	33008.08	47.41	1.470	0.30(0.29)	0.97	15884.3
7	36024.90	57.20	1.339	0.30(0.29)	0.98	20181.0
8	38435.36	65.97	1.270	0.30(0.29)	0.98	25186.7
9	40614.29	73.24	1.221	0.30(0.29)	0.98	29768.3
10	41733.65	79.67	1.178	0.30(0.30)	0.98	34199.3
11	41677.17	87.25	1.127	0.30(0.30)	0.99	38193.3
12	41633.15	89.84	1.110	0.30(0.30)	0.99	39608.1
13	41472.26	93.87	1.091	0.30(0.30)	0.99	41536.5
14	40986.75	102.49	1.052	0.30(0.30)	0.99	44905.2
15	40547.11	106.40	1.034	0.30(0.30)	0.99	45989.9
16	39928.17	111.71	1.010	0.30(0.30)	0.98	47359.4
17	39416.03	115.68	0.992	0.30(0.30)	0.99	48208.5
18	37892.89	123.55	0.963	0.30(0.30)	0.99	49523.6
19	36609.10	129.27	0.948	0.30(0.30)	0.99	49837.3
20	36244.59	131.91	0.941	0.30(0.30)	0.99	49948.2
21	33255.04	154.92	0.881	0.30(0.30)	0.99	50570.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41733.65 Tc(MIN.) = 79.67
 EFFECTIVE AREA(ACRES) = 34199.32 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 50570.0
 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.) = 79.67
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.178
 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 0.40 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) = 3.60
 EFFECTIVE AREA(ACRES) = 34203.82 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 50574.5 PEAK FLOW RATE(CFS) = 41733.65
 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) = 10.18

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.160

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS
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) = 41765.25

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.35

AVERAGE FLOW DEPTH(FEET) = 10.18 TRAVEL TIME(MIN.) = 2.72

Tc(MIN.) = 82.39

SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 63.21

EFFECTIVE AREA(ACRES) = 34265.96 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50636.7 PEAK FLOW RATE(CFS) = 41733.65

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) = 10.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 10.18 FLOW VELOCITY(FEET/SEC.) = 16.34

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) = 41733.65 Tc(MIN.) = 82.39

AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34265.96

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

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

MAINLINE Tc(MIN.) = 82.39

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.160

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS
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) = 15.13

EFFECTIVE AREA(ACRES) = 34285.46 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50656.2 PEAK FLOW RATE(CFS) = 41733.65

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.) = 82.39

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.160

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS
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) = 34288.96 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50659.7 PEAK FLOW RATE(CFS) = 41733.65

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 82.39

RAINFALL INTENSITY(INCH/HR) = 1.16

AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.98

EFFECTIVE STREAM AREA(ACRES) = 34288.96

TOTAL STREAM AREA(ACRES) = 50659.68

PEAK FLOW RATE(CFS) AT CONFLUENCE = 41733.65

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

USER-SPECIFIED VALUES ARE AS FOLLOWS:

TC(MIN.) = 18.11 RAINFALL INTENSITY(INCH/HR) = 2.65

EFFECTIVE AREA(ACRES) = 144.00

TOTAL AREA(ACRES) = 439.50 PEAK FLOW RATE(CFS) = 227.70

AREA-AVERAGED Fm(INCH/HR) = 0.14 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.48

NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 18.11

RAINFALL INTENSITY(INCH/HR) = 2.65

AREA-AVERAGED Fm(INCH/HR) = 0.14

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.48

EFFECTIVE STREAM AREA(ACRES) = 144.00

TOTAL STREAM AREA(ACRES) = 439.50

PEAK FLOW RATE(CFS) AT CONFLUENCE = 227.70

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22382.29	18.07	2.655	0.30(0.27)	0.92	3964.5	12603.00
1	24001.87	21.53	2.348	0.30(0.28)	0.93	5300.2	12606.00
1	25823.23	25.93	2.076	0.30(0.28)	0.94	6862.0	12710.00
1	26038.73	26.48	2.051	0.30(0.28)	0.94	7051.7	600.00
1	30634.90	42.92	1.570	0.30(0.29)	0.96	13169.8	40100.00

1	33008.08	50.35	1.408	0.30(0.29)	0.97	15973.9	11801.00
1	36024.90	60.05	1.310	0.30(0.29)	0.97	20270.7	11530.00
1	38435.36	68.76	1.251	0.30(0.29)	0.98	25276.3	11910.00
1	40614.29	75.99	1.203	0.30(0.29)	0.98	29858.0	11330.00
1	41733.65	82.39	1.160	0.30(0.29)	0.98	34289.0	11130.00
1	41677.17	89.97	1.109	0.30(0.30)	0.98	38282.9	12330.00
1	41633.15	92.56	1.097	0.30(0.30)	0.98	39697.8	12410.00
1	41472.26	96.59	1.079	0.30(0.30)	0.98	41626.1	12400.00
1	40986.75	105.23	1.039	0.30(0.30)	0.98	44994.9	12201.00
1	40547.11	109.15	1.022	0.30(0.30)	0.98	46079.6	12111.00
1	39928.17	114.47	0.997	0.30(0.30)	0.98	47449.0	12101.10
1	39416.03	118.45	0.979	0.30(0.30)	0.98	48298.1	10400.00
1	37892.89	126.35	0.955	0.30(0.30)	0.98	49613.2	12010.00
1	36609.10	132.11	0.941	0.30(0.30)	0.98	49927.0	10210.00
1	36244.59	134.76	0.934	0.30(0.30)	0.98	50037.8	12000.00
1	33255.04	157.85	0.874	0.30(0.30)	0.98	50659.7	10100.00
2	227.70	18.11	2.650	0.30(0.14)	0.48	144.0	12720.50

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22609.87	18.07	2.655	0.30(0.27)	0.90	4108.2	12603.00
2	22629.79	18.11	2.650	0.30(0.27)	0.90	4124.9	12720.50
3	24202.11	21.53	2.348	0.30(0.27)	0.91	5444.2	12606.00
4	25998.76	25.93	2.076	0.30(0.28)	0.93	7006.0	12710.00
5	26211.97	26.48	2.051	0.30(0.28)	0.93	7195.7	600.00
6	30764.46	42.92	1.570	0.30(0.29)	0.96	13313.8	40100.00
7	33122.97	50.35	1.408	0.30(0.29)	0.96	16117.9	11801.00
8	36130.81	60.05	1.310	0.30(0.29)	0.97	20414.7	11530.00
9	38535.96	68.76	1.251	0.30(0.29)	0.98	25420.3	11910.00
10	40710.50	75.99	1.203	0.30(0.29)	0.98	30002.0	11330.00
11	41825.96	82.39	1.160	0.30(0.29)	0.98	34433.0	11130.00
12	41764.87	89.97	1.109	0.30(0.29)	0.98	38426.9	12330.00
13	41719.76	92.56	1.097	0.30(0.29)	0.98	39841.8	12410.00
14	41557.20	96.59	1.079	0.30(0.29)	0.98	41770.1	12400.00
15	41068.11	105.23	1.039	0.30(0.29)	0.98	45138.9	12201.00
16	40626.84	109.15	1.022	0.30(0.29)	0.98	46223.6	12111.00
17	40005.70	114.47	0.997	0.30(0.29)	0.98	47593.0	12101.10
18	39491.90	118.45	0.979	0.30(0.29)	0.98	48442.1	10400.00
19	37966.62	126.35	0.955	0.30(0.29)	0.98	49757.2	12010.00
20	36681.46	132.11	0.941	0.30(0.29)	0.98	50071.0	10210.00
21	36316.34	134.76	0.934	0.30(0.29)	0.98	50181.8	12000.00
22	33321.33	157.85	0.874	0.30(0.29)	0.98	50803.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 41825.96 Tc(MIN.) = 82.39

EFFECTIVE AREA(ACRES) = 34432.96 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 51099.2

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

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) = 11.20
CHANNEL FLOW THRU SUBAREA(CFS) = 41825.96
FLOW VELOCITY(FEET/SEC.) = 14.60 FLOW DEPTH(FEET) = 11.20
TRAVEL TIME(MIN.) = 0.50 Tc(MIN.) = 82.89
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12721.00 = 109120.82 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. Rows 1-22.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41825.96 Tc(MIN.) = 82.89
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34432.96

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) = 16.15
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.147

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. Row 1: 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) = 41831.61
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.23
AVERAGE FLOW DEPTH(FEET) = 16.15 TRAVEL TIME(MIN.) = 1.50
Tc(MIN.) = 84.39
SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 11.30
EFFECTIVE AREA(ACRES) = 34444.20 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51110.4 PEAK FLOW RATE(CFS) = 41825.96
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 16.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 16.15 FLOW VELOCITY(FEET/SEC.) = 9.23
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12722.00 = 109951.24 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 1-22.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 41825.96 Tc(MIN.) = 84.39
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34444.20

FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 84.39

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.147

SUBAREA LOSS RATE DATA(AMC II):

Table with 6 columns: DEVELOPMENT TYPE/LAND USE, SCS SOIL GROUP, AREA, Fp, Ap, SCS CN.

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) = 7.54
 EFFECTIVE AREA(ACRES) = 34454.10 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51120.3 PEAK FLOW RATE(CFS) = 41825.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 84.39
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.147
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 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) = 34456.70 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51122.9 PEAK FLOW RATE(CFS) = 41825.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 11.13
 * 100 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
 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) = 41832.93
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.70
 AVERAGE FLOW DEPTH(FEET) = 11.13 TRAVEL TIME(MIN.) = 0.71
 Tc(MIN.) = 85.10
 SUBAREA AREA(ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 13.93
 EFFECTIVE AREA(ACRES) = 34474.60 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51140.8 PEAK FLOW RATE(CFS) = 41825.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 11.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 11.13 FLOW VELOCITY(FEET/SEC.) = 14.69
 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	22609.87	21.36	2.359	0.30(0.27)	0.90	4149.9	12603.00
2	22629.79	21.40	2.356	0.30(0.27)	0.90	4166.5	12720.50
3	24202.11	24.75	2.135	0.30(0.27)	0.91	5485.8	12606.00
4	25998.76	29.07	1.933	0.30(0.28)	0.92	7047.6	12710.00
5	26211.97	29.62	1.908	0.30(0.28)	0.93	7237.3	600.00
6	30764.46	45.90	1.503	0.30(0.29)	0.96	13355.4	40100.00
7	33122.97	53.26	1.379	0.30(0.29)	0.96	16159.5	11801.00
8	36130.81	62.88	1.291	0.30(0.29)	0.97	20456.3	11530.00
9	38535.96	71.54	1.233	0.30(0.29)	0.97	25462.0	11910.00
10	40710.50	78.72	1.185	0.30(0.29)	0.98	30043.6	11330.00
11	41825.96	85.10	1.142	0.30(0.29)	0.98	34474.6	11130.00
12	41764.87	92.68	1.097	0.30(0.29)	0.98	38468.6	12330.00
13	41719.76	95.27	1.085	0.30(0.29)	0.98	39883.4	12410.00
14	41557.20	99.31	1.066	0.30(0.29)	0.98	41811.8	12400.00
15	41068.11	107.95	1.027	0.30(0.29)	0.98	45180.5	12201.00
16	40626.84	111.88	1.009	0.30(0.29)	0.98	46265.2	12111.00
17	40005.70	117.22	0.985	0.30(0.29)	0.98	47634.7	12101.10
18	39491.90	121.21	0.969	0.30(0.29)	0.98	48483.7	10400.00
19	37966.62	129.14	0.948	0.30(0.29)	0.98	49798.9	12010.00
20	36681.46	134.94	0.933	0.30(0.29)	0.98	50112.6	10210.00
21	36316.34	137.59	0.926	0.30(0.29)	0.98	50223.5	12000.00
22	33321.33	160.76	0.866	0.30(0.29)	0.98	50845.3	10100.00

NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) = 41825.96 Tc(MIN.) = 85.10
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34474.60

FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 85.10

* 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
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) = 33.64

EFFECTIVE AREA(ACRES) = 34519.00 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 51185.2 PEAK FLOW RATE(CFS) = 41825.96

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 85.10

RAINFALL INTENSITY(INCH/HR) = 1.14

AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.98

EFFECTIVE STREAM AREA(ACRES) = 34519.00

TOTAL STREAM AREA(ACRES) = 51185.22

PEAK FLOW RATE(CFS) AT CONFLUENCE = 41825.96

FLOW PROCESS FROM NODE 12730.00 TO NODE 12731.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 561.54

ELEVATION DATA: UPSTREAM(FEET) = 613.29 DOWNSTREAM(FEET) = 551.75

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20

SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 13.823

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.189

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
COMMERCIAL	B	59.52	0.30	0.100	56	

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN	(MIN.)
NATURAL FAIR COVER "CHAPARRAL,BROADLEAF"	B	6.33	0.30	1.000	63	13.82

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 16.46
TOTAL AREA(ACRES) = 6.33 PEAK FLOW RATE(CFS) = 16.46

FLOW PROCESS FROM NODE 12731.00 TO NODE 12732.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 551.75 DOWNSTREAM(FEET) = 494.40

CHANNEL LENGTH THRU SUBAREA(FEET) = 971.91 CHANNEL SLOPE = 0.0590

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 0.98

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.774

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) = 59.27

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.19

AVERAGE FLOW DEPTH(FEET) = 0.96 TRAVEL TIME(MIN.) = 3.12

Tc(MIN.) = 16.94

SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 85.50

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) = 99.59

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.29 FLOW VELOCITY(FEET/SEC.) = 6.12

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) = 1.79

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.481

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) = 165.34
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.00
 AVERAGE FLOW DEPTH(FEET) = 1.75 TRAVEL TIME(MIN.) = 2.75
 Tc(MIN.) = 19.70
 SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 131.30
 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) = 220.09
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 2.05

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<<<<<

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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) = 2.217

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) = 283.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.23
 AVERAGE FLOW DEPTH(FEET) = 2.58 TRAVEL TIME(MIN.) = 3.81
 Tc(MIN.) = 23.51
 SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 126.05
 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) = 322.23
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 2.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 2.76 FLOW VELOCITY(FEET/SEC.) = 7.51
 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) = 2.028

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) = 345.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.03
 AVERAGE FLOW DEPTH(FEET) = 2.54 TRAVEL TIME(MIN.) = 3.47
 Tc(MIN.) = 26.98
 SUBAREA AREA(ACRES) = 26.02 SUBAREA RUNOFF(CFS) = 46.79
 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) = 341.10
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 2.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 2.52 FLOW VELOCITY(FEET/SEC.) = 9.00
 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<<<<<

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TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 26.98
 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 = 341.10

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22609.87	21.36	2.359	0.30(0.27)	0.90	4194.3	12603.00
1	22629.79	21.40	2.356	0.30(0.27)	0.90	4210.9	12720.50
1	24202.11	24.75	2.135	0.30(0.27)	0.91	5530.2	12606.00
1	25998.76	29.07	1.933	0.30(0.28)	0.93	7092.0	12710.00
1	26211.97	29.62	1.908	0.30(0.28)	0.93	7281.7	600.00
1	30764.46	45.90	1.503	0.30(0.29)	0.96	13399.8	40100.00
1	33122.97	53.26	1.379	0.30(0.29)	0.96	16203.9	11801.00
1	36130.81	62.88	1.291	0.30(0.29)	0.97	20500.7	11530.00
1	38535.96	71.54	1.233	0.30(0.29)	0.97	25506.4	11910.00
1	40710.50	78.72	1.185	0.30(0.29)	0.98	30088.0	11330.00

1	41825.96	85.10	1.142	0.30	(0.29)	0.98	34519.0	11130.00
1	41764.87	92.68	1.097	0.30	(0.29)	0.98	38513.0	12330.00
1	41719.76	95.27	1.085	0.30	(0.29)	0.98	39927.8	12410.00
1	41557.20	99.31	1.066	0.30	(0.29)	0.98	41856.1	12400.00
1	41068.11	107.95	1.027	0.30	(0.29)	0.98	45224.9	12201.00
1	40626.84	111.88	1.009	0.30	(0.29)	0.98	46309.6	12111.00
1	40005.70	117.22	0.985	0.30	(0.29)	0.98	47679.1	12101.10
1	39491.90	121.21	0.969	0.30	(0.29)	0.98	48528.1	10400.00
1	37966.62	129.14	0.948	0.30	(0.29)	0.98	49843.3	12010.00
1	36681.46	134.94	0.933	0.30	(0.29)	0.98	50157.0	10210.00
1	36316.34	137.59	0.926	0.30	(0.29)	0.98	50267.9	12000.00
1	33321.33	160.76	0.866	0.30	(0.29)	0.98	50889.7	10100.00
2	341.10	26.98	2.028	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	22924.84	21.36	2.359	0.30 (0.26)	0.87	4345.1	12603.00
2	22945.00	21.40	2.356	0.30 (0.26)	0.87	4362.1	12720.50
3	24531.76	24.75	2.135	0.30 (0.27)	0.89	5705.0	12606.00
4	25470.42	26.98	2.028	0.30 (0.27)	0.90	6526.8	12730.00
5	26323.57	29.07	1.933	0.30 (0.27)	0.90	7282.5	12710.00
6	26532.51	29.62	1.908	0.30 (0.27)	0.91	7472.3	600.00
7	31015.59	45.90	1.503	0.30 (0.28)	0.95	13590.4	40100.00
8	33352.72	53.26	1.379	0.30 (0.29)	0.95	16394.5	11801.00
9	36345.46	62.88	1.291	0.30 (0.29)	0.96	20691.3	11530.00
10	38740.66	71.54	1.233	0.30 (0.29)	0.97	25696.9	11910.00
11	40906.96	78.72	1.185	0.30 (0.29)	0.97	30278.5	11330.00
12	42015.09	85.10	1.142	0.30 (0.29)	0.98	34709.5	11130.00
13	41946.26	92.68	1.097	0.30 (0.29)	0.98	38703.5	12330.00
14	41899.13	95.27	1.085	0.30 (0.29)	0.98	40118.3	12410.00
15	41733.41	99.31	1.066	0.30 (0.29)	0.98	42046.7	12400.00
16	41237.55	107.95	1.027	0.30 (0.29)	0.98	45415.5	12201.00
17	40793.20	111.88	1.009	0.30 (0.29)	0.98	46500.1	12111.00
18	40167.88	117.22	0.985	0.30 (0.29)	0.98	47869.6	12101.10
19	39651.36	121.21	0.969	0.30 (0.29)	0.98	48718.7	10400.00
20	38122.54	129.14	0.948	0.30 (0.29)	0.98	50033.8	12010.00
21	36834.81	134.94	0.933	0.30 (0.29)	0.98	50347.5	10210.00
22	36468.49	137.59	0.926	0.30 (0.29)	0.98	50458.4	12000.00
23	33463.16	160.76	0.866	0.30 (0.29)	0.98	51080.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 42015.09 Tc(MIN.) = 85.10
EFFECTIVE AREA(ACRES) = 34709.54 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51375.8
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) = 8.40
CHANNEL FLOW THRU SUBAREA(CFS) = 42015.09
FLOW VELOCITY(FEET/SEC.) = 20.66 FLOW DEPTH(FEET) = 8.40
TRAVEL TIME(MIN.) = 0.32 Tc(MIN.) = 85.42
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	22924.84	21.36	2.359	0.30 (0.26)	0.87	4345.1	12603.00
2	22945.00	21.40	2.356	0.30 (0.26)	0.87	4362.1	12720.50
3	24531.76	24.75	2.135	0.30 (0.27)	0.89	5705.0	12606.00
4	25470.42	26.98	2.011	0.30 (0.27)	0.90	6526.8	12730.00
5	26323.57	29.45	1.916	0.30 (0.27)	0.90	7282.5	12710.00
6	26532.51	30.00	1.891	0.30 (0.27)	0.91	7472.3	600.00
7	31015.59	46.26	1.495	0.30 (0.28)	0.95	13590.4	40100.00
8	33352.72	53.61	1.375	0.30 (0.29)	0.95	16394.5	11801.00
9	36345.46	63.22	1.288	0.30 (0.29)	0.96	20691.3	11530.00
10	38740.66	71.88	1.230	0.30 (0.29)	0.97	25696.9	11910.00
11	40906.96	79.05	1.182	0.30 (0.29)	0.97	30278.5	11330.00
12	42015.09	85.42	1.140	0.30 (0.29)	0.98	34709.5	11130.00
13	41946.26	93.00	1.095	0.30 (0.29)	0.98	38703.5	12330.00
14	41899.13	95.60	1.083	0.30 (0.29)	0.98	40118.3	12410.00
15	41733.41	99.63	1.065	0.30 (0.29)	0.98	42046.7	12400.00
16	41237.55	108.27	1.026	0.30 (0.29)	0.98	45415.5	12201.00
17	40793.20	112.21	1.008	0.30 (0.29)	0.98	46500.1	12111.00
18	40167.88	117.54	0.983	0.30 (0.29)	0.98	47869.6	12101.10
19	39651.36	121.54	0.968	0.30 (0.29)	0.98	48718.7	10400.00
20	38122.54	129.48	0.947	0.30 (0.29)	0.98	50033.8	12010.00
21	36834.81	135.28	0.932	0.30 (0.29)	0.98	50347.5	10210.00
22	36468.49	137.93	0.925	0.30 (0.29)	0.98	50458.4	12000.00
23	33463.16	161.11	0.865	0.30 (0.29)	0.98	51080.3	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 42015.09 Tc(MIN.) = 85.42
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 34709.54

FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 85.42

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.140

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) = 10.65
 EFFECTIVE AREA (ACRES) = 34722.84 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51389.1 PEAK FLOW RATE (CFS) = 42015.09
 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.) = 85.42
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.140
 SUBAREA 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 0.90 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) = 34723.74 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51390.0 PEAK FLOW RATE (CFS) = 42015.09
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 85.42
 RAINFALL INTENSITY (INCH/HR) = 1.14
 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 34723.74
 TOTAL STREAM AREA (ACRES) = 51389.96
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 42015.09

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<
 =====

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 23.42 RAINFALL INTENSITY (INCH/HR) = 2.22
 EFFECTIVE AREA (ACRES) = 68.70
 TOTAL AREA (ACRES) = 870.60 PEAK FLOW RATE (CFS) = 115.10
 AREA-AVERAGED Fm (INCH/HR) = 0.15 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL

CONFLUENCE ANALYSES.

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 23.42
 RAINFALL INTENSITY (INCH/HR) = 2.22
 AREA-AVERAGED Fm (INCH/HR) = 0.15
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 EFFECTIVE STREAM AREA (ACRES) = 68.70
 TOTAL STREAM AREA (ACRES) = 870.60
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 115.10

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22924.84	21.76	2.333	0.30 (0.26)	0.87	4359.3	12603.00
1	22945.00	21.80	2.330	0.30 (0.26)	0.87	4376.3	12720.50
1	24531.76	25.14	2.112	0.30 (0.27)	0.89	5719.2	12606.00
1	25470.42	27.36	2.011	0.30 (0.27)	0.90	6541.0	12730.00
1	26323.57	29.45	1.916	0.30 (0.27)	0.90	7296.7	12710.00
1	26532.51	30.00	1.891	0.30 (0.27)	0.91	7486.5	600.00
1	31015.59	46.26	1.495	0.30 (0.28)	0.95	13604.6	40100.00
1	33352.72	53.61	1.375	0.30 (0.29)	0.95	16408.7	11801.00
1	36345.46	63.22	1.288	0.30 (0.29)	0.96	20705.5	11530.00
1	38740.66	71.88	1.230	0.30 (0.29)	0.97	25711.1	11910.00
1	40906.96	79.05	1.182	0.30 (0.29)	0.97	30292.7	11330.00
1	42015.09	85.42	1.140	0.30 (0.29)	0.98	34723.7	11130.00
1	41946.26	93.00	1.095	0.30 (0.29)	0.98	38717.7	12330.00
1	41899.13	95.60	1.083	0.30 (0.29)	0.98	40132.5	12410.00
1	41733.41	99.63	1.065	0.30 (0.29)	0.98	42060.9	12400.00
1	41237.55	108.27	1.026	0.30 (0.29)	0.98	45429.7	12201.00
1	40793.20	112.21	1.008	0.30 (0.29)	0.98	46514.3	12111.00
1	40167.88	117.54	0.983	0.30 (0.29)	0.98	47883.8	12101.10
1	39651.36	121.54	0.968	0.30 (0.29)	0.98	48732.9	10400.00
1	38122.54	129.48	0.947	0.30 (0.29)	0.98	50048.0	12010.00
1	36834.81	135.28	0.932	0.30 (0.29)	0.98	50361.7	10210.00
1	36468.49	137.93	0.925	0.30 (0.29)	0.98	50472.6	12000.00
1	33463.16	161.11	0.865	0.30 (0.29)	0.98	51094.5	10100.00
2	115.10	23.42	2.223	0.30 (0.15)	0.50	68.7	12741.00

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	23037.45	21.76	2.333	0.30 (0.26)	0.87	4423.1	12603.00
2	23057.68	21.80	2.330	0.30 (0.26)	0.87	4440.2	12720.50
3	23830.68	23.42	2.223	0.30 (0.26)	0.88	5097.1	12741.00
4	24640.71	25.14	2.112	0.30 (0.27)	0.88	5787.9	12606.00
5	25573.75	27.36	2.011	0.30 (0.27)	0.89	6609.7	12730.00

6	26421.63	29.45	1.916	0.30	(0.27)	0.90	7365.4	12710.00
7	26629.20	30.00	1.891	0.30	(0.27)	0.90	7555.2	600.00
8	31090.31	46.26	1.495	0.30	(0.28)	0.94	13673.3	40100.00
9	33420.76	53.61	1.375	0.30	(0.29)	0.95	16477.4	11801.00
10	36408.68	63.22	1.288	0.30	(0.29)	0.96	20774.2	11530.00
11	38800.66	71.88	1.230	0.30	(0.29)	0.97	25779.8	11910.00
12	40964.29	79.05	1.182	0.30	(0.29)	0.97	30361.4	11330.00
13	42070.05	85.42	1.140	0.30	(0.29)	0.97	34792.4	11130.00
14	41998.76	93.00	1.095	0.30	(0.29)	0.98	38786.4	12330.00
15	41950.96	95.60	1.083	0.30	(0.29)	0.98	40201.2	12410.00
16	41784.22	99.63	1.065	0.30	(0.29)	0.98	42129.6	12400.00
17	41286.17	108.27	1.026	0.30	(0.29)	0.98	45498.4	12201.00
18	40840.82	112.21	1.008	0.30	(0.29)	0.98	46583.0	12111.00
19	40214.16	117.54	0.983	0.30	(0.29)	0.98	47952.5	12101.10
20	39696.79	121.54	0.968	0.30	(0.29)	0.98	48801.6	10400.00
21	38166.82	129.48	0.947	0.30	(0.29)	0.98	50116.7	12010.00
22	36878.25	135.28	0.932	0.30	(0.29)	0.98	50430.4	10210.00
23	36511.55	137.93	0.925	0.30	(0.29)	0.98	50541.3	12000.00
24	33502.88	161.11	0.865	0.30	(0.29)	0.98	51163.2	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 42070.05 Tc(MIN.) = 85.42
EFFECTIVE AREA(ACRES) = 34792.44 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52260.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 56

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

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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) = 9.41
CHANNEL FLOW THRU SUBAREA(CFS) = 42070.05
FLOW VELOCITY(FEET/SEC.) = 18.10 FLOW DEPTH(FEET) = 9.41
TRAVEL TIME(MIN.) = 0.75 Tc(MIN.) = 86.18
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	23037.45	22.68	2.272	0.30 (0.26)	0.87	4423.1	12603.00
2	23057.68	22.72	2.269	0.30 (0.26)	0.87	4440.2	12720.50
3	23830.68	24.33	2.162	0.30 (0.26)	0.88	5097.1	12741.00
4	24640.71	26.04	2.071	0.30 (0.27)	0.88	5787.9	12606.00
5	25573.75	28.25	1.970	0.30 (0.27)	0.89	6609.7	12730.00
6	26421.63	30.33	1.882	0.30 (0.27)	0.90	7365.4	12710.00
7	26629.20	30.88	1.869	0.30 (0.27)	0.90	7555.2	600.00
8	31090.31	47.09	1.477	0.30 (0.28)	0.94	13673.3	40100.00
9	33420.76	54.42	1.367	0.30 (0.29)	0.95	16477.4	11801.00
10	36408.68	64.02	1.283	0.30 (0.29)	0.96	20774.2	11530.00
11	38800.66	72.65	1.225	0.30 (0.29)	0.97	25779.8	11910.00
12	40964.29	79.81	1.177	0.30 (0.29)	0.97	30361.4	11330.00

13	42070.05	86.18	1.135	0.30	(0.29)	0.97	34792.4	11130.00
14	41998.76	93.76	1.092	0.30	(0.29)	0.98	38786.4	12330.00
15	41950.96	96.35	1.080	0.30	(0.29)	0.98	40201.2	12410.00
16	41784.22	100.39	1.062	0.30	(0.29)	0.98	42129.6	12400.00
17	41286.17	109.03	1.022	0.30	(0.29)	0.98	45498.4	12201.00
18	40840.82	112.97	1.004	0.30	(0.29)	0.98	46583.0	12111.00
19	40214.16	118.31	0.980	0.30	(0.29)	0.98	47952.5	12101.10
20	39696.79	122.31	0.966	0.30	(0.29)	0.98	48801.6	10400.00
21	38166.82	130.26	0.945	0.30	(0.29)	0.98	50116.7	12010.00
22	36878.25	136.06	0.930	0.30	(0.29)	0.98	50430.4	10210.00
23	36511.55	138.72	0.923	0.30	(0.29)	0.98	50541.3	12000.00
24	33502.88	161.92	0.863	0.30	(0.29)	0.98	51163.2	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 42070.05 Tc(MIN.) = 86.18
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 34792.44

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.) = 86.18
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.135
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	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) = 13.00
EFFECTIVE AREA(ACRES) = 34809.75 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52277.9 PEAK FLOW RATE(CFS) = 42070.05
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52277.9 TC(MIN.) = 86.18
EFFECTIVE AREA(ACRES) = 34809.75 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.975
PEAK FLOW RATE(CFS) = 42070.05

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23037.45	22.68	2.272	0.30 (0.26)	0.87	4440.4	12603.00
2	23057.68	22.72	2.269	0.30 (0.26)	0.87	4457.5	12720.50
3	23830.68	24.33	2.162	0.30 (0.26)	0.88	5114.4	12741.00
4	24640.71	26.04	2.071	0.30 (0.27)	0.88	5805.2	12606.00
5	25573.75	28.25	1.970	0.30 (0.27)	0.89	6627.0	12730.00
6	26421.63	30.33	1.882	0.30 (0.27)	0.90	7382.8	12710.00
7	26629.20	30.88	1.869	0.30 (0.27)	0.90	7572.5	600.00
8	31090.31	47.09	1.477	0.30 (0.28)	0.94	13690.6	40100.00
9	33420.76	54.42	1.367	0.30 (0.29)	0.95	16494.7	11801.00
10	36408.68	64.02	1.283	0.30 (0.29)	0.96	20791.5	11530.00
11	38800.66	72.65	1.225	0.30 (0.29)	0.97	25797.1	11910.00
12	40964.29	79.81	1.177	0.30 (0.29)	0.97	30378.7	11330.00

13	42070.05	86.18	1.135	0.30	(0.29)	0.97	34809.7	11130.00
14	41998.76	93.76	1.092	0.30	(0.29)	0.98	38803.7	12330.00
15	41950.96	96.35	1.080	0.30	(0.29)	0.98	40218.5	12410.00
16	41784.22	100.39	1.062	0.30	(0.29)	0.98	42146.9	12400.00
17	41286.17	109.03	1.022	0.30	(0.29)	0.98	45515.7	12201.00
18	40840.82	112.97	1.004	0.30	(0.29)	0.98	46600.3	12111.00
19	40214.16	118.31	0.980	0.30	(0.29)	0.98	47969.8	12101.10
20	39696.79	122.31	0.966	0.30	(0.29)	0.98	48818.9	10400.00
21	38166.82	130.26	0.945	0.30	(0.29)	0.98	50134.0	12010.00
22	36878.25	136.06	0.930	0.30	(0.29)	0.98	50447.7	10210.00
23	36511.55	138.72	0.923	0.30	(0.29)	0.98	50558.6	12000.00
24	33502.88	161.92	0.863	0.30	(0.29)	0.98	51180.5	10100.00

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END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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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 S28- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV28.DAT
TIME/DATE OF STUDY: 09:17 06/14/2019

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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; 6.027
- 2) 10.00; 3.864
- 3) 15.00; 2.981
- 4) 20.00; 2.449
- 5) 25.00; 2.118
- 6) 30.00; 1.891
- 7) 40.00; 1.635
- 8) 50.00; 1.412
- 9) 60.00; 1.310
- 10) 90.00; 1.109
- 11) 120.00; 0.973
- 12) 180.00; 0.816
- 13) 360.00; 0.607
- 14) 1200.00; 0.266

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 # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RI00EV27.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24640.71	26.04	0.30 (0.27)	0.88	5805.2	12606.00
2	25573.75	28.25	0.30 (0.27)	0.89	6627.0	12730.00
3	26629.20	30.88	0.30 (0.27)	0.90	7572.5	600.00
4	31090.31	47.09	0.30 (0.28)	0.94	13690.6	40100.00
5	33420.76	54.42	0.30 (0.29)	0.95	16494.7	11801.00
6	36408.68	64.02	0.30 (0.29)	0.96	20791.5	11530.00
7	38800.66	72.65	0.30 (0.29)	0.97	25797.1	11910.00
8	40964.29	79.81	0.30 (0.29)	0.97	30378.7	11330.00
9	42070.05	86.18	0.30 (0.29)	0.97	34809.7	11130.00
10	41998.76	93.76	0.30 (0.29)	0.98	38803.7	12330.00
11	41950.96	96.35	0.30 (0.29)	0.98	40218.5	12410.00
12	41784.22	100.39	0.30 (0.29)	0.98	42146.9	12400.00
13	41286.17	109.03	0.30 (0.29)	0.98	45515.7	12201.00
14	40840.82	112.97	0.30 (0.29)	0.98	46600.3	12111.00
15	40214.16	118.31	0.30 (0.29)	0.98	47969.8	12101.10
16	39696.79	122.31	0.30 (0.29)	0.98	48818.9	10400.00
17	38166.82	130.26	0.30 (0.29)	0.98	50134.0	12010.00
18	36878.25	136.06	0.30 (0.29)	0.98	50447.7	10210.00
19	36511.55	138.72	0.30 (0.29)	0.98	50558.6	12000.00
20	33502.88	161.92	0.30 (0.29)	0.98	51180.5	10100.00
TOTAL AREA (ACRES) =						51180.5

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: 0610501Y.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1712.17	25.43	0.30 (0.29)	0.98	1025.4	50120.00
2	1673.65	26.63	0.30 (0.29)	0.98	1040.0	50150.00
3	1553.32	30.32	0.30 (0.29)	0.98	1063.4	50100.00
TOTAL AREA (ACRES) =						1063.4

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0

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

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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	1712.17	25.43	0.30 (0.29)	0.98	1025.4
2	1673.65	26.63	0.30 (0.29)	0.98	1040.0
3	1553.32	30.32	0.30 (0.29)	0.98	1063.4
TOTAL AREA (ACRES) =			1063.4		

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 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	1712.17	25.43	2.098	0.30 (0.29)	0.98	1025.4	50120.00
2	1673.65	26.63	2.044	0.30 (0.29)	0.98	1040.0	50150.00
3	1553.32	30.32	1.883	0.30 (0.29)	0.98	1063.4	50100.00

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 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	24640.71	26.04	2.071	0.30 (0.27)	0.88	5805.2	12606.00
2	25573.75	28.25	1.970	0.30 (0.27)	0.89	6627.0	12730.00
3	26629.20	30.88	1.869	0.30 (0.27)	0.90	7572.5	600.00
4	31090.31	47.09	1.477	0.30 (0.28)	0.94	13690.6	40100.00
5	33420.76	54.42	1.367	0.30 (0.29)	0.95	16494.7	11801.00
6	36408.68	64.02	1.283	0.30 (0.29)	0.96	20791.5	11530.00
7	38800.66	72.65	1.225	0.30 (0.29)	0.97	25797.1	11910.00
8	40964.29	79.81	1.177	0.30 (0.29)	0.97	30378.7	11330.00
9	42070.05	86.18	1.135	0.30 (0.29)	0.97	34809.7	11130.00
10	41998.76	93.76	1.092	0.30 (0.29)	0.98	38803.7	12330.00
11	41950.96	96.35	1.080	0.30 (0.29)	0.98	40218.5	12410.00
12	41784.22	100.39	1.062	0.30 (0.29)	0.98	42146.9	12400.00
13	41286.17	109.03	1.023	0.30 (0.29)	0.98	45515.7	12201.00
14	40840.82	112.97	1.005	0.30 (0.29)	0.98	46600.3	12111.00
15	40214.16	118.31	0.981	0.30 (0.29)	0.98	47969.8	12101.10
16	39696.79	122.31	0.967	0.30 (0.29)	0.98	48818.9	10400.00
17	38166.82	130.26	0.946	0.30 (0.29)	0.98	50134.0	12010.00
18	36878.25	136.06	0.931	0.30 (0.29)	0.98	50447.7	10210.00
19	36511.55	138.72	0.924	0.30 (0.29)	0.98	50558.6	12000.00
20	33502.88	161.92	0.863	0.30 (0.29)	0.98	51180.5	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	26146.26	25.43	2.098	0.30 (0.27)	0.90	6695.6	50120.00
2	26333.38	26.04	2.071	0.30 (0.27)	0.90	6838.0	12606.00
3	26563.20	26.63	2.044	0.30 (0.27)	0.90	7064.3	50150.00
4	27194.35	28.25	1.970	0.30 (0.27)	0.90	7677.3	12730.00
5	27956.39	30.32	1.883	0.30 (0.27)	0.91	8433.3	50100.00
6	28168.45	30.88	1.869	0.30 (0.27)	0.91	8635.9	600.00
7	32246.53	47.09	1.477	0.30 (0.28)	0.95	14754.0	40100.00
8	34469.45	54.42	1.367	0.30 (0.29)	0.95	17558.1	11801.00
9	37375.45	64.02	1.283	0.30 (0.29)	0.96	21854.9	11530.00
10	39710.86	72.65	1.225	0.30 (0.29)	0.97	26860.5	11910.00

11	41827.61	79.81	1.177	0.30 (0.29)	0.97	31442.1	11330.00
12	42891.62	86.18	1.135	0.30 (0.29)	0.97	35873.1	11130.00
13	42778.62	93.76	1.092	0.30 (0.29)	0.98	39867.1	12330.00
14	42719.33	96.35	1.080	0.30 (0.29)	0.98	41281.9	12410.00
15	42534.69	100.39	1.062	0.30 (0.29)	0.98	43210.3	12400.00
16	41998.32	109.03	1.023	0.30 (0.29)	0.98	46579.1	12201.00
17	41535.51	112.97	1.005	0.30 (0.29)	0.98	47663.7	12111.00
18	40885.19	118.31	0.981	0.30 (0.29)	0.98	49033.2	12101.10
19	40354.42	122.31	0.967	0.30 (0.29)	0.98	49882.3	10400.00
20	38804.11	130.26	0.946	0.30 (0.29)	0.98	51197.4	12010.00
21	37500.69	136.06	0.931	0.30 (0.29)	0.98	51511.1	10210.00
22	37127.18	138.72	0.924	0.30 (0.29)	0.98	51622.0	12000.00
23	34059.14	161.92	0.863	0.30 (0.29)	0.98	52243.9	10100.00

TOTAL AREA (ACRES) = 52243.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 42891.62 Tc(MIN.) = 86.177
EFFECTIVE AREA(ACRES) = 35873.13 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52243.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52243.9 TC(MIN.) = 86.18
EFFECTIVE AREA(ACRES) = 35873.13 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.975
PEAK FLOW RATE(CFS) = 42891.62

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26146.26	25.43	2.098	0.30 (0.27)	0.90	6695.6	50120.00
2	26333.38	26.04	2.071	0.30 (0.27)	0.90	6838.0	12606.00
3	26563.20	26.63	2.044	0.30 (0.27)	0.90	7064.3	50150.00
4	27194.35	28.25	1.970	0.30 (0.27)	0.90	7677.3	12730.00
5	27956.39	30.32	1.883	0.30 (0.27)	0.91	8433.3	50100.00
6	28168.45	30.88	1.869	0.30 (0.27)	0.91	8635.9	600.00
7	32246.53	47.09	1.477	0.30 (0.28)	0.95	14754.0	40100.00
8	34469.45	54.42	1.367	0.30 (0.29)	0.95	17558.1	11801.00
9	37375.45	64.02	1.283	0.30 (0.29)	0.96	21854.9	11530.00
10	39710.86	72.65	1.225	0.30 (0.29)	0.97	26860.5	11910.00
11	41827.61	79.81	1.177	0.30 (0.29)	0.97	31442.1	11330.00
12	42891.62	86.18	1.135	0.30 (0.29)	0.97	35873.1	11130.00
13	42778.62	93.76	1.092	0.30 (0.29)	0.98	39867.1	12330.00
14	42719.33	96.35	1.080	0.30 (0.29)	0.98	41281.9	12410.00
15	42534.69	100.39	1.062	0.30 (0.29)	0.98	43210.3	12400.00
16	41998.32	109.03	1.023	0.30 (0.29)	0.98	46579.1	12201.00
17	41535.51	112.97	1.005	0.30 (0.29)	0.98	47663.7	12111.00
18	40885.19	118.31	0.981	0.30 (0.29)	0.98	49033.2	12101.10
19	40354.42	122.31	0.967	0.30 (0.29)	0.98	49882.3	10400.00
20	38804.11	130.26	0.946	0.30 (0.29)	0.98	51197.4	12010.00
21	37500.69	136.06	0.931	0.30 (0.29)	0.98	51511.1	10210.00
22	37127.18	138.72	0.924	0.30 (0.29)	0.98	51622.0	12000.00
23	34059.14	161.92	0.863	0.30 (0.29)	0.98	52243.9	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 S29- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV29.DAT
TIME/DATE OF STUDY: 09:17 06/14/2019

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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; 6.007
- 2) 10.00; 3.854
- 3) 15.00; 2.975
- 4) 20.00; 2.446
- 5) 25.00; 2.115
- 6) 30.00; 1.889
- 7) 40.00; 1.633
- 8) 50.00; 1.411
- 9) 60.00; 1.307
- 10) 90.00; 1.106
- 11) 120.00; 0.970
- 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: RI00EV28.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26563.20	26.63	0.30 (0.27)	0.90	7064.3	50150.00
2	27194.35	28.25	0.30 (0.27)	0.90	7677.3	12730.00
3	28168.45	30.88	0.30 (0.27)	0.91	8635.9	600.00
4	32246.53	47.09	0.30 (0.28)	0.95	14754.0	40100.00
5	34469.45	54.42	0.30 (0.29)	0.95	17558.1	11801.00
6	37375.45	64.02	0.30 (0.29)	0.96	21854.9	11530.00
7	39710.86	72.65	0.30 (0.29)	0.97	26860.5	11910.00
8	41827.61	79.81	0.30 (0.29)	0.97	31442.1	11330.00
9	42891.62	86.18	0.30 (0.29)	0.97	35873.1	11130.00
10	42778.62	93.76	0.30 (0.29)	0.98	39867.1	12330.00
11	42719.33	96.35	0.30 (0.29)	0.98	41281.9	12410.00
12	42534.69	100.39	0.30 (0.29)	0.98	43210.3	12400.00
13	41998.32	109.03	0.30 (0.29)	0.98	46579.1	12201.00
14	41535.51	112.97	0.30 (0.29)	0.98	47663.7	12111.00
15	40885.19	118.31	0.30 (0.29)	0.98	49033.2	12101.10
16	40354.42	122.31	0.30 (0.29)	0.98	49882.3	10400.00
17	38804.11	130.26	0.30 (0.29)	0.98	51197.4	12010.00
18	37500.69	136.06	0.30 (0.29)	0.98	51511.1	10210.00
19	37127.18	138.72	0.30 (0.29)	0.98	51622.0	12000.00
20	34059.14	161.92	0.30 (0.29)	0.98	52243.9	10100.00
TOTAL AREA (ACRES) =						52243.9

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26563.20	26.63	0.30 (0.27)	0.90	7064.3	50150.00
2	27194.35	28.25	0.30 (0.27)	0.90	7677.3	12730.00
3	28168.45	30.88	0.30 (0.27)	0.91	8635.9	600.00
4	32246.53	47.09	0.30 (0.28)	0.95	14754.0	40100.00
5	34469.45	54.42	0.30 (0.29)	0.95	17558.1	11801.00
6	37375.45	64.02	0.30 (0.29)	0.96	21854.9	11530.00
7	39710.86	72.65	0.30 (0.29)	0.97	26860.5	11910.00
8	41827.61	79.81	0.30 (0.29)	0.97	31442.1	11330.00
9	42891.62	86.18	0.30 (0.29)	0.97	35873.1	11130.00
10	42778.62	93.76	0.30 (0.29)	0.98	39867.1	12330.00
11	42719.33	96.35	0.30 (0.29)	0.98	41281.9	12410.00
12	42534.69	100.39	0.30 (0.29)	0.98	43210.3	12400.00
13	41998.32	109.03	0.30 (0.29)	0.98	46579.1	12201.00

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14 41535.51 112.97 0.30( 0.29) 0.98 47663.7 12111.00
15 40885.19 118.31 0.30( 0.29) 0.98 49033.2 12101.10
16 40354.42 122.31 0.30( 0.29) 0.98 49882.3 10400.00
17 38804.11 130.26 0.30( 0.29) 0.98 51197.4 12010.00
18 37500.69 136.06 0.30( 0.29) 0.98 51511.1 10210.00
19 37127.18 138.72 0.30( 0.29) 0.98 51622.0 12000.00
20 34059.14 161.92 0.30( 0.29) 0.98 52243.9 10100.00
TOTAL AREA (ACRES) = 52243.9

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FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 12
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>>>>CLEAR MEMORY BANK # 1 <<<<<
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FLOW PROCESS FROM NODE 12800.00 TO NODE 12901.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<
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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) = 9.80
CHANNEL FLOW THRU SUBAREA(CFS) = 42891.62
FLOW VELOCITY(FEET/SEC.) = 17.58 FLOW DEPTH(FEET) = 9.80
TRAVEL TIME(MIN.) = 2.96 Tc(MIN.) = 89.14
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12901.00 = 114915.99 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	26563.20	30.10	1.887	0.30(0.27)	0.90	7064.3	50150.00
2	27194.35	31.69	1.846	0.30(0.27)	0.90	7677.3	12730.00
3	28168.45	34.28	1.779	0.30(0.27)	0.91	8635.9	600.00
4	32246.53	50.34	1.407	0.30(0.28)	0.95	14754.0	40100.00
5	34469.45	57.60	1.332	0.30(0.29)	0.95	17558.1	11801.00
6	37375.45	67.11	1.259	0.30(0.29)	0.96	21854.9	11530.00
7	39710.86	75.68	1.202	0.30(0.29)	0.97	26860.5	11910.00
8	41827.61	82.79	1.154	0.30(0.29)	0.97	31442.1	11330.00
9	42891.62	89.14	1.112	0.30(0.29)	0.97	35873.1	11130.00
10	42778.62	96.72	1.076	0.30(0.29)	0.98	39867.1	12330.00
11	42719.33	99.31	1.064	0.30(0.29)	0.98	41281.9	12410.00
12	42534.69	103.36	1.045	0.30(0.29)	0.98	43210.3	12400.00
13	41998.32	112.01	1.006	0.30(0.29)	0.98	46579.1	12201.00
14	41535.51	115.96	0.988	0.30(0.29)	0.98	47663.7	12111.00
15	40885.19	121.32	0.967	0.30(0.29)	0.98	49033.2	12101.10
16	40354.42	125.33	0.956	0.30(0.29)	0.98	49882.3	10400.00
17	38804.11	133.31	0.935	0.30(0.29)	0.98	51197.4	12010.00
18	37500.69	139.15	0.920	0.30(0.29)	0.98	51511.1	10210.00
19	37127.18	141.82	0.913	0.30(0.29)	0.98	51622.0	12000.00
20	34059.14	165.12	0.852	0.30(0.29)	0.98	52243.9	10100.00

NEW PEAK FLOW DATA ARE:

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PEAK FLOW RATE(CFS) = 42891.62 Tc(MIN.) = 89.14
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 35873.13

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FLOW PROCESS FROM NODE 12901.00 TO NODE 12901.00 IS CODE = 81
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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MAINLINE Tc(MIN.) = 89.14
* 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) = 35892.53 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52263.2 PEAK FLOW RATE(CFS) = 42891.62
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
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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MAINLINE Tc(MIN.) = 89.14
* 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) = 35900.43 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52271.1 PEAK FLOW RATE(CFS) = 42891.62
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
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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MAINLINE Tc(MIN.) = 89.14
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.112

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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
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) = 52.26
EFFECTIVE AREA(ACRES) = 35969.83 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52340.5 PEAK FLOW RATE(CFS) = 42891.62
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.) = 89.14
* 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) = 35983.63 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52354.3 PEAK FLOW RATE(CFS) = 42891.62
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.) = 89.14

* 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) = 35994.43 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52365.1 PEAK FLOW RATE(CFS) = 42891.62
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) = 9.63
CHANNEL FLOW THRU SUBAREA(CFS) = 42891.62
FLOW VELOCITY(FEET/SEC.) = 17.96 FLOW DEPTH(FEET) = 9.63
TRAVEL TIME(MIN.) = 0.11 Tc(MIN.) = 89.25
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	26563.20	30.23	1.883	0.30(0.27)	0.90	7185.6	50150.00
2	27194.35	31.83	1.842	0.30(0.27)	0.90	7798.6	12730.00
3	28168.45	34.41	1.776	0.30(0.27)	0.91	8757.2	600.00
4	32246.53	50.47	1.406	0.30(0.28)	0.94	14875.3	40100.00
5	34469.45	57.73	1.331	0.30(0.29)	0.95	17679.4	11801.00
6	37375.45	67.23	1.259	0.30(0.29)	0.96	21976.2	11530.00
7	39710.86	75.80	1.201	0.30(0.29)	0.97	26981.8	11910.00
8	41827.61	82.90	1.154	0.30(0.29)	0.97	31563.4	11330.00
9	42891.62	89.25	1.111	0.30(0.29)	0.97	35994.4	11130.00
10	42778.62	96.83	1.075	0.30(0.29)	0.98	39988.4	12330.00
11	42719.33	99.43	1.063	0.30(0.29)	0.98	41403.2	12410.00
12	42534.69	103.47	1.045	0.30(0.29)	0.98	43331.6	12400.00
13	41998.32	112.13	1.006	0.30(0.29)	0.98	46700.4	12201.00
14	41535.51	116.08	0.988	0.30(0.29)	0.98	47785.0	12111.00
15	40885.19	121.43	0.966	0.30(0.29)	0.98	49154.5	12101.10
16	40354.42	125.44	0.956	0.30(0.29)	0.98	50003.6	10400.00
17	38804.11	133.43	0.935	0.30(0.29)	0.98	51318.7	12010.00
18	37500.69	139.27	0.920	0.30(0.29)	0.98	51632.4	10210.00
19	37127.18	141.94	0.913	0.30(0.29)	0.98	51743.3	12000.00
20	34059.14	165.24	0.852	0.30(0.29)	0.98	52365.1	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 42891.62 Tc(MIN.) = 89.25
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 35994.43

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: E502XXCE.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	72.40	11.09	0.30(0.27)	0.91	28.7	50200.00	
TOTAL AREA(ACRES) =							28.7

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 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	26563.20	30.23	1.883	0.30(0.27)	0.90	7185.6	50150.00
2	27194.35	31.83	1.842	0.30(0.27)	0.90	7798.6	12730.00
3	28168.45	34.41	1.776	0.30(0.27)	0.91	8757.2	600.00
4	32246.53	50.47	1.406	0.30(0.28)	0.94	14875.3	40100.00
5	34469.45	57.73	1.331	0.30(0.29)	0.95	17679.4	11801.00
6	37375.45	67.23	1.259	0.30(0.29)	0.96	21976.2	11530.00
7	39710.86	75.80	1.201	0.30(0.29)	0.97	26981.8	11910.00
8	41827.61	82.90	1.154	0.30(0.29)	0.97	31563.4	11330.00
9	42891.62	89.25	1.111	0.30(0.29)	0.97	35994.4	11130.00
10	42778.62	96.83	1.075	0.30(0.29)	0.98	39988.4	12330.00
11	42719.33	99.43	1.063	0.30(0.29)	0.98	41403.2	12410.00
12	42534.69	103.47	1.045	0.30(0.29)	0.98	43331.6	12400.00
13	41998.32	112.13	1.006	0.30(0.29)	0.98	46700.4	12201.00
14	41535.51	116.08	0.988	0.30(0.29)	0.98	47785.0	12111.00
15	40885.19	121.43	0.966	0.30(0.29)	0.98	49154.5	12101.10
16	40354.42	125.44	0.956	0.30(0.29)	0.98	50003.6	10400.00
17	38804.11	133.43	0.935	0.30(0.29)	0.98	51318.7	12010.00
18	37500.69	139.27	0.920	0.30(0.29)	0.98	51632.4	10210.00
19	37127.18	141.94	0.913	0.30(0.29)	0.98	51743.3	12000.00
20	34059.14	165.24	0.852	0.30(0.29)	0.98	52365.1	10100.00
LONGEST FLOWPATH FROM NODE							10100.00 TO NODE 12902.00 = 115038.03 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	72.40	11.09	3.662	0.30(0.27)	0.91	28.7	50200.00
LONGEST FLOWPATH FROM NODE							50200.00 TO NODE 12902.00 = 1426.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20567.50	11.09	3.662	0.30(0.27)	0.90	2665.8	50200.00
2	26597.60	30.23	1.883	0.30(0.27)	0.90	7214.3	50150.00

3	27227.88	31.83	1.842	0.30(0.27)	0.90	7827.3	12730.00
4	28200.56	34.41	1.776	0.30(0.27)	0.91	8785.9	600.00
5	32270.74	50.47	1.406	0.30(0.28)	0.94	14904.0	40100.00
6	34492.04	57.73	1.331	0.30(0.29)	0.95	17708.1	11801.00
7	37396.51	67.23	1.259	0.30(0.29)	0.96	22004.9	11530.00
8	39730.70	75.80	1.201	0.30(0.29)	0.97	27010.5	11910.00
9	41846.42	82.90	1.154	0.30(0.29)	0.97	31592.1	11330.00
10	42909.53	89.25	1.111	0.30(0.29)	0.97	36023.1	11130.00
11	42795.75	96.83	1.075	0.30(0.29)	0.98	40017.1	12330.00
12	42736.21	99.43	1.063	0.30(0.29)	0.98	41431.9	12410.00
13	42551.18	103.47	1.045	0.30(0.29)	0.98	43360.3	12400.00
14	42013.97	112.13	1.006	0.30(0.29)	0.98	46729.1	12201.00
15	41550.79	116.08	0.988	0.30(0.29)	0.98	47813.7	12111.00
16	40900.00	121.43	0.966	0.30(0.29)	0.98	49183.2	12101.10
17	40369.00	125.44	0.956	0.30(0.29)	0.98	50032.3	10400.00
18	38818.25	133.43	0.935	0.30(0.29)	0.98	51347.4	12010.00
19	37514.50	139.27	0.920	0.30(0.29)	0.98	51661.1	10210.00
20	37140.84	141.94	0.913	0.30(0.29)	0.98	51772.0	12000.00
21	34071.50	165.24	0.852	0.30(0.29)	0.98	52393.8	10100.00
TOTAL AREA(ACRES) =							52393.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 42909.53 Tc(MIN.) = 89.249
 EFFECTIVE AREA(ACRES) = 36023.13 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA(ACRES) = 52393.8
 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 # 3 <<<<<

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: E503XXCE.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	552.75	24.39	0.30(0.30)	0.99	366.4	50300.00	
TOTAL AREA(ACRES) =							366.4

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	20567.50	11.09	3.662	0.30(0.27)	0.90	2665.8	50200.00
2	26597.60	30.23	1.883	0.30(0.27)	0.90	7214.3	50150.00
3	27227.88	31.83	1.842	0.30(0.27)	0.90	7827.3	12730.00

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4 28200.56 34.41 1.776 0.30( 0.27) 0.91 8785.9 600.00
5 32270.74 50.47 1.406 0.30( 0.28) 0.94 14904.0 40100.00
6 34492.04 57.73 1.331 0.30( 0.29) 0.95 17708.1 11801.00
7 37396.51 67.23 1.259 0.30( 0.29) 0.96 22004.9 11530.00
8 39730.70 75.80 1.201 0.30( 0.29) 0.97 27010.5 11910.00
9 41846.42 82.90 1.154 0.30( 0.29) 0.97 31592.1 11330.00
10 42909.53 89.25 1.111 0.30( 0.29) 0.97 36023.1 11130.00
11 42795.75 96.83 1.075 0.30( 0.29) 0.98 40017.1 12330.00
12 42736.21 99.43 1.063 0.30( 0.29) 0.98 41431.9 12410.00
13 42551.18 103.47 1.045 0.30( 0.29) 0.98 43360.3 12400.00
14 42013.97 112.13 1.006 0.30( 0.29) 0.98 46729.1 12201.00
15 41550.79 116.08 0.988 0.30( 0.29) 0.98 47813.7 12111.00
16 40900.00 121.43 0.966 0.30( 0.29) 0.98 49183.2 12101.10
17 40369.00 125.44 0.956 0.30( 0.29) 0.98 50032.3 10400.00
18 38818.25 133.43 0.935 0.30( 0.29) 0.98 51347.4 12010.00
19 37514.50 139.27 0.920 0.30( 0.29) 0.98 51661.1 10210.00
20 37140.84 141.94 0.913 0.30( 0.29) 0.98 51772.0 12000.00
21 34071.50 165.24 0.852 0.30( 0.29) 0.98 52393.8 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 FEET.

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** MEMORY BANK # 1 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          552.75 24.39  2.155 0.30( 0.30) 0.99  366.4 50300.00
LONGEST FLOWPATH FROM NODE 50300.00 TO NODE 12902.00 = 8614.00 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          21022.55 11.09  3.662 0.30( 0.27) 0.90 2832.5 50200.00
2          25310.16 24.39  2.155 0.30( 0.27) 0.90 6192.7 50300.00
3          27069.44 30.23  1.883 0.30( 0.27) 0.90 7580.7 50150.00
4          27687.57 31.83  1.842 0.30( 0.27) 0.91 8193.7 12730.00
5          28640.61 34.41  1.776 0.30( 0.27) 0.91 9152.3 600.00
6          32600.82 50.47  1.406 0.30( 0.28) 0.95 15270.4 40100.00
7          34799.68 57.73  1.331 0.30( 0.29) 0.95 18074.5 11801.00
8          37682.73 67.23  1.259 0.30( 0.29) 0.96 22371.3 11530.00
9          39999.85 75.80  1.201 0.30( 0.29) 0.97 27376.9 11910.00
10         42101.43 82.90  1.154 0.30( 0.29) 0.97 31958.5 11330.00
11         43151.90 89.25  1.111 0.30( 0.29) 0.97 36389.5 11130.00
12         43027.43 96.83  1.075 0.30( 0.29) 0.98 40383.5 12330.00
13         42964.39 99.43  1.063 0.30( 0.29) 0.98 41798.3 12410.00
14         42773.91 103.47 1.045 0.30( 0.29) 0.98 43726.7 12400.00
15         42225.04 112.13 1.006 0.30( 0.29) 0.98 47095.5 12201.00
16         41756.53 116.08 0.988 0.30( 0.29) 0.98 48180.1 12111.00
17         41099.35 121.43 0.966 0.30( 0.29) 0.98 49549.6 12101.10
18         40565.23 125.44 0.956 0.30( 0.29) 0.98 50398.7 10400.00
19         39008.27 133.43 0.935 0.30( 0.29) 0.98 51713.8 12010.00
20         37699.98 139.27 0.920 0.30( 0.29) 0.98 52027.5 10210.00
21         37324.23 141.94 0.913 0.30( 0.29) 0.98 52138.4 12000.00
22         34236.78 165.24 0.852 0.30( 0.29) 0.98 52760.2 10100.00
TOTAL AREA (ACRES) = 52760.2

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

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PEAK FLOW RATE(CFS) = 43151.90 Tc(MIN.) = 89.249
EFFECTIVE AREA(ACRES) = 36389.53 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52760.2

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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) = 16.76

CHANNEL FLOW THRU SUBAREA(CFS) = 43151.90

FLOW VELOCITY(FEET/SEC.) = 9.07 FLOW DEPTH(FEET) = 16.76

TRAVEL TIME(MIN.) = 1.65 Tc(MIN.) = 90.90

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

** 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          21022.55 13.15  3.300 0.30( 0.27) 0.90 2832.5 50200.00
2          25310.16 26.33  2.055 0.30( 0.27) 0.90 6192.7 50300.00
3          27069.44 32.13  1.835 0.30( 0.27) 0.90 7580.7 50150.00
4          27687.57 33.71  1.794 0.30( 0.27) 0.91 8193.7 12730.00
5          28640.61 36.27  1.728 0.30( 0.27) 0.91 9152.3 600.00
6          32600.82 52.26  1.388 0.30( 0.28) 0.95 15270.4 40100.00
7          34799.68 59.48  1.312 0.30( 0.29) 0.95 18074.5 11801.00
8          37682.73 68.94  1.247 0.30( 0.29) 0.96 22371.3 11530.00
9          39999.85 77.48  1.190 0.30( 0.29) 0.97 27376.9 11910.00
10         42101.43 84.56  1.142 0.30( 0.29) 0.97 31958.5 11330.00
11         43151.90 90.90  1.102 0.30( 0.29) 0.97 36389.5 11130.00
12         43027.43 98.48  1.068 0.30( 0.29) 0.98 40383.5 12330.00
13         42964.39 101.08 1.056 0.30( 0.29) 0.98 41798.3 12410.00
14         42773.91 105.12 1.037 0.30( 0.29) 0.98 43726.7 12400.00
15         42225.04 113.78 0.998 0.30( 0.29) 0.98 47095.5 12201.00
16         41756.53 117.74 0.980 0.30( 0.29) 0.98 48180.1 12111.00
17         41099.35 123.10 0.962 0.30( 0.29) 0.98 49549.6 12101.10
18         40565.23 127.12 0.951 0.30( 0.29) 0.98 50398.7 10400.00
19         39008.27 135.13 0.930 0.30( 0.29) 0.98 51713.8 12010.00
20         37699.98 140.99 0.915 0.30( 0.29) 0.98 52027.5 10210.00
21         37324.23 143.66 0.908 0.30( 0.29) 0.98 52138.4 12000.00
22         34236.78 167.00 0.847 0.30( 0.29) 0.98 52760.2 10100.00

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NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 43151.90 Tc(MIN.) = 90.90

AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 36389.53

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: E504XXCE.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	136.04	17.00	0.30 (0.29)	0.97	70.5	50400.00
TOTAL AREA (ACRES) =			70.5			

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	21022.55	13.15	3.300	0.30 (0.27)	0.90	2832.5	50200.00
2	25310.16	26.33	2.055	0.30 (0.27)	0.90	6192.7	50300.00
3	27069.44	32.13	1.835	0.30 (0.27)	0.90	7580.7	50150.00
4	27687.57	33.71	1.794	0.30 (0.27)	0.91	8193.7	12730.00
5	28640.61	36.27	1.728	0.30 (0.27)	0.91	9152.3	600.00
6	32600.82	52.26	1.388	0.30 (0.28)	0.95	15270.4	40100.00
7	34799.68	59.48	1.312	0.30 (0.29)	0.95	18074.5	11801.00
8	37682.73	68.94	1.247	0.30 (0.29)	0.96	22371.3	11530.00
9	39999.85	77.48	1.190	0.30 (0.29)	0.97	27376.9	11910.00
10	42101.43	84.56	1.142	0.30 (0.29)	0.97	31958.5	11330.00
11	43151.90	90.90	1.102	0.30 (0.29)	0.97	36389.5	11130.00
12	43027.43	98.48	1.068	0.30 (0.29)	0.98	40383.5	12330.00
13	42964.39	101.08	1.056	0.30 (0.29)	0.98	41798.3	12410.00
14	42773.91	105.12	1.037	0.30 (0.29)	0.98	43726.7	12400.00
15	42225.04	113.78	0.998	0.30 (0.29)	0.98	47095.5	12201.00
16	41756.53	117.74	0.980	0.30 (0.29)	0.98	48180.1	12111.00
17	41099.35	123.10	0.962	0.30 (0.29)	0.98	49549.6	12101.10
18	40565.23	127.12	0.951	0.30 (0.29)	0.98	50398.7	10400.00
19	39008.27	135.13	0.930	0.30 (0.29)	0.98	51713.8	12010.00
20	37699.98	140.99	0.915	0.30 (0.29)	0.98	52027.5	10210.00
21	37324.23	143.66	0.908	0.30 (0.29)	0.98	52138.4	12000.00
22	34236.78	167.00	0.847	0.30 (0.29)	0.98	52760.2	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	136.04	17.00	2.763	0.30 (0.29)	0.97	70.5	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	21150.62	13.15	3.300	0.30 (0.27)	0.91	2887.0	50200.00
2	22411.34	17.00	2.763	0.30 (0.27)	0.91	3884.7	50400.00
3	25407.23	26.33	2.055	0.30 (0.27)	0.91	6263.2	50300.00
4	27154.39	32.13	1.835	0.30 (0.27)	0.90	7651.2	50150.00
5	27770.29	33.71	1.794	0.30 (0.27)	0.91	8264.2	12730.00
6	28719.72	36.27	1.728	0.30 (0.27)	0.91	9222.8	600.00
7	32661.18	52.26	1.388	0.30 (0.28)	0.95	15340.9	40100.00
8	34855.91	59.48	1.312	0.30 (0.29)	0.95	18145.0	11801.00

9	37735.37	68.94	1.247	0.30 (0.29)	0.96	22441.8	11530.00
10	40049.34	77.48	1.190	0.30 (0.29)	0.97	27447.4	11910.00
11	42148.32	84.56	1.142	0.30 (0.29)	0.97	32029.0	11330.00
12	43196.56	90.90	1.102	0.30 (0.29)	0.97	36460.0	11130.00
13	43070.19	98.48	1.068	0.30 (0.29)	0.98	40454.0	12330.00
14	43006.51	101.08	1.056	0.30 (0.29)	0.98	41868.8	12410.00
15	42815.03	105.12	1.037	0.30 (0.29)	0.98	43797.2	12400.00
16	42263.99	113.78	0.998	0.30 (0.29)	0.98	47166.0	12201.00
17	41794.50	117.74	0.980	0.30 (0.29)	0.98	48250.6	12111.00
18	41136.30	123.10	0.962	0.30 (0.29)	0.98	49620.1	12101.10
19	40601.61	127.12	0.951	0.30 (0.29)	0.98	50469.2	10400.00
20	39043.49	135.13	0.930	0.30 (0.29)	0.98	51784.3	12010.00
21	37734.36	140.99	0.915	0.30 (0.29)	0.98	52098.0	10210.00
22	37358.23	143.66	0.908	0.30 (0.29)	0.98	52208.9	12000.00
23	34267.42	167.00	0.847	0.30 (0.29)	0.98	52830.7	10100.00
TOTAL AREA (ACRES) =			52830.7				

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43196.56 Tc (MIN.) = 90.895
EFFECTIVE AREA (ACRES) = 36460.03 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 52830.7
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) = 16.09
CHANNEL FLOW THRU SUBAREA (CFS) = 43196.56
FLOW VELOCITY (FEET/SEC.) = 9.57 FLOW DEPTH (FEET) = 16.09
TRAVEL TIME (MIN.) = 1.34 Tc (MIN.) = 92.23
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	21150.62	14.82	3.007	0.30 (0.27)	0.91	2887.0	50200.00
2	22411.34	18.64	2.590	0.30 (0.27)	0.91	3884.7	50400.00
3	25407.23	27.90	1.984	0.30 (0.27)	0.91	6263.2	50300.00
4	27154.39	33.67	1.795	0.30 (0.27)	0.90	7651.2	50150.00
5	27770.29	35.24	1.755	0.30 (0.27)	0.91	8264.2	12730.00
6	28719.72	37.79	1.690	0.30 (0.27)	0.91	9222.8	600.00
7	32661.18	53.71	1.372	0.30 (0.28)	0.95	15340.9	40100.00
8	34855.91	60.91	1.301	0.30 (0.29)	0.95	18145.0	11801.00
9	37735.37	70.34	1.238	0.30 (0.29)	0.96	22441.8	11530.00

10	40049.34	78.85	1.181	0.30	(0.29)	0.97	27447.4	11910.00
11	42148.32	85.91	1.133	0.30	(0.29)	0.97	32029.0	11330.00
12	43196.56	92.23	1.096	0.30	(0.29)	0.97	36460.0	11130.00
13	43070.19	99.82	1.061	0.30	(0.29)	0.98	40454.0	12330.00
14	43006.51	102.41	1.050	0.30	(0.29)	0.98	41868.8	12410.00
15	42815.03	106.46	1.031	0.30	(0.29)	0.98	43797.2	12400.00
16	42263.99	115.13	0.992	0.30	(0.29)	0.98	47166.0	12201.00
17	41794.50	119.09	0.974	0.30	(0.29)	0.98	48250.6	12111.00
18	41136.30	124.46	0.958	0.30	(0.29)	0.98	49620.1	12101.10
19	40601.61	128.48	0.948	0.30	(0.29)	0.98	50469.2	10400.00
20	39043.49	136.51	0.927	0.30	(0.29)	0.98	51784.3	12010.00
21	37734.36	142.38	0.911	0.30	(0.29)	0.98	52098.0	10210.00
22	37358.23	145.06	0.904	0.30	(0.29)	0.98	52208.9	12000.00
23	34267.42	168.44	0.843	0.30	(0.29)	0.98	52830.7	10100.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 43196.56 Tc(MIN.) = 92.23
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 36460.03

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

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 92.23
 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) = 36460.03
 TOTAL STREAM AREA(ACRES) = 52830.75
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 43196.56

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

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

=====

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN.) = 17.60 RAINFALL INTENSITY(INCH/HR) = 2.70
 EFFECTIVE AREA(ACRES) = 44.10
 TOTAL AREA(ACRES) = 214.70 PEAK FLOW RATE(CFS) = 88.90
 AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.42
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

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

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

>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 17.60

RAINFALL INTENSITY(INCH/HR) = 2.70
 AREA-AVERAGED Fm(INCH/HR) = 0.13
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.42
 EFFECTIVE STREAM AREA(ACRES) = 44.10
 TOTAL STREAM AREA(ACRES) = 214.70
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 88.90

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21150.62	14.82	3.007	0.30 (0.27)	0.91	2887.0	50200.00
1	22411.34	18.64	2.590	0.30 (0.27)	0.91	3884.7	50400.00
1	25407.23	27.90	1.984	0.30 (0.27)	0.91	6263.2	50300.00
1	27154.39	33.67	1.795	0.30 (0.27)	0.90	7651.2	50150.00
1	27770.29	35.24	1.755	0.30 (0.27)	0.91	8264.2	12730.00
1	28719.72	37.79	1.690	0.30 (0.27)	0.91	9222.8	600.00
1	32661.18	53.71	1.372	0.30 (0.28)	0.95	15340.9	40100.00
1	34855.91	60.91	1.301	0.30 (0.29)	0.95	18145.0	11801.00
1	37735.37	70.34	1.238	0.30 (0.29)	0.96	22441.8	11530.00
1	40049.34	78.85	1.181	0.30 (0.29)	0.97	27447.4	11910.00
1	42148.32	85.91	1.133	0.30 (0.29)	0.97	32029.0	11330.00
1	43196.56	92.23	1.096	0.30 (0.29)	0.97	36460.0	11130.00
1	43070.19	99.82	1.061	0.30 (0.29)	0.98	40454.0	12330.00
1	43006.51	102.41	1.050	0.30 (0.29)	0.98	41868.8	12410.00
1	42815.03	106.46	1.031	0.30 (0.29)	0.98	43797.2	12400.00
1	42263.99	115.13	0.992	0.30 (0.29)	0.98	47166.0	12201.00
1	41794.50	119.09	0.974	0.30 (0.29)	0.98	48250.6	12111.00
1	41136.30	124.46	0.958	0.30 (0.29)	0.98	49620.1	12101.10
1	40601.61	128.48	0.948	0.30 (0.29)	0.98	50469.2	10400.00
1	39043.49	136.51	0.927	0.30 (0.29)	0.98	51784.3	12010.00
1	37734.36	142.38	0.911	0.30 (0.29)	0.98	52098.0	10210.00
1	37358.23	145.06	0.904	0.30 (0.29)	0.98	52208.9	12000.00
1	34267.42	168.44	0.843	0.30 (0.29)	0.98	52830.7	10100.00
2	88.90	17.60	2.700	0.30 (0.13)	0.42	44.1	12904.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21234.40	14.82	3.007	0.30 (0.27)	0.90	2924.1	50200.00
2	22157.74	17.60	2.700	0.30 (0.27)	0.90	3657.8	12904.00
3	22496.45	18.64	2.590	0.30 (0.27)	0.90	3928.8	50400.00
4	25471.40	27.90	1.984	0.30 (0.27)	0.90	6307.3	50300.00
5	27212.04	33.67	1.795	0.30 (0.27)	0.90	7695.3	50150.00
6	27826.55	35.24	1.755	0.30 (0.27)	0.90	8308.3	12730.00
7	28773.73	37.79	1.690	0.30 (0.27)	0.91	9266.9	600.00
8	32704.23	53.71	1.372	0.30 (0.28)	0.94	15385.0	40100.00
9	34896.49	60.91	1.301	0.30 (0.29)	0.95	18189.1	11801.00
10	37773.77	70.34	1.238	0.30 (0.29)	0.96	22485.9	11530.00
11	40085.77	78.85	1.181	0.30 (0.29)	0.97	27491.5	11910.00
12	42183.11	85.91	1.133	0.30 (0.29)	0.97	32073.1	11330.00
13	43230.06	92.23	1.096	0.30 (0.29)	0.97	36504.1	11130.00
14	43102.50	99.82	1.061	0.30 (0.29)	0.98	40498.1	12330.00
15	43038.41	102.41	1.050	0.30 (0.29)	0.98	41912.9	12410.00
16	42846.30	106.46	1.031	0.30 (0.29)	0.98	43841.3	12400.00

17	42293.91	115.13	0.992	0.30	(0.29)	0.98	47210.1	12201.00
18	41823.79	119.09	0.974	0.30	(0.29)	0.98	48294.7	12111.00
19	41165.05	124.46	0.958	0.30	(0.29)	0.98	49664.2	12101.10
20	40629.99	128.48	0.948	0.30	(0.29)	0.98	50513.3	10400.00
21	39071.15	136.51	0.927	0.30	(0.29)	0.98	51828.4	12010.00
22	37761.49	142.38	0.911	0.30	(0.29)	0.98	52142.1	10210.00
23	37385.12	145.06	0.904	0.30	(0.29)	0.98	52253.0	12000.00
24	34292.19	168.44	0.843	0.30	(0.29)	0.98	52874.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43230.06 Tc (MIN.) = 92.23
EFFECTIVE AREA (ACRES) = 36504.13 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 53045.4
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.) = 92.23
* 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) = 28.85
EFFECTIVE AREA (ACRES) = 36543.23 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 53084.5 PEAK FLOW RATE (CFS) = 43230.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 92.23
* 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) = 36548.23 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 53089.5 PEAK FLOW RATE (CFS) = 43230.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 92.23
* 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) = 36554.13 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 53095.4 PEAK FLOW RATE (CFS) = 43230.06
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 53095.4 TC (MIN.) = 92.23
EFFECTIVE AREA (ACRES) = 36554.13 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.974
PEAK FLOW RATE (CFS) = 43230.06

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21234.40	14.82	3.007	0.30 (0.27)	0.90	2974.1	50200.00
2	22157.74	17.60	2.700	0.30 (0.27)	0.90	3707.8	12904.00
3	22496.45	18.64	2.590	0.30 (0.27)	0.90	3978.8	50400.00
4	25471.40	27.90	1.984	0.30 (0.27)	0.90	6357.3	50300.00
5	27212.04	33.67	1.795	0.30 (0.27)	0.90	7745.3	50150.00
6	27826.55	35.24	1.755	0.30 (0.27)	0.90	8358.3	12730.00
7	28773.73	37.79	1.690	0.30 (0.27)	0.91	9316.9	600.00
8	32704.23	53.71	1.372	0.30 (0.28)	0.94	15435.0	40100.00

9	34896.49	60.91	1.301	0.30 (0.29)	0.95	18239.1	11801.00
10	37773.77	70.34	1.238	0.30 (0.29)	0.96	22535.9	11530.00
11	40085.77	78.85	1.181	0.30 (0.29)	0.97	27541.5	11910.00
12	42183.11	85.91	1.133	0.30 (0.29)	0.97	32123.1	11330.00
13	43230.06	92.23	1.096	0.30 (0.29)	0.97	36554.1	11130.00
14	43102.50	99.82	1.061	0.30 (0.29)	0.98	40548.1	12330.00
15	43038.41	102.41	1.050	0.30 (0.29)	0.98	41962.9	12410.00
16	42846.30	106.46	1.031	0.30 (0.29)	0.98	43891.3	12400.00
17	42293.91	115.13	0.992	0.30 (0.29)	0.98	47260.1	12201.00
18	41823.79	119.09	0.974	0.30 (0.29)	0.98	48344.7	12111.00
19	41165.05	124.46	0.958	0.30 (0.29)	0.98	49714.2	12101.10
20	40629.99	128.48	0.948	0.30 (0.29)	0.98	50563.3	10400.00
21	39071.15	136.51	0.927	0.30 (0.29)	0.98	51878.4	12010.00
22	37761.49	142.38	0.911	0.30 (0.29)	0.98	52192.1	10210.00
23	37385.12	145.06	0.904	0.30 (0.29)	0.98	52303.0	12000.00
24	34292.19	168.44	0.843	0.30 (0.29)	0.98	52924.8	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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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 S33- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV33.DAT
TIME/DATE OF STUDY: 12:17 06/19/2019

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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; 5.876
- 2) 10.00; 3.789
- 3) 15.00; 2.933
- 4) 20.00; 2.419
- 5) 25.00; 2.096
- 6) 30.00; 1.873
- 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	0.0312	0.167	0.0150

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

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

FLOW PROCESS FROM NODE 13222.00 TO NODE 13222.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

=====

USER-SPECIFIED VALUES ARE AS FOLLOWS:

TC(MIN.) = 59.66 RAINFALL INTENSITY(INCH/HR) = 1.29
EFFECTIVE AREA(ACRES) = 2982.60
TOTAL AREA(ACRES) = 4924.40 PEAK FLOW RATE(CFS) = 2529.60
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.82
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.84
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.266
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 2552.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.78
AVERAGE FLOW DEPTH(FEET) = 3.85 TRAVEL TIME(MIN.) = 3.92
Tc(MIN.) = 63.58
SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 45.14
EFFECTIVE AREA(ACRES) = 3027.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 2782.92
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.04

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

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 63.58
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.266
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 16.14
 EFFECTIVE AREA(ACRES) = 3044.30 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 2799.06

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 63.58
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.266
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977
 SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 6.92
 EFFECTIVE AREA(ACRES) = 3052.20 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) = 2805.97

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 63.58
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.266
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 19.12
 EFFECTIVE AREA(ACRES) = 3074.20 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5016.0 PEAK FLOW RATE(CFS) = 2825.10

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 63.58
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.266
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA(ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 13.04
 EFFECTIVE AREA(ACRES) = 3089.20 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5031.0 PEAK FLOW RATE(CFS) = 2838.14

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

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

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

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

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

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

FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 685.00 DOWNSTREAM (FEET) = 655.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 135.00 CHANNEL SLOPE = 0.2222
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.224
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 0.70 0.30 1.000 66
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 6.31
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.10
AVERAGE FLOW DEPTH (FEET) = 0.54 TRAVEL TIME (MIN.) = 0.32
Tc (MIN.) = 8.96
SUBAREA AREA (ACRES) = 1.30 SUBAREA RUNOFF (CFS) = 4.59
EFFECTIVE AREA (ACRES) = 2.40 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 2.4 PEAK FLOW RATE (CFS) = 8.48

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

FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 655.00 DOWNSTREAM (FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.054
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.30 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 1.90 0.30 1.000 66
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 12.36
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.30
AVERAGE FLOW DEPTH (FEET) = 0.70 TRAVEL TIME (MIN.) = 0.41
Tc (MIN.) = 9.37
SUBAREA AREA (ACRES) = 2.30 SUBAREA RUNOFF (CFS) = 7.77
EFFECTIVE AREA (ACRES) = 4.70 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 4.7 PEAK FLOW RATE (CFS) = 15.88

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

FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 630.00 DOWNSTREAM (FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.757
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 1.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.50 0.30 1.000 66
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 21.48
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.52

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

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

FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.641

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 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) = 258.28

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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.999					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 267.32					
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) = 258.28					
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<<<<<

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MAINLINE Tc (MIN.) = 17.08
* 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	0.30	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) = 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/ 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) = 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	2838.14	63.58	1.266	0.30 (0.25)	0.82	3089.2	13222.00

LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2223.05	20.67	2.375	0.30 (0.25)	0.84	1159.0	31100.00
2	2976.39	63.58	1.266	0.30 (0.25)	0.83	3243.7	13222.00

TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2976.39 Tc(MIN.) = 63.578
EFFECTIVE AREA(ACRES) = 3243.70 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
TOTAL AREA (ACRES) = 5185.5
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.67
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.250
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 2980.41

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.84

AVERAGE FLOW DEPTH(FEET) = 5.67 TRAVEL TIME(MIN.) = 2.43

Tc(MIN.) = 66.00

SUBAREA AREA (ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 8.03

EFFECTIVE AREA(ACRES) = 3253.10 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA (ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 2976.39

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 5.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.67 FLOW VELOCITY(FEET/SEC.) = 7.84

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13302.00 = 7532.09 FEET.

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 66.00

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.250

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 RESIDENTIAL	B	1.10	0.30	0.100	56
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952

SUBAREA AREA (ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 24.38

EFFECTIVE AREA(ACRES) = 3281.20 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA (ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 2976.39

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 66.00

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.250

SUBAREA LOSS RATE DATA(AMC II):

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

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"ROW CROPS,CONTOURED"   B    0.10   0.30   1.000   79
COMMERCIAL               B    0.10   0.30   0.100   56
RESIDENTIAL
".4 DWELLING/ACRE"      B    2.40   0.30   0.900   56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED"   B    0.50   0.30   1.000   79
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.894
SUBAREA AREA(ACRES) = 3.10   SUBAREA RUNOFF(CFS) = 2.74
EFFECTIVE AREA(ACRES) = 3284.30   AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5226.1   PEAK FLOW RATE(CFS) = 2976.39
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<<<<

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=====
MAINLINE Tc(MIN.) = 66.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.250
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA     Fp       Ap     SCS
LAND USE           GROUP    (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"           B        0.10    0.30    1.000    86
NATURAL FAIR COVER
"OPEN BRUSH"       B        2.60    0.30    1.000    66
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B    3.10    0.30    1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B        0.40    0.30    1.000    65
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B    0.20    0.30    1.000    63
NATURAL FAIR COVER
"OPEN BRUSH"       B       13.80    0.30    1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 20.20   SUBAREA RUNOFF(CFS) = 17.26
EFFECTIVE AREA(ACRES) = 3304.50   AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5246.3   PEAK FLOW RATE(CFS) = 2977.22

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

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=====
MAINLINE Tc(MIN.) = 66.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.250
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA     Fp       Ap     SCS
LAND USE           GROUP    (ACRES) (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B    34.60    0.30    1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B        2.40    0.30    1.000    65
NATURAL FAIR COVER

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"OPEN BRUSH"           B    22.60   0.30   1.000   66
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B    11.60   0.30   1.000   79
APARTMENTS             B     0.40   0.30   0.200   56
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B     4.80   0.30   1.000   63
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996
SUBAREA AREA(ACRES) = 76.40   SUBAREA RUNOFF(CFS) = 65.38
EFFECTIVE AREA(ACRES) = 3380.90   AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5322.7   PEAK FLOW RATE(CFS) = 3042.60

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

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=====
MAINLINE Tc(MIN.) = 66.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.250
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA     Fp       Ap     SCS
LAND USE           GROUP    (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"GRASS"             B        1.60    0.30    1.000    69
NATURAL FAIR COVER
"OPEN BRUSH"       B       46.40    0.30    1.000    66
RESIDENTIAL
"11+ DWELLINGS/ACRE" B    0.10    0.30    0.200    56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B    60.70    0.30    1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B        5.80    0.30    1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.999
SUBAREA AREA(ACRES) = 114.60   SUBAREA RUNOFF(CFS) = 97.96
EFFECTIVE AREA(ACRES) = 3495.50   AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5437.3   PEAK FLOW RATE(CFS) = 3140.56

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FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

>>>>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) = 5.23
CHANNEL FLOW THRU SUBAREA(CFS) = 3140.56
FLOW VELOCITY(FEET/SEC.) = 9.14   FLOW DEPTH(FEET) = 5.23
TRAVEL TIME(MIN.) = 4.00   Tc(MIN.) = 70.00
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

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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.) = 70.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.223
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) = 6.65
EFFECTIVE AREA(ACRES) = 3503.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5444.9 PEAK FLOW RATE(CFS) = 3140.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.223
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 13.16
EFFECTIVE AREA(ACRES) = 3517.90 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5459.7 PEAK FLOW RATE(CFS) = 3140.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.223
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 20.43
EFFECTIVE AREA(ACRES) = 3542.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3 PEAK FLOW RATE(CFS) = 3140.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.223
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 29.41
EFFECTIVE AREA(ACRES) = 3577.80 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6 PEAK FLOW RATE(CFS) = 3140.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.223

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	1.70	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	5.50	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.20	0.30	1.000	66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.830
SUBAREA AREA(ACRES) = 10.50 SUBAREA RUNOFF(CFS) = 9.20
EFFECTIVE AREA(ACRES) = 3588.30 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5530.1 PEAK FLOW RATE(CFS) = 3140.56
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.00
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.223

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 "OPEN BRUSH"	B	0.20	0.30	0.100	56
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	6.50	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	3.00	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917
SUBAREA AREA(ACRES) = 11.60 SUBAREA RUNOFF(CFS) = 9.89
EFFECTIVE AREA(ACRES) = 3599.90 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5541.7 PEAK FLOW RATE(CFS) = 3144.55

FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 355.00 DOWNSTREAM(FEET) = 350.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 925.40 CHANNEL SLOPE = 0.0054

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.05
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.209

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) = 3150.47
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.63
AVERAGE FLOW DEPTH(FEET) = 6.05 TRAVEL TIME(MIN.) = 2.02
Tc(MIN.) = 72.02
SUBAREA AREA(ACRES) = 13.80 SUBAREA RUNOFF(CFS) = 11.85
EFFECTIVE AREA(ACRES) = 3613.70 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5555.5 PEAK FLOW RATE(CFS) = 3144.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.05

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

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 72.02
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.209

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) = 18.66
EFFECTIVE AREA(ACRES) = 3636.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5578.3 PEAK FLOW RATE(CFS) = 3144.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 72.02
 * 100 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 "WOODLAND,GRASS"	B	0.20	0.30	1.000	65
NATURAL FAIR COVER "OPEN BRUSH"	B	0.30	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	0.20	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS,CONTOURED"	B	2.70	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994
 SUBAREA AREA(ACRES) = 3.40 SUBAREA RUNOFF(CFS) = 2.79
 EFFECTIVE AREA(ACRES) = 3639.90 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5581.7 PEAK FLOW RATE(CFS) = 3144.55
 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) = 4.88
 * 100 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
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) = 3155.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.00
 AVERAGE FLOW DEPTH(FEET) = 4.88 TRAVEL TIME(MIN.) = 4.94
 Tc(MIN.) = 76.97
 SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 21.60
 EFFECTIVE AREA(ACRES) = 3667.30 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 3144.55
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 4.87
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.87 FLOW VELOCITY(FEET/SEC.) = 9.99
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

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

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

MAINLINE Tc(MIN.) = 76.97
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.176
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 "FALLOW"	B	3.90	0.30	0.100	56
AGRICULTURAL POOR COVER "FALLOW"	B	3.00	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934
 SUBAREA AREA(ACRES) = 53.20 SUBAREA RUNOFF(CFS) = 42.88
 EFFECTIVE AREA(ACRES) = 3720.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5662.3 PEAK FLOW RATE(CFS) = 3144.55
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc(MIN.) = 76.97
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.176
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 "FALLOW"	B	4.30	0.30	0.100	56
AGRICULTURAL POOR COVER "FALLOW"	B	5.30	0.30	1.000	86
NATURAL FAIR COVER "GRASS"	B	2.70	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860
 SUBAREA AREA(ACRES) = 27.60 SUBAREA RUNOFF(CFS) = 22.80
 EFFECTIVE AREA(ACRES) = 3748.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA (ACRES) = 5689.9 PEAK FLOW RATE (CFS) = 3144.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 76.97
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.176
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 20.46
EFFECTIVE AREA (ACRES) = 3773.80 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) = 3144.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 76.97
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.176
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.00	0.30	0.100	56
AGRICULTURAL POOR COVER "FALLOW"	B	3.70	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	2.10	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	0.20	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807
SUBAREA AREA (ACRES) = 10.70 SUBAREA RUNOFF (CFS) = 8.99
EFFECTIVE AREA (ACRES) = 3784.50 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) = 3144.55
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 76.97
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.176
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.50	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	8.20	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906
SUBAREA AREA (ACRES) = 8.70 SUBAREA RUNOFF (CFS) = 7.08
EFFECTIVE AREA (ACRES) = 3793.20 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) = 3148.55

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 3A00EVRL.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	1221.21	13.34	0.30 (0.13)	0.43	436.8	120.00
2	1221.20	13.34	0.30 (0.13)	0.43	436.8	110.00
3	1039.13	20.29	0.30 (0.13)	0.43	504.5	100.00
4	976.70	22.82	0.30 (0.13)	0.43	510.2	150.00
TOTAL AREA (ACRES) =		510.2				

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	2467.94	35.15	1.741	0.30 (0.26)	0.88	1708.5	31100.00
2	3148.55	76.97	1.176	0.30 (0.25)	0.84	3793.2	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	1221.21	13.34	3.218	0.30 (0.13)	0.43	436.8	120.00
2	1221.20	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	3093.33	13.34	3.218	0.30(0.21)	0.70	1084.9	120.00
2	3093.34	13.34	3.218	0.30(0.21)	0.70	1085.0	110.00
3	3098.98	20.29	2.401	0.30(0.22)	0.73	1490.4	100.00
4	3116.27	22.82	2.237	0.30(0.22)	0.74	1619.1	150.00
5	3214.71	35.15	1.741	0.30(0.23)	0.78	2218.7	31100.00
6	3633.28	76.97	1.176	0.30(0.24)	0.80	4303.4	13222.00
TOTAL AREA (ACRES) =		6245.2					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3633.28 Tc(MIN.) = 76.967
 EFFECTIVE AREA(ACRES) = 4303.40 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.70
 TOTAL AREA(ACRES) = 6245.2
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50
 CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 4.89

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.133
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 PUBLIC PARK B 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) = 3660.46
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.57
 AVERAGE FLOW DEPTH(FEET) = 4.89 TRAVEL TIME(MIN.) = 6.35
 Tc(MIN.) = 83.32
 SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 54.36
 EFFECTIVE AREA(ACRES) = 4372.20 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) = 3633.28
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 4.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 4.87 FLOW VELOCITY(FEET/SEC.) = 11.55
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13306.00 = 18026.13 FEET.

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

 MAINLINE Tc(MIN.) = 83.32
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.133
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL 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) = 38.64
 EFFECTIVE AREA(ACRES) = 4418.50 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) = 3633.28
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

 MAINLINE Tc(MIN.) = 83.32
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.133
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL POOR COVER
 "BARREN" B 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) = 45.25
 EFFECTIVE AREA(ACRES) = 4477.10 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) = 3633.28
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 83.32
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.133
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"WOODLAND, GRASS" B 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) = 7.56
EFFECTIVE AREA (ACRES) = 4486.80 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) = 3633.28
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 83.32
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.133
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
".4 DWELLING/ACRE" B 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) = 1.78
EFFECTIVE AREA (ACRES) = 4489.10 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) = 3633.28
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) = 4.81
CHANNEL FLOW THRU SUBAREA (CFS) = 3633.28
FLOW VELOCITY (FEET/SEC.) = 11.73 FLOW DEPTH (FEET) = 4.81
TRAVEL TIME (MIN.) = 2.19 Tc (MIN.) = 85.51
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13307.00 = 19569.34 FEET.

FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 85.51
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.118
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 0.20 0.30 0.100 56
NATURAL FAIR COVER
"GRASS" B 0.10 0.30 1.000 69
AGRICULTURAL FAIR COVER
"ORCHARDS" B 0.20 0.30 1.000 65
NATURAL POOR COVER
"BARREN" B 3.70 0.30 1.000 86
COMMERCIAL B 0.30 0.30 0.100 56
NATURAL FAIR COVER
"GRASS" B 3.20 0.30 1.000 69
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.942
SUBAREA AREA (ACRES) = 7.70 SUBAREA RUNOFF (CFS) = 5.79
EFFECTIVE AREA (ACRES) = 4496.80 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) = 3633.28
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 85.51
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.118
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"WOODLAND, GRASS" B 3.60 0.30 1.000 65
NATURAL FAIR COVER
"GRASS" B 1.90 0.30 1.000 69
NATURAL FAIR COVER
"WOODLAND, GRASS" B 0.60 0.30 1.000 65
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA (ACRES) = 6.10 SUBAREA RUNOFF (CFS) = 4.49
EFFECTIVE AREA (ACRES) = 4502.90 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) = 3633.28
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<<<<<

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ELEVATION DATA: UPSTREAM (FEET) =	220.00	DOWNSTREAM (FEET) =	212.00
CHANNEL LENGTH THRU SUBAREA (FEET) =	925.62	CHANNEL SLOPE =	0.0086
GIVEN CHANNEL BASE (FEET) =	50.00	CHANNEL FREEBOARD (FEET) =	0.0
"Z" FACTOR =	3.000	MANNING'S FACTOR =	0.040
*ESTIMATED CHANNEL HEIGHT (FEET) =	5.76		
CHANNEL FLOW THRU SUBAREA (CFS) =	3633.28		
FLOW VELOCITY (FEET/SEC.) =	9.38	FLOW DEPTH (FEET) =	5.76
TRAVEL TIME (MIN.) =	1.64	Tc (MIN.) =	87.16
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 =	20494.96	FEET.	

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

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MAINLINE Tc (MIN.) =	87.16
* 100 YEAR RAINFALL INTENSITY (INCH/HR) =	1.107

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) = 7.68
EFFECTIVE AREA (ACRES) = 4512.40 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) = 3633.28
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

=====

MAINLINE Tc (MIN.) =	87.16
* 100 YEAR RAINFALL INTENSITY (INCH/HR) =	1.107

SUBAREA LOSS RATE DATA (AMC II):					
DEVELOPMENT TYPE/ 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) = 65.16
EFFECTIVE AREA (ACRES) = 4588.00 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) = 3633.28
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<<<<<

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MAINLINE Tc (MIN.) =	87.16
* 100 YEAR RAINFALL INTENSITY (INCH/HR) =	1.107

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) = 11.48
EFFECTIVE AREA (ACRES) = 4603.60 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) = 3633.28
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<<<<<

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MAINLINE Tc (MIN.) =	87.16
* 100 YEAR RAINFALL INTENSITY (INCH/HR) =	1.107

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) = 67.02
 EFFECTIVE AREA (ACRES) = 4684.00 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) = 3667.72

 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 87.16
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.107
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 SCHOOL B 0.30 0.30 0.600 56
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 0.70 0.30 1.000 65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.880
 SUBAREA AREA (ACRES) = 1.00 SUBAREA RUNOFF (CFS) = 0.76
 EFFECTIVE AREA (ACRES) = 4685.00 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) = 3668.48

 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 87.16
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.107
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "GRASS" B 0.30 0.30 1.000 69
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 0.80 0.30 1.000 65
 NATURAL FAIR COVER
 "GRASS" B 0.50 0.30 1.000 69
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 0.20 0.30 1.000 65
 NATURAL FAIR COVER
 "GRASS" B 0.30 0.30 1.000 69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 2.10 SUBAREA RUNOFF (CFS) = 1.53
 EFFECTIVE AREA (ACRES) = 4687.10 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) = 3670.01

 FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 87.16
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.107
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "GRASS" B 1.20 0.30 1.000 69
 NATURAL FAIR COVER
 "OPEN BRUSH" B 0.50 0.30 1.000 66
 PUBLIC PARK B 1.70 0.30 0.850 56
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 7.20 0.30 1.000 65
 NATURAL FAIR COVER
 "GRASS" B 1.00 0.30 1.000 69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.978
 SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 8.50
 EFFECTIVE AREA (ACRES) = 4698.70 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) = 3678.50

 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: R100EV29.DNA
 MEMORY BANK # 2 DEFINED AS FOLLOWS:
 STREAM Q Tc Fp (Fm) Ap Ae HEADWATER
 NUMBER (CFS) (MIN.) (INCH/HR) (ACRES) NODE
 1 21234.40 14.82 0.30 (0.27) 0.90 2974.1 50200.00
 2 22496.45 18.64 0.30 (0.27) 0.90 3978.8 50400.00
 3 25471.40 27.90 0.30 (0.27) 0.90 6357.3 50300.00
 4 28773.73 37.79 0.30 (0.27) 0.91 9316.9 600.00
 5 32704.23 53.71 0.30 (0.28) 0.94 15435.0 40100.00
 6 34896.49 60.91 0.30 (0.29) 0.95 18239.1 11801.00
 7 37773.77 70.34 0.30 (0.29) 0.96 22535.9 11530.00
 8 40085.77 78.85 0.30 (0.29) 0.97 27541.5 11910.00
 9 42183.11 85.91 0.30 (0.29) 0.97 32123.1 11330.00
 10 43230.06 92.23 0.30 (0.29) 0.97 36554.1 11130.00

11	43102.50	99.82	0.30	(0.29)	0.98	40548.1	12330.00
12	42846.30	106.46	0.30	(0.29)	0.98	43891.3	12400.00
13	42293.91	115.13	0.30	(0.29)	0.98	47260.1	12201.00
14	41823.79	119.09	0.30	(0.29)	0.98	48344.7	12111.00
15	41165.05	124.46	0.30	(0.29)	0.98	49714.2	12101.10
16	40629.99	128.48	0.30	(0.29)	0.98	50563.3	10400.00
17	39071.15	136.51	0.30	(0.29)	0.98	51878.4	12010.00
18	37761.49	142.38	0.30	(0.29)	0.98	52192.1	10210.00
19	37385.12	145.06	0.30	(0.29)	0.98	52303.0	12000.00
20	34292.19	168.44	0.30	(0.29)	0.98	52924.8	10100.00

TOTAL AREA (ACRES) = 52924.8

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	21234.40	14.82	0.30 (0.27)	0.90	2974.1	50200.00
2	22496.45	18.64	0.30 (0.27)	0.90	3978.8	50400.00
3	25471.40	27.90	0.30 (0.27)	0.90	6357.3	50300.00
4	28773.73	37.79	0.30 (0.27)	0.91	9316.9	600.00
5	32704.23	53.71	0.30 (0.28)	0.94	15435.0	40100.00
6	34896.49	60.91	0.30 (0.29)	0.95	18239.1	11801.00
7	37773.77	70.34	0.30 (0.29)	0.96	22535.9	11530.00
8	40085.77	78.85	0.30 (0.29)	0.97	27541.5	11910.00
9	42183.11	85.91	0.30 (0.29)	0.97	32123.1	11330.00
10	43230.06	92.23	0.30 (0.29)	0.97	36554.1	11130.00
11	43102.50	99.82	0.30 (0.29)	0.98	40548.1	12330.00
12	42846.30	106.46	0.30 (0.29)	0.98	43891.3	12400.00
13	42293.91	115.13	0.30 (0.29)	0.98	47260.1	12201.00
14	41823.79	119.09	0.30 (0.29)	0.98	48344.7	12111.00
15	41165.05	124.46	0.30 (0.29)	0.98	49714.2	12101.10
16	40629.99	128.48	0.30 (0.29)	0.98	50563.3	10400.00
17	39071.15	136.51	0.30 (0.29)	0.98	51878.4	12010.00
18	37761.49	142.38	0.30 (0.29)	0.98	52192.1	10210.00
19	37385.12	145.06	0.30 (0.29)	0.98	52303.0	12000.00
20	34292.19	168.44	0.30 (0.29)	0.98	52924.8	10100.00

TOTAL AREA (ACRES) = 52924.8

FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 213.00 DOWNSTREAM(FEET) = 212.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1389.52 CHANNEL SLOPE = 0.0007
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 18.88
CHANNEL FLOW THRU SUBAREA(CFS) = 43230.06
FLOW VELOCITY(FEET/SEC.) = 7.78 FLOW DEPTH(FEET) = 18.88
TRAVEL TIME(MIN.) = 2.98 Tc(MIN.) = 95.21
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<<<<<<
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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	21234.40	18.51	2.572	0.30 (0.27)	0.90	2974.1	50200.00
2	22496.45	22.27	2.273	0.30 (0.27)	0.90	3978.8	50400.00
3	25471.40	31.40	1.837	0.30 (0.27)	0.90	6357.3	50300.00
4	28773.73	41.15	1.592	0.30 (0.27)	0.91	9316.9	600.00
5	32704.23	56.95	1.324	0.30 (0.28)	0.94	15435.0	40100.00
6	34896.49	64.08	1.263	0.30 (0.29)	0.95	18239.1	11801.00
7	37773.77	73.44	1.200	0.30 (0.29)	0.96	22535.9	11530.00
8	40085.77	81.90	1.143	0.30 (0.29)	0.97	27541.5	11910.00
9	42183.11	88.91	1.095	0.30 (0.29)	0.97	32123.1	11330.00
10	43230.06	95.21	1.064	0.30 (0.29)	0.97	36554.1	11130.00
11	43102.50	102.80	1.030	0.30 (0.29)	0.98	40548.1	12330.00
12	42846.30	109.44	0.999	0.30 (0.29)	0.98	43891.3	12400.00
13	42293.91	118.12	0.960	0.30 (0.29)	0.98	47260.1	12201.00
14	41823.79	122.10	0.946	0.30 (0.29)	0.98	48344.7	12111.00
15	41165.05	127.48	0.932	0.30 (0.29)	0.98	49714.2	12101.10
16	40629.99	131.51	0.921	0.30 (0.29)	0.98	50563.3	10400.00
17	39071.15	139.57	0.900	0.30 (0.29)	0.98	51878.4	12010.00
18	37761.49	145.48	0.885	0.30 (0.29)	0.98	52192.1	10210.00
19	37385.12	148.17	0.878	0.30 (0.29)	0.98	52303.0	12000.00
20	34292.19	171.63	0.817	0.30 (0.29)	0.98	52924.8	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	3093.33	24.02	2.159	0.30 (0.21)	0.71	1480.2	120.00
2	3093.34	24.02	2.159	0.30 (0.21)	0.71	1480.3	110.00
3	3098.98	30.97	1.848	0.30 (0.22)	0.73	1885.7	100.00
4	3116.27	33.49	1.784	0.30 (0.22)	0.74	2014.4	150.00
5	3214.71	45.73	1.493	0.30 (0.23)	0.77	2614.0	31100.00
6	3678.50	87.16	1.107	0.30 (0.24)	0.79	4698.7	13222.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24123.79	18.51	2.572	0.30 (0.25)	0.85	4115.0	50200.00
2	25530.82	22.27	2.273	0.30 (0.26)	0.85	5351.0	50400.00
3	26161.11	24.02	2.159	0.30 (0.26)	0.85	5915.8	120.00
4	26162.07	24.02	2.159	0.30 (0.26)	0.85	5916.6	110.00
5	28432.92	30.97	1.848	0.30 (0.26)	0.86	8133.1	100.00
6	28573.27	31.40	1.837	0.30 (0.26)	0.86	8264.5	50300.00
7	29297.55	33.49	1.784	0.30 (0.26)	0.87	9007.9	150.00
8	31951.62	41.15	1.592	0.30 (0.26)	0.88	11706.6	600.00
9	33127.09	45.73	1.493	0.30 (0.27)	0.89	13703.3	31100.00
10	36044.57	56.95	1.324	0.30 (0.27)	0.92	18613.7	40100.00
11	38316.67	64.08	1.263	0.30 (0.28)	0.92	21776.6	11801.00
12	41298.66	73.44	1.200	0.30 (0.28)	0.93	26544.1	11530.00

13	43705.37	81.90	1.143	0.30	(0.28)	0.94	31975.4	11910.00
14	45338.27	87.16	1.107	0.30	(0.28)	0.95	35678.6	13222.00
15	45811.80	88.91	1.095	0.30	(0.28)	0.95	36821.8	11330.00
16	46727.02	95.21	1.064	0.30	(0.29)	0.95	41252.8	11130.00
17	46452.90	102.80	1.030	0.30	(0.29)	0.96	45246.8	12330.00
18	46068.36	109.44	0.999	0.30	(0.29)	0.96	48590.0	12400.00
19	45348.32	118.12	0.960	0.30	(0.29)	0.96	51958.8	12201.00
20	44818.95	122.10	0.946	0.30	(0.29)	0.96	53043.4	12111.00
21	44101.05	127.48	0.932	0.30	(0.29)	0.96	54412.9	12101.10
22	43521.61	131.51	0.921	0.30	(0.29)	0.96	55262.0	10400.00
23	41874.15	139.57	0.900	0.30	(0.29)	0.96	56577.1	12010.00
24	40499.55	145.48	0.885	0.30	(0.29)	0.96	56890.8	10210.00
25	40093.62	148.17	0.878	0.30	(0.29)	0.96	57001.7	12000.00
26	36742.76	171.63	0.817	0.30	(0.29)	0.96	57623.5	10100.00

TOTAL AREA (ACRES) = 59565.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 46727.02 Tc (MIN.) = 95.209
EFFECTIVE AREA (ACRES) = 41252.83 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA (ACRES) = 59565.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 59565.3 TC (MIN.) = 95.21
EFFECTIVE AREA (ACRES) = 41252.83 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.953
PEAK FLOW RATE (CFS) = 46727.02

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24123.79	18.51	2.572	0.30 (0.25)	0.85	4115.0	50200.00
2	25530.82	22.27	2.273	0.30 (0.26)	0.85	5351.0	50400.00
3	26161.11	24.02	2.159	0.30 (0.26)	0.85	5915.8	120.00
4	26162.07	24.02	2.159	0.30 (0.26)	0.85	5916.6	110.00
5	28432.92	30.97	1.848	0.30 (0.26)	0.86	8133.1	100.00
6	28573.27	31.40	1.837	0.30 (0.26)	0.86	8264.5	50300.00
7	29297.55	33.49	1.784	0.30 (0.26)	0.87	9007.9	150.00
8	31951.62	41.15	1.592	0.30 (0.26)	0.88	11706.6	600.00
9	33127.09	45.73	1.493	0.30 (0.27)	0.89	13703.3	31100.00
10	36044.57	56.95	1.324	0.30 (0.27)	0.92	18613.7	40100.00
11	38316.67	64.08	1.263	0.30 (0.28)	0.92	21776.6	11801.00
12	41298.66	73.44	1.200	0.30 (0.28)	0.93	26544.1	11530.00
13	43705.37	81.90	1.143	0.30 (0.28)	0.94	31975.4	11910.00
14	45338.27	87.16	1.107	0.30 (0.28)	0.95	35678.6	13222.00
15	45811.80	88.91	1.095	0.30 (0.28)	0.95	36821.8	11330.00
16	46727.02	95.21	1.064	0.30 (0.29)	0.95	41252.8	11130.00
17	46452.90	102.80	1.030	0.30 (0.29)	0.96	45246.8	12330.00
18	46068.36	109.44	0.999	0.30 (0.29)	0.96	48590.0	12400.00
19	45348.32	118.12	0.960	0.30 (0.29)	0.96	51958.8	12201.00
20	44818.95	122.10	0.946	0.30 (0.29)	0.96	53043.4	12111.00
21	44101.05	127.48	0.932	0.30 (0.29)	0.96	54412.9	12101.10
22	43521.61	131.51	0.921	0.30 (0.29)	0.96	55262.0	10400.00
23	41874.15	139.57	0.900	0.30 (0.29)	0.96	56577.1	12010.00
24	40499.55	145.48	0.885	0.30 (0.29)	0.96	56890.8	10210.00
25	40093.62	148.17	0.878	0.30 (0.29)	0.96	57001.7	12000.00
26	36742.76	171.63	0.817	0.30 (0.29)	0.96	57623.5	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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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- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV34.DAT
TIME/DATE OF STUDY: 12:22 06/19/2019

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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; 5.847
- 2) 10.00; 3.775
- 3) 15.00; 2.924
- 4) 20.00; 2.413
- 5) 25.00; 2.092
- 6) 30.00; 1.869
- 7) 40.00; 1.613
- 8) 50.00; 1.397
- 9) 60.00; 1.287
- 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

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

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PEAK FLOWRATE TABLE FILE NAME: RI00EV33.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24123.79	18.51	0.30 (0.25)	0.85	4115.0	50200.00
2	26162.07	24.02	0.30 (0.26)	0.85	5916.6	110.00
3	29297.55	33.49	0.30 (0.26)	0.87	9007.9	150.00
4	31951.62	41.15	0.30 (0.26)	0.88	11706.6	600.00
5	33127.09	45.73	0.30 (0.27)	0.89	13703.3	31100.00
6	36044.57	56.95	0.30 (0.27)	0.92	18613.7	40100.00
7	38316.67	64.08	0.30 (0.28)	0.92	21776.6	11801.00
8	41298.66	73.44	0.30 (0.28)	0.93	26544.1	11530.00
9	43705.37	81.90	0.30 (0.28)	0.94	31975.4	11910.00
10	45811.80	88.91	0.30 (0.28)	0.95	36821.8	11330.00
11	46727.02	95.21	0.30 (0.29)	0.95	41252.8	11130.00
12	46452.90	102.80	0.30 (0.29)	0.96	45246.8	12330.00
13	46068.36	109.44	0.30 (0.29)	0.96	48590.0	12400.00
14	45348.32	118.12	0.30 (0.29)	0.96	51958.8	12201.00
15	44818.95	122.10	0.30 (0.29)	0.96	53043.4	12111.00
16	44101.05	127.48	0.30 (0.29)	0.96	54412.9	12101.10
17	43521.61	131.51	0.30 (0.29)	0.96	55262.0	10400.00
18	41874.15	139.57	0.30 (0.29)	0.96	56577.1	12010.00
19	40499.55	145.48	0.30 (0.29)	0.96	56890.8	10210.00
20	36742.76	171.63	0.30 (0.29)	0.96	57623.5	10100.00
TOTAL AREA (ACRES) =						57623.5

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	24123.79	18.51	0.30 (0.25)	0.85	4115.0	50200.00
2	26162.07	24.02	0.30 (0.26)	0.85	5916.6	110.00
3	29297.55	33.49	0.30 (0.26)	0.87	9007.9	150.00
4	31951.62	41.15	0.30 (0.26)	0.88	11706.6	600.00
5	33127.09	45.73	0.30 (0.27)	0.89	13703.3	31100.00
6	36044.57	56.95	0.30 (0.27)	0.92	18613.7	40100.00
7	38316.67	64.08	0.30 (0.28)	0.92	21776.6	11801.00
8	41298.66	73.44	0.30 (0.28)	0.93	26544.1	11530.00
9	43705.37	81.90	0.30 (0.28)	0.94	31975.4	11910.00
10	45811.80	88.91	0.30 (0.28)	0.95	36821.8	11330.00
11	46727.02	95.21	0.30 (0.29)	0.95	41252.8	11130.00
12	46452.90	102.80	0.30 (0.29)	0.96	45246.8	12330.00
13	46068.36	109.44	0.30 (0.29)	0.96	48590.0	12400.00


```

14 45348.32 118.12 0.30( 0.29) 0.96 51958.8 12201.00
15 44818.95 122.10 0.30( 0.29) 0.96 53043.4 12111.00
16 44101.05 127.48 0.30( 0.29) 0.96 54412.9 12101.10
17 43521.61 131.51 0.30( 0.29) 0.96 55262.0 10400.00
18 41874.15 139.57 0.30( 0.29) 0.96 56577.1 12010.00
19 40499.55 145.48 0.30( 0.29) 0.96 56890.8 10210.00
20 36742.76 171.63 0.30( 0.29) 0.96 57623.5 10100.00
TOTAL AREA(ACRES) = 57623.5

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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) = 215.00 DOWNSTREAM(FEET) = 209.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 623.02 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) = 9.65
CHANNEL FLOW THRU SUBAREA(CFS) = 46727.02
FLOW VELOCITY(FEET/SEC.) = 19.50 FLOW DEPTH(FEET) = 9.65
TRAVEL TIME(MIN.) = 0.53 Tc(MIN.) = 95.74
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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0610505Y.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	299.75	19.45	0.30(0.30)	0.99	153.2	50500.00
TOTAL AREA(ACRES) = 153.2						

FLOW PROCESS FROM NODE 13402.00 TO NODE 13402.00 IS CODE = 11

>>>>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	24123.79	19.18	2.497	0.30(0.25)	0.85	4115.0	50200.00
2	26162.07	24.67	2.113	0.30(0.26)	0.85	5916.6	110.00
3	29297.55	34.11	1.764	0.30(0.26)	0.87	9007.9	150.00
4	31951.62	41.76	1.575	0.30(0.26)	0.88	11706.6	600.00
5	33127.09	46.33	1.476	0.30(0.27)	0.89	13703.3	31100.00
6	36044.57	57.53	1.314	0.30(0.27)	0.92	18613.7	40100.00
7	38316.67	64.65	1.256	0.30(0.28)	0.92	21776.6	11801.00
8	41298.66	73.99	1.192	0.30(0.28)	0.93	26544.1	11530.00
9	43705.37	82.44	1.135	0.30(0.28)	0.94	31975.4	11910.00
10	45811.80	89.44	1.088	0.30(0.28)	0.95	36821.8	11330.00
11	46727.02	95.74	1.058	0.30(0.29)	0.95	41252.8	11130.00
12	46452.90	103.33	1.023	0.30(0.29)	0.96	45246.8	12330.00

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13 46068.36 109.98 0.993 0.30( 0.29) 0.96 48590.0 12400.00
14 45348.32 118.66 0.953 0.30( 0.29) 0.96 51958.8 12201.00
15 44818.95 122.64 0.940 0.30( 0.29) 0.96 53043.4 12111.00
16 44101.05 128.02 0.926 0.30( 0.29) 0.96 54412.9 12101.10
17 43521.61 132.06 0.916 0.30( 0.29) 0.96 55262.0 10400.00
18 41874.15 140.13 0.895 0.30( 0.29) 0.96 56577.1 12010.00
19 40499.55 146.04 0.879 0.30( 0.29) 0.96 56890.8 10210.00
20 36742.76 172.20 0.811 0.30( 0.29) 0.96 57623.5 10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13402.00 = 118713.68 FEET.

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** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	299.75	19.45	2.469	0.30(0.30)	0.99	153.2	50500.00
LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 6247.00 FEET.							

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24423.13	19.18	2.497	0.30(0.26)	0.85	4266.1	50200.00
2	24523.79	19.45	2.469	0.30(0.26)	0.85	4356.8	50500.00
3	26412.71	24.67	2.113	0.30(0.26)	0.86	6069.8	110.00
4	29499.97	34.11	1.764	0.30(0.26)	0.87	9161.1	150.00
5	32128.04	41.76	1.575	0.30(0.26)	0.88	11859.8	600.00
6	33289.89	46.33	1.476	0.30(0.27)	0.89	13856.5	31100.00
7	36185.00	57.53	1.314	0.30(0.27)	0.92	18766.8	40100.00
8	38449.02	64.65	1.256	0.30(0.28)	0.92	21929.8	11801.00
9	41422.29	73.99	1.192	0.30(0.28)	0.93	26697.3	11530.00
10	43821.11	82.44	1.135	0.30(0.28)	0.94	32128.6	11910.00
11	45921.01	89.44	1.088	0.30(0.28)	0.95	36975.0	11330.00
12	46832.10	95.74	1.058	0.30(0.29)	0.95	41406.0	11130.00
13	46553.20	103.33	1.023	0.30(0.29)	0.96	45400.0	12330.00
14	46164.47	109.98	0.993	0.30(0.29)	0.96	48743.2	12400.00
15	45438.96	118.66	0.953	0.30(0.29)	0.96	52111.9	12201.00
16	44907.81	122.64	0.940	0.30(0.29)	0.96	53196.6	12111.00
17	44187.97	128.02	0.926	0.30(0.29)	0.96	54566.1	12101.10
18	43607.09	132.06	0.916	0.30(0.29)	0.96	55415.1	10400.00
19	41956.73	140.13	0.895	0.30(0.29)	0.96	56730.3	12010.00
20	40580.02	146.04	0.879	0.30(0.29)	0.96	57044.0	10210.00
21	36813.84	172.20	0.811	0.30(0.29)	0.96	57776.7	10100.00
TOTAL AREA(ACRES) = 57776.7							

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 46832.10 Tc(MIN.) = 95.741
EFFECTIVE AREA(ACRES) = 41406.01 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 57776.7
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<<<<<

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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) = 11.58
 CHANNEL FLOW THRU SUBAREA(CFS) = 46832.10
 FLOW VELOCITY(FEET/SEC.) = 15.68 FLOW DEPTH(FEET) = 11.58
 TRAVEL TIME(MIN.) = 0.42 Tc(MIN.) = 96.16
 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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0610506Y.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	107.09	17.21	0.30	(0.30)	1.00	49.6	50600.00
TOTAL AREA(ACRES) =							49.6

 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	24423.13	19.70	2.444	0.30(0.26)	0.85	4266.1	50200.00
2	24523.79	19.97	2.416	0.30(0.26)	0.85	4356.8	50500.00
3	26412.71	25.17	2.084	0.30(0.26)	0.86	6069.8	110.00
4	29499.97	34.60	1.751	0.30(0.26)	0.87	9161.1	150.00
5	32128.04	42.23	1.565	0.30(0.26)	0.88	11859.8	600.00
6	33289.89	46.79	1.466	0.30(0.27)	0.89	13856.5	31100.00
7	36185.00	57.99	1.309	0.30(0.27)	0.92	18766.8	40100.00
8	38449.02	65.10	1.253	0.30(0.28)	0.92	21929.8	11801.00
9	41422.29	74.43	1.189	0.30(0.28)	0.93	26697.3	11530.00
10	43821.11	82.87	1.132	0.30(0.28)	0.94	32128.6	11910.00
11	45921.01	89.87	1.085	0.30(0.28)	0.95	36975.0	11330.00
12	46832.10	96.16	1.056	0.30(0.29)	0.95	41406.0	11130.00
13	46553.20	103.75	1.021	0.30(0.29)	0.96	45400.0	12330.00
14	46164.47	110.40	0.991	0.30(0.29)	0.96	48743.2	12400.00
15	45438.96	119.09	0.951	0.30(0.29)	0.96	52111.9	12201.00
16	44907.81	123.06	0.939	0.30(0.29)	0.96	53196.6	12111.00
17	44187.97	128.45	0.925	0.30(0.29)	0.96	54566.1	12101.10
18	43607.09	132.49	0.915	0.30(0.29)	0.96	55415.1	10400.00
19	41956.73	140.56	0.894	0.30(0.29)	0.96	56730.3	12010.00
20	40580.02	146.48	0.878	0.30(0.29)	0.96	57044.0	10210.00
21	36813.84	172.66	0.810	0.30(0.29)	0.96	57776.7	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	107.09	17.21	2.698	0.30(0.30)	1.00	49.6	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	23923.65	17.21	2.698	0.30(0.26)	0.85	3776.4	50600.00
2	24518.86	19.70	2.444	0.30(0.26)	0.85	4315.7	50200.00
3	24618.28	19.97	2.416	0.30(0.26)	0.85	4406.4	50500.00
4	26492.37	25.17	2.084	0.30(0.26)	0.86	6119.4	110.00
5	29564.77	34.60	1.751	0.30(0.26)	0.87	9210.7	150.00
6	32184.51	42.23	1.565	0.30(0.26)	0.88	11909.4	600.00
7	33341.96	46.79	1.466	0.30(0.27)	0.89	13906.1	31100.00
8	36230.06	57.99	1.309	0.30(0.27)	0.92	18816.4	40100.00
9	38491.55	65.10	1.253	0.30(0.28)	0.92	21979.4	11801.00
10	41462.00	74.43	1.189	0.30(0.28)	0.93	26746.9	11530.00
11	43858.27	82.87	1.132	0.30(0.28)	0.94	32178.2	11910.00
12	45956.06	89.87	1.085	0.30(0.28)	0.95	37024.6	11330.00
13	46865.85	96.16	1.056	0.30(0.29)	0.95	41455.6	11130.00
14	46585.40	103.75	1.021	0.30(0.29)	0.96	45449.6	12330.00
15	46195.32	110.40	0.991	0.30(0.29)	0.96	48792.8	12400.00
16	45468.04	119.09	0.951	0.30(0.29)	0.96	52161.5	12201.00
17	44936.34	123.06	0.939	0.30(0.29)	0.96	53246.2	12111.00
18	44215.88	128.45	0.925	0.30(0.29)	0.96	54615.7	12101.10
19	43634.53	132.49	0.915	0.30(0.29)	0.96	55464.7	10400.00
20	41983.23	140.56	0.894	0.30(0.29)	0.96	56779.9	12010.00
21	40605.84	146.48	0.878	0.30(0.29)	0.96	57093.6	10210.00
22	36836.62	172.66	0.810	0.30(0.29)	0.96	57826.3	10100.00
TOTAL AREA(ACRES) =							57826.3

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 46865.85 Tc(MIN.) = 96.162
 EFFECTIVE AREA(ACRES) = 41455.60 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 57826.3
 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

>>>>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) = 10.38
 CHANNEL FLOW THRU SUBAREA(CFS) = 46865.85
 FLOW VELOCITY(FEET/SEC.) = 17.93 FLOW DEPTH(FEET) = 10.38
 TRAVEL TIME(MIN.) = 1.49 Tc(MIN.) = 97.65
 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<<<<<

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MAINLINE Tc(MIN.) = 97.65
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.049
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER					
"GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, STRAIGHT ROW"	B	1.80	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) = 20.30 SUBAREA RUNOFF (CFS) = 13.69
EFFECTIVE AREA (ACRES) = 41475.90 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 57846.6 PEAK FLOW RATE (CFS) = 46865.85
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.) = 97.65
* 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
AGRICULTURAL POOR COVER					
"ROW CROPS, STRAIGHT ROW"	B	3.50	0.30	1.000	81
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	12.60	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) = 22.00 SUBAREA RUNOFF (CFS) = 14.83
EFFECTIVE AREA (ACRES) = 41497.90 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 57868.6 PEAK FLOW RATE (CFS) = 46865.85
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 15.1

>>>>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			

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 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	23923.65	19.07	2.508	0.30 (0.26)	0.86	3818.7	50600.00
2	24518.86	21.54	2.314	0.30 (0.26)	0.85	4358.0	50200.00
3	24618.28	21.81	2.297	0.30 (0.26)	0.86	4448.7	50500.00
4	26492.37	26.97	2.004	0.30 (0.26)	0.86	6161.7	110.00
5	29564.77	36.33	1.707	0.30 (0.26)	0.87	9253.0	150.00
6	32184.51	43.91	1.528	0.30 (0.26)	0.88	11951.7	600.00
7	33341.96	48.46	1.430	0.30 (0.27)	0.89	13948.4	31100.00
8	36230.06	59.61	1.291	0.30 (0.27)	0.92	18858.7	40100.00
9	38491.55	66.69	1.242	0.30 (0.28)	0.92	22021.7	11801.00
10	41462.00	75.98	1.179	0.30 (0.28)	0.93	26789.2	11530.00
11	43858.27	84.39	1.122	0.30 (0.28)	0.94	32220.5	11910.00
12	45956.06	91.36	1.078	0.30 (0.28)	0.95	37066.9	11330.00
13	46865.85	97.65	1.049	0.30 (0.29)	0.95	41497.9	11130.00
14	46585.40	105.25	1.014	0.30 (0.29)	0.96	45491.9	12330.00
15	46195.32	111.90	0.984	0.30 (0.29)	0.96	48835.1	12400.00
16	45468.04	120.59	0.945	0.30 (0.29)	0.96	52203.8	12201.00
17	44936.34	124.57	0.935	0.30 (0.29)	0.96	53288.5	12111.00
18	44215.88	129.97	0.921	0.30 (0.29)	0.96	54658.0	12101.10
19	43634.53	134.01	0.911	0.30 (0.29)	0.96	55507.0	10400.00
20	41983.23	142.10	0.890	0.30 (0.29)	0.96	56822.2	12010.00
21	40605.84	148.04	0.874	0.30 (0.29)	0.96	57135.9	10210.00
22	36836.62	174.27	0.806	0.30 (0.29)	0.96	57868.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 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	842.59	9.80	3.858	0.30 (0.11)	0.38	246.8	429.00
2	890.71	11.26	3.560	0.30 (0.11)	0.38	283.5	425.00
3	905.71	11.71	3.484	0.30 (0.11)	0.38	294.8	400.00
4	943.25	13.11	3.246	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 13406.00 = 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	20508.06	9.80	3.858	0.30(0.24)	0.80	2209.3	429.00
2	21623.94	11.26	3.560	0.30(0.24)	0.80	2539.5	425.00
3	21965.35	11.71	3.484	0.30(0.24)	0.80	2640.3	400.00
4	22778.42	13.11	3.246	0.30(0.24)	0.80	2955.5	300.00
5	24682.76	18.01	2.616	0.30(0.24)	0.80	4047.0	210.00
6	24914.92	19.07	2.508	0.30(0.24)	0.80	4272.9	50600.00
7	25156.73	20.12	2.406	0.30(0.24)	0.81	4515.1	410.00
8	25360.12	21.00	2.349	0.30(0.24)	0.81	4718.9	200.00
9	25488.75	21.54	2.314	0.30(0.24)	0.81	4843.8	50200.00
10	25514.90	21.61	2.309	0.30(0.24)	0.81	4868.8	230.00
11	25583.97	21.81	2.297	0.30(0.24)	0.81	4936.2	50500.00
12	25887.13	22.69	2.240	0.30(0.24)	0.81	5233.2	220.50
13	27335.15	26.97	2.004	0.30(0.25)	0.82	6652.9	110.00
14	30275.14	36.33	1.707	0.30(0.25)	0.85	9744.2	150.00
15	32815.40	43.91	1.528	0.30(0.26)	0.86	12442.9	600.00
16	33929.12	48.46	1.430	0.30(0.26)	0.88	14439.6	31100.00
17	36755.30	59.61	1.291	0.30(0.27)	0.90	19349.9	40100.00
18	38994.71	66.69	1.242	0.30(0.27)	0.91	22512.9	11801.00
19	41937.15	75.98	1.179	0.30(0.28)	0.92	27280.4	11530.00
20	44308.05	84.39	1.122	0.30(0.28)	0.93	32711.7	11910.00
21	46386.15	91.36	1.078	0.30(0.28)	0.94	37558.1	11330.00
22	47283.15	97.65	1.049	0.30(0.28)	0.95	41989.1	11130.00
23	46987.25	105.25	1.014	0.30(0.29)	0.95	45983.1	12330.00
24	46583.63	111.90	0.984	0.30(0.29)	0.95	49326.2	12400.00
25	45839.19	120.59	0.945	0.30(0.29)	0.95	52695.0	12201.00
26	45302.88	124.57	0.935	0.30(0.29)	0.96	53779.7	12111.00
27	44576.16	129.97	0.921	0.30(0.29)	0.96	55149.2	12101.10
28	43990.13	134.01	0.911	0.30(0.29)	0.96	55998.2	10400.00
29	42329.46	142.10	0.890	0.30(0.29)	0.96	57313.4	12010.00
30	40945.19	148.04	0.874	0.30(0.29)	0.96	57627.1	10210.00
31	37145.59	174.27	0.806	0.30(0.29)	0.96	58359.8	10100.00
TOTAL AREA (ACRES) =		58359.8					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 47283.15 Tc(MIN.) = 97.651
 EFFECTIVE AREA(ACRES) = 41989.10 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 58359.8
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

 FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 11.50

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.037
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 7.00 0.30 1.000 -
 USER-DEFINED - 3.30 0.30 1.000 -
 USER-DEFINED - 0.40 0.30 0.100 -
 USER-DEFINED - 1.40 0.30 1.000 -
 USER-DEFINED - 0.30 0.30 0.100 -
 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) = 47287.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.97
 AVERAGE FLOW DEPTH(FEET) = 11.50 TRAVEL TIME(MIN.) = 2.57
 Tc(MIN.) = 100.22
 SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 8.40
 EFFECTIVE AREA(ACRES) = 42001.50 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 58372.2 PEAK FLOW RATE(CFS) = 47283.15
 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) = 11.50
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 11.50 FLOW VELOCITY(FEET/SEC.) = 15.97
 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 # 2 <<<<<
 =====

 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0610507Y.DNA
 MEMORY BANK # 2 DEFINED AS FOLLOWS:
 STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
 NUMBER (CFS) (MIN.) (INCH/HR) (ACRES) NODE
 1 459.67 19.60 0.30(0.30) 0.99 236.8 50700.00
 TOTAL AREA(ACRES) = 236.8

 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	20508.06	13.17	3.235	0.30(0.24)	0.80	2221.7	429.00
2	21623.94	14.58	2.996	0.30(0.24)	0.80	2551.9	425.00
3	21965.35	15.01	2.923	0.30(0.24)	0.80	2652.7	400.00

4	22778.42	16.37	2.784	0.30 (0.24)	0.80	2967.9	300.00
5	24682.76	21.18	2.337	0.30 (0.24)	0.80	4059.4	210.00
6	24914.92	22.23	2.270	0.30 (0.24)	0.81	4285.3	50600.00
7	25156.73	23.27	2.203	0.30 (0.24)	0.81	4527.5	410.00
8	25360.12	24.14	2.147	0.30 (0.24)	0.81	4731.3	200.00
9	25488.75	24.68	2.113	0.30 (0.24)	0.81	4856.2	50200.00
10	25514.90	24.75	2.108	0.30 (0.24)	0.81	4881.2	230.00
11	25583.97	24.94	2.096	0.30 (0.24)	0.81	4948.6	50500.00
12	25887.13	25.82	2.056	0.30 (0.24)	0.81	5245.6	220.50
13	27335.15	30.04	1.868	0.30 (0.25)	0.82	6665.3	110.00
14	30275.14	39.30	1.631	0.30 (0.25)	0.85	9756.6	150.00
15	32815.40	46.80	1.466	0.30 (0.26)	0.86	12455.3	600.00
16	33929.12	51.31	1.383	0.30 (0.26)	0.88	14452.0	31100.00
17	36755.30	62.39	1.271	0.30 (0.27)	0.90	19362.3	40100.00
18	38994.71	69.42	1.223	0.30 (0.27)	0.91	22525.3	11801.00
19	41937.15	78.64	1.161	0.30 (0.28)	0.92	27292.8	11530.00
20	44308.05	87.01	1.104	0.30 (0.28)	0.93	32724.1	11910.00
21	46386.15	93.95	1.066	0.30 (0.28)	0.94	37570.5	11330.00
22	47283.15	100.22	1.037	0.30 (0.28)	0.95	42001.5	11130.00
23	46987.25	107.82	1.003	0.30 (0.29)	0.95	45995.5	12330.00
24	46583.63	114.48	0.972	0.30 (0.29)	0.95	49338.6	12400.00
25	45839.19	123.18	0.939	0.30 (0.29)	0.95	52707.4	12201.00
26	45302.88	127.17	0.928	0.30 (0.29)	0.96	53792.1	12111.00
27	44576.16	132.58	0.914	0.30 (0.29)	0.96	55161.6	12101.10
28	43990.13	136.64	0.904	0.30 (0.29)	0.96	56010.6	10400.00
29	42329.46	144.76	0.883	0.30 (0.29)	0.96	57325.8	12010.00
30	40945.19	150.72	0.867	0.30 (0.29)	0.96	57639.5	10210.00
31	37145.59	177.04	0.799	0.30 (0.29)	0.96	58372.2	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	459.67	19.60	2.454	0.30 (0.30)	0.99	236.8	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7903.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20928.92	13.17	3.235	0.30 (0.24)	0.82	2380.8	429.00
2	22051.77	14.58	2.996	0.30 (0.24)	0.81	2728.0	425.00
3	22393.96	15.01	2.923	0.30 (0.24)	0.81	2834.0	400.00
4	23221.09	16.37	2.784	0.30 (0.24)	0.81	3165.6	300.00
5	24516.84	19.60	2.454	0.30 (0.24)	0.81	3937.6	50700.00
6	25117.54	21.18	2.337	0.30 (0.24)	0.81	4296.2	210.00
7	25335.36	22.23	2.270	0.30 (0.24)	0.81	4522.1	50600.00
8	25562.95	23.27	2.203	0.30 (0.24)	0.82	4764.2	410.00
9	25754.38	24.14	2.147	0.30 (0.24)	0.82	4968.1	200.00
10	25875.64	24.68	2.113	0.30 (0.24)	0.82	5093.0	50200.00
11	25900.82	24.75	2.108	0.30 (0.24)	0.82	5118.0	230.00
12	25967.27	24.94	2.096	0.30 (0.24)	0.82	5185.4	50500.00
13	26261.88	25.82	2.056	0.30 (0.25)	0.82	5482.4	220.50
14	27669.90	30.04	1.868	0.30 (0.25)	0.83	6902.1	110.00
15	30559.36	39.30	1.631	0.30 (0.25)	0.85	9993.3	150.00
16	33064.47	46.80	1.466	0.30 (0.26)	0.87	12692.1	600.00
17	34160.37	51.31	1.383	0.30 (0.26)	0.88	14688.7	31100.00
18	36962.75	62.39	1.271	0.30 (0.27)	0.90	19599.1	40100.00
19	39192.02	69.42	1.223	0.30 (0.27)	0.91	22762.1	11801.00

20	42121.14	78.64	1.161	0.30 (0.28)	0.92	27529.5	11530.00
21	44479.98	87.01	1.104	0.30 (0.28)	0.93	32960.9	11910.00
22	46549.93	93.95	1.066	0.30 (0.28)	0.94	37807.3	11330.00
23	47440.82	100.22	1.037	0.30 (0.28)	0.95	42238.3	11130.00
24	47137.52	107.82	1.003	0.30 (0.29)	0.95	46232.2	12330.00
25	46727.42	114.48	0.972	0.30 (0.29)	0.95	49575.4	12400.00
26	45975.83	123.18	0.939	0.30 (0.29)	0.95	52944.2	12201.00
27	45437.31	127.17	0.928	0.30 (0.29)	0.96	54028.9	12111.00
28	44707.60	132.58	0.914	0.30 (0.29)	0.96	55398.3	12101.10
29	44119.32	136.64	0.904	0.30 (0.29)	0.96	56247.4	10400.00
30	42454.14	144.76	0.883	0.30 (0.29)	0.96	57562.6	12010.00
31	41066.57	150.72	0.867	0.30 (0.29)	0.96	57876.3	10210.00
32	37252.38	177.04	0.799	0.30 (0.29)	0.96	58609.0	10100.00

TOTAL AREA (ACRES) = 58609.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 47440.82 Tc (MIN.) = 100.217
EFFECTIVE AREA (ACRES) = 42238.29 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 58609.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 12.98
* 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
USER-DEFINED	-	0.40	0.30	1.000	-
USER-DEFINED	-	2.90	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) = 47441.91
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.80
AVERAGE FLOW DEPTH (FEET) = 12.98 TRAVEL TIME (MIN.) = 1.15
Tc (MIN.) = 101.37
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 2.17
EFFECTIVE AREA (ACRES) = 42241.59 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 58612.3 PEAK FLOW RATE (CFS) = 47440.82
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) = 12.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 12.98 FLOW VELOCITY (FEET/SEC.) = 13.80
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

 >>>>CLEAR MEMORY BANK # 3 <<<<<<
 =====

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: RI00EV36.DNA
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2809.02	26.97	0.30 (0.27)	0.90	1488.4	110.00
2	2910.06	29.35	0.30 (0.27)	0.90	1663.3	100.00
3	2918.17	30.50	0.30 (0.27)	0.90	1739.2	100.00
4	2939.45	33.51	0.30 (0.27)	0.91	1919.8	130.00
5	3115.82	46.01	0.30 (0.28)	0.93	2648.1	20100.00
6	3057.66	51.15	0.30 (0.28)	0.93	2827.8	13600.00
7	2949.81	85.07	0.30 (0.28)	0.93	3796.8	13510.00
8	2804.84	93.46	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	20928.92	14.67	2.980	0.30 (0.24)	0.82	2384.1	429.00
2	22051.77	16.05	2.817	0.30 (0.24)	0.82	2731.3	425.00
3	22393.96	16.48	2.773	0.30 (0.24)	0.81	2837.3	400.00
4	23221.09	17.81	2.636	0.30 (0.24)	0.81	3168.9	300.00
5	24516.84	21.02	2.347	0.30 (0.24)	0.82	3940.9	50700.00
6	25117.54	22.59	2.247	0.30 (0.24)	0.81	4299.5	210.00
7	25335.36	23.63	2.180	0.30 (0.24)	0.81	4525.4	50600.00
8	25562.95	24.67	2.113	0.30 (0.24)	0.82	4767.5	410.00
9	25754.38	25.54	2.068	0.30 (0.24)	0.82	4971.4	200.00
10	25875.64	26.08	2.044	0.30 (0.24)	0.82	5096.3	50200.00
11	25900.82	26.15	2.041	0.30 (0.24)	0.82	5121.3	230.00
12	25967.27	26.34	2.032	0.30 (0.24)	0.82	5188.7	50500.00
13	26261.88	27.20	1.994	0.30 (0.25)	0.82	5485.7	220.50
14	27669.90	31.40	1.833	0.30 (0.25)	0.83	6905.4	110.00
15	30559.36	40.62	1.600	0.30 (0.25)	0.85	9996.6	150.00
16	33064.47	48.09	1.438	0.30 (0.26)	0.87	12695.4	600.00
17	34160.37	52.59	1.368	0.30 (0.26)	0.88	14692.0	31100.00
18	36962.75	63.63	1.262	0.30 (0.27)	0.90	19602.4	40100.00
19	39192.02	70.64	1.215	0.30 (0.27)	0.91	22765.4	11801.00
20	42121.14	79.84	1.153	0.30 (0.28)	0.92	27532.8	11530.00
21	44479.98	88.18	1.096	0.30 (0.28)	0.93	32964.2	11910.00
22	46549.93	95.10	1.061	0.30 (0.28)	0.94	37810.6	11330.00
23	47440.82	101.37	1.032	0.30 (0.28)	0.95	42241.6	11130.00
24	47137.52	108.97	0.997	0.30 (0.29)	0.95	46235.6	12330.00

25	46727.42	115.63	0.967	0.30 (0.29)	0.95	49578.7	12400.00
26	45975.83	124.34	0.936	0.30 (0.29)	0.95	52947.5	12201.00
27	45437.31	128.34	0.925	0.30 (0.29)	0.96	54032.2	12111.00
28	44707.60	133.75	0.911	0.30 (0.29)	0.96	55401.6	12101.10
29	44119.32	137.81	0.901	0.30 (0.29)	0.96	56250.7	10400.00
30	42454.14	145.95	0.880	0.30 (0.29)	0.96	57565.9	12010.00
31	41066.57	151.93	0.864	0.30 (0.29)	0.96	57879.6	10210.00
32	37252.38	178.28	0.795	0.30 (0.29)	0.96	58612.3	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	2809.02	26.97	2.004	0.30 (0.27)	0.90	1488.4	110.00
2	2910.06	29.35	1.898	0.30 (0.27)	0.90	1663.3	100.00
3	2918.17	30.50	1.856	0.30 (0.27)	0.90	1739.2	100.00
4	2939.45	33.51	1.779	0.30 (0.27)	0.91	1919.8	130.00
5	3115.82	46.01	1.483	0.30 (0.28)	0.93	2648.1	20100.00
6	3057.66	51.15	1.384	0.30 (0.28)	0.93	2827.8	13600.00
7	2949.81	85.07	1.117	0.30 (0.28)	0.93	3796.8	13510.00
8	2804.84	93.46	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	23317.16	14.67	2.980	0.30 (0.25)	0.84	3193.7	429.00
2	24507.07	16.05	2.817	0.30 (0.25)	0.84	3617.0	425.00
3	24871.20	16.48	2.773	0.30 (0.25)	0.84	3746.4	400.00
4	25753.19	17.81	2.636	0.30 (0.25)	0.84	4151.9	300.00
5	27139.78	21.02	2.347	0.30 (0.25)	0.84	5100.8	50700.00
6	27799.56	22.59	2.247	0.30 (0.25)	0.83	5546.0	210.00
7	28046.14	23.63	2.180	0.30 (0.25)	0.83	5829.5	50600.00
8	28293.94	24.67	2.113	0.30 (0.25)	0.83	6128.8	410.00
9	28512.23	25.54	2.068	0.30 (0.25)	0.83	6380.7	200.00
10	28653.90	26.08	2.044	0.30 (0.25)	0.84	6535.2	50200.00
11	28681.63	26.15	2.041	0.30 (0.25)	0.84	6564.0	230.00
12	28754.92	26.34	2.032	0.30 (0.25)	0.84	6642.0	50500.00
13	28992.43	26.97	2.004	0.30 (0.25)	0.84	6895.0	110.00
14	29080.71	27.20	1.994	0.30 (0.25)	0.84	6991.1	220.50
15	29893.04	29.35	1.898	0.30 (0.25)	0.84	7876.0	100.00
16	30286.45	30.50	1.856	0.30 (0.25)	0.84	8340.5	100.00
17	30594.44	31.40	1.833	0.30 (0.25)	0.84	8698.6	110.00
18	31269.99	33.51	1.779	0.30 (0.25)	0.85	9532.0	130.00
19	33599.10	40.62	1.600	0.30 (0.26)	0.86	12330.5	150.00
20	35483.92	46.01	1.483	0.30 (0.26)	0.87	14593.3	20100.00
21	36156.76	48.09	1.438	0.30 (0.26)	0.88	15416.2	600.00
22	36866.16	51.15	1.384	0.30 (0.27)	0.88	16878.8	13600.00
23	37213.43	52.59	1.368	0.30 (0.27)	0.89	17561.1	31100.00
24	39980.71	63.63	1.262	0.30 (0.27)	0.91	22786.9	40100.00
25	42187.70	70.64	1.215	0.30 (0.27)	0.92	26150.0	11801.00
26	45087.59	79.84	1.153	0.30 (0.28)	0.93	31180.3	11530.00
27	46548.82	85.07	1.117	0.30 (0.28)	0.93	34732.5	13510.00
28	47375.95	88.18	1.096	0.30 (0.28)	0.93	36784.4	11910.00
29	48863.31	93.46	1.068	0.30 (0.28)	0.94	40519.6	13500.00
30	49328.07	95.10	1.061	0.30 (0.28)	0.94	41670.3	11330.00
31	50117.16	101.37	1.032	0.30 (0.28)	0.95	46101.3	11130.00
32	49690.31	108.97	0.997	0.30 (0.28)	0.95	50095.2	12330.00

Node	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
33	49171.96	115.63	0.967	0.30 (0.29)	0.95	53438.4	12400.00
34	48309.18	124.34	0.936	0.30 (0.29)	0.95	56807.2	12201.00
35	47733.70	128.34	0.925	0.30 (0.29)	0.95	57891.9	12111.00
36	46953.89	133.75	0.911	0.30 (0.29)	0.95	59261.3	12101.10
37	46328.03	137.81	0.901	0.30 (0.29)	0.96	60110.4	10400.00
38	44587.55	145.95	0.880	0.30 (0.29)	0.96	61425.6	12010.00
39	43144.70	151.93	0.864	0.30 (0.29)	0.96	61739.3	10210.00
40	39086.65	178.28	0.795	0.30 (0.29)	0.96	62472.0	10100.00

TOTAL AREA (ACRES) = 62472.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 50117.16 Tc (MIN.) = 101.368
EFFECTIVE AREA (ACRES) = 46101.27 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89
TOTAL AREA (ACRES) = 62472.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93
CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 9.79
CHANNEL FLOW THRU SUBAREA (CFS) = 50117.16
FLOW VELOCITY (FEET/SEC.) = 20.56 FLOW DEPTH (FEET) = 9.79
TRAVEL TIME (MIN.) = 0.14 Tc (MIN.) = 101.51
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506101b.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM 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	23317.16	14.85	2.950	0.30 (0.25)	0.84	3193.7	429.00
2	24507.07	16.23	2.799	0.30 (0.25)	0.84	3617.0	425.00
3	24871.20	16.65	2.755	0.30 (0.25)	0.84	3746.4	400.00
4	25753.19	17.99	2.619	0.30 (0.25)	0.84	4151.9	300.00
5	27139.78	21.19	2.337	0.30 (0.25)	0.84	5100.8	50700.00
6	27799.56	22.76	2.236	0.30 (0.25)	0.83	5546.0	210.00
7	28046.14	23.80	2.169	0.30 (0.25)	0.83	5829.5	50600.00
8	28293.94	24.83	2.103	0.30 (0.25)	0.83	6128.8	410.00
9	28512.23	25.71	2.061	0.30 (0.25)	0.83	6380.7	200.00
10	28653.90	26.24	2.037	0.30 (0.25)	0.84	6535.2	50200.00
11	28681.63	26.31	2.034	0.30 (0.25)	0.84	6564.0	230.00
12	28754.92	26.50	2.025	0.30 (0.25)	0.84	6642.0	50500.00
13	28992.43	27.14	1.997	0.30 (0.25)	0.84	6895.0	110.00
14	29080.71	27.37	1.986	0.30 (0.25)	0.84	6991.1	220.50
15	29893.04	29.52	1.890	0.30 (0.25)	0.84	7876.0	100.00
16	30286.45	30.67	1.852	0.30 (0.25)	0.84	8340.5	100.00
17	30594.44	31.57	1.829	0.30 (0.25)	0.84	8698.6	110.00
18	31269.99	33.67	1.775	0.30 (0.25)	0.85	9532.0	130.00
19	33599.10	40.78	1.596	0.30 (0.26)	0.86	12330.5	150.00
20	35483.92	46.17	1.480	0.30 (0.26)	0.87	14593.3	20100.00
21	36156.76	48.24	1.435	0.30 (0.26)	0.88	15416.2	600.00
22	36866.16	51.30	1.383	0.30 (0.27)	0.88	16878.8	13600.00
23	37213.43	52.74	1.367	0.30 (0.27)	0.89	17561.1	31100.00
24	39980.71	63.78	1.261	0.30 (0.27)	0.91	22786.9	40100.00
25	42187.70	70.78	1.214	0.30 (0.27)	0.92	26150.0	11801.00
26	45087.59	79.98	1.152	0.30 (0.28)	0.93	31180.3	11530.00
27	46548.82	85.21	1.116	0.30 (0.28)	0.93	34732.5	13510.00
28	47375.95	88.32	1.095	0.30 (0.28)	0.93	36784.4	11910.00
29	48863.31	93.60	1.068	0.30 (0.28)	0.94	40519.6	13500.00
30	49328.07	95.24	1.060	0.30 (0.28)	0.94	41670.3	11330.00
31	50117.16	101.51	1.031	0.30 (0.28)	0.95	46101.3	11130.00
32	49690.31	109.11	0.997	0.30 (0.28)	0.95	50095.2	12330.00
33	49171.96	115.77	0.966	0.30 (0.29)	0.95	53438.4	12400.00
34	48309.18	124.48	0.935	0.30 (0.29)	0.95	56807.2	12201.00
35	47733.70	128.48	0.925	0.30 (0.29)	0.95	57891.9	12111.00
36	46953.89	133.89	0.911	0.30 (0.29)	0.95	59261.3	12101.10
37	46328.03	137.96	0.900	0.30 (0.29)	0.96	60110.4	10400.00
38	44587.55	146.10	0.879	0.30 (0.29)	0.96	61425.6	12010.00
39	43144.70	152.07	0.864	0.30 (0.29)	0.96	61739.3	10210.00
40	39086.65	178.43	0.795	0.30 (0.29)	0.96	62472.0	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	23841.92	14.85	2.950	0.30 (0.25)	0.85	3434.2	429.00
2	25047.88	16.23	2.799	0.30 (0.25)	0.85	3879.7	425.00
3	25416.52	16.65	2.755	0.30 (0.25)	0.85	4016.0	400.00
4	26309.59	17.99	2.619	0.30 (0.25)	0.85	4443.1	300.00
5	27715.67	21.19	2.337	0.30 (0.25)	0.84	5443.9	50700.00

6	28387.58	22.76	2.236	0.30	(0.25)	0.84	5914.5	210.00
7	28639.89	23.80	2.169	0.30	(0.25)	0.84	6214.8	50600.00
8	28891.54	24.83	2.103	0.30	(0.25)	0.84	6530.8	410.00
9	29116.39	25.71	2.061	0.30	(0.25)	0.84	6796.8	200.00
10	29262.30	26.24	2.037	0.30	(0.25)	0.84	6960.0	50200.00
11	29290.56	26.31	2.034	0.30	(0.25)	0.84	6990.0	230.00
12	29365.26	26.50	2.025	0.30	(0.25)	0.84	7071.0	50500.00
13	29607.17	27.14	1.997	0.30	(0.25)	0.85	7334.4	110.00
14	29696.93	27.37	1.986	0.30	(0.25)	0.85	7434.2	220.50
15	30519.98	29.52	1.890	0.30	(0.25)	0.85	8353.9	100.00
16	30922.04	30.67	1.852	0.30	(0.25)	0.85	8837.0	100.00
17	31239.00	31.57	1.829	0.30	(0.26)	0.85	9209.7	110.00
18	31933.39	33.67	1.775	0.30	(0.26)	0.86	10077.1	130.00
19	32882.27	36.50	1.703	0.30	(0.26)	0.86	11238.4	10100.00
20	34231.41	40.78	1.596	0.30	(0.26)	0.87	12921.5	150.00
21	36059.65	46.17	1.480	0.30	(0.26)	0.88	15184.3	20100.00
22	36710.70	48.24	1.435	0.30	(0.26)	0.88	16007.2	600.00
23	37394.72	51.30	1.383	0.30	(0.27)	0.89	17469.8	13600.00
24	37734.27	52.74	1.367	0.30	(0.27)	0.89	18152.1	31100.00
25	40450.33	63.78	1.261	0.30	(0.27)	0.91	23377.9	40100.00
26	42634.29	70.78	1.214	0.30	(0.28)	0.92	26741.0	11801.00
27	45503.94	79.98	1.152	0.30	(0.28)	0.93	31771.3	11530.00
28	46947.98	85.21	1.116	0.30	(0.28)	0.93	35323.5	13510.00
29	47764.86	88.32	1.095	0.30	(0.28)	0.93	37375.4	11910.00
30	49238.72	93.60	1.068	0.30	(0.28)	0.94	41110.6	13500.00
31	49699.84	95.24	1.060	0.30	(0.28)	0.94	42261.3	11330.00
32	50475.03	101.51	1.031	0.30	(0.28)	0.95	46692.3	11130.00
33	50031.31	109.11	0.997	0.30	(0.28)	0.95	50686.2	12330.00
34	49498.18	115.77	0.966	0.30	(0.29)	0.95	54029.4	12400.00
35	48620.34	124.48	0.935	0.30	(0.29)	0.95	57398.2	12201.00
36	48039.81	128.48	0.925	0.30	(0.29)	0.95	58482.9	12111.00
37	47253.17	133.89	0.911	0.30	(0.29)	0.95	59852.3	12101.10
38	46622.17	137.96	0.900	0.30	(0.29)	0.96	60701.4	10400.00
39	44871.41	146.10	0.879	0.30	(0.29)	0.96	62016.6	12010.00
40	43421.00	152.07	0.864	0.30	(0.29)	0.96	62330.3	10210.00
41	39329.65	178.43	0.795	0.30	(0.29)	0.96	63063.0	10100.00

TOTAL AREA (ACRES) = 63063.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 50475.03 Tc (MIN.) = 101.505
EFFECTIVE AREA (ACRES) = 46692.27 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63063.0
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 = 56

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

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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) = 8.88
CHANNEL FLOW THRU SUBAREA (CFS) = 50475.03
FLOW VELOCITY (FEET/SEC.) = 23.26 FLOW DEPTH (FEET) = 8.88

TRAVEL TIME (MIN.) = 0.19 Tc (MIN.) = 101.69
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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0610508Y.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	246.57	20.47	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	23841.92	15.09	2.915	0.30 (0.25)	0.85	3434.2	429.00
2	25047.88	16.46	2.775	0.30 (0.25)	0.85	3879.7	425.00
3	25416.52	16.88	2.731	0.30 (0.25)	0.85	4016.0	400.00
4	26309.59	18.22	2.595	0.30 (0.25)	0.85	4443.1	300.00
5	27715.67	21.42	2.322	0.30 (0.25)	0.84	5443.9	50700.00
6	28387.58	22.98	2.221	0.30 (0.25)	0.84	5914.5	210.00
7	28639.89	24.03	2.155	0.30 (0.25)	0.84	6214.8	50600.00
8	28891.54	25.06	2.089	0.30 (0.25)	0.84	6530.8	410.00
9	29116.39	25.93	2.051	0.30 (0.25)	0.84	6796.8	200.00
10	29262.30	26.47	2.027	0.30 (0.25)	0.84	6960.0	50200.00
11	29290.56	26.53	2.024	0.30 (0.25)	0.84	6990.0	230.00
12	29365.26	26.73	2.015	0.30 (0.25)	0.84	7071.0	50500.00
13	29607.17	27.36	1.987	0.30 (0.25)	0.85	7334.4	110.00
14	29696.93	27.59	1.976	0.30 (0.25)	0.85	7434.2	220.50
15	30519.98	29.74	1.881	0.30 (0.25)	0.85	8353.9	100.00
16	30922.04	30.89	1.846	0.30 (0.25)	0.85	8837.0	100.00
17	31239.00	31.78	1.823	0.30 (0.26)	0.85	9209.7	110.00
18	31933.39	33.89	1.769	0.30 (0.26)	0.86	10077.1	130.00
19	32882.27	36.72	1.697	0.30 (0.26)	0.86	11238.4	10100.00
20	34231.41	40.99	1.592	0.30 (0.26)	0.87	12921.5	150.00
21	36059.65	46.38	1.475	0.30 (0.26)	0.88	15184.3	20100.00
22	36710.70	48.45	1.430	0.30 (0.26)	0.88	16007.2	600.00
23	37394.72	51.50	1.380	0.30 (0.27)	0.89	17469.8	13600.00
24	37734.27	52.95	1.365	0.30 (0.27)	0.89	18152.1	31100.00
25	40450.33	63.98	1.260	0.30 (0.27)	0.91	23377.9	40100.00
26	42634.29	70.98	1.213	0.30 (0.28)	0.92	26741.0	11801.00
27	45503.94	80.17	1.151	0.30 (0.28)	0.93	31771.3	11530.00
28	46947.98	85.40	1.115	0.30 (0.28)	0.93	35323.5	13510.00

29	47764.86	88.51	1.094	0.30 (0.28)	0.93	37375.4	11910.00
30	49238.72	93.79	1.067	0.30 (0.28)	0.94	41110.6	13500.00
31	49699.84	95.43	1.059	0.30 (0.28)	0.94	42261.3	11330.00
32	50475.03	101.69	1.031	0.30 (0.28)	0.95	46692.3	11130.00
33	50031.31	109.29	0.996	0.30 (0.28)	0.95	50686.2	12330.00
34	49498.18	115.96	0.965	0.30 (0.29)	0.95	54029.4	12400.00
35	48620.34	124.67	0.935	0.30 (0.29)	0.95	57398.2	12201.00
36	48039.81	128.67	0.924	0.30 (0.29)	0.95	58482.9	12111.00
37	47253.17	134.08	0.910	0.30 (0.29)	0.95	59852.3	12101.10
38	46622.17	138.15	0.900	0.30 (0.29)	0.96	60701.4	10400.00
39	44871.41	146.29	0.879	0.30 (0.29)	0.96	62016.6	12010.00
40	43421.00	152.27	0.863	0.30 (0.29)	0.96	62330.3	10210.00
41	39329.65	178.63	0.795	0.30 (0.29)	0.96	63063.0	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	246.57	20.47	2.383	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	24070.03	15.09	2.915	0.30 (0.26)	0.85	3530.9	429.00
2	25283.41	16.46	2.775	0.30 (0.26)	0.85	3985.3	425.00
3	25653.88	16.88	2.731	0.30 (0.25)	0.85	4124.3	400.00
4	26551.37	18.22	2.595	0.30 (0.25)	0.85	4560.0	300.00
5	27545.23	20.47	2.383	0.30 (0.25)	0.85	5278.4	50800.00
6	27955.04	21.42	2.322	0.30 (0.25)	0.85	5575.2	50700.00
7	28615.06	22.98	2.221	0.30 (0.25)	0.85	6045.7	210.00
8	28859.46	24.03	2.155	0.30 (0.25)	0.85	6346.1	50600.00
9	29103.41	25.06	2.089	0.30 (0.25)	0.85	6662.1	410.00
10	29323.67	25.93	2.051	0.30 (0.25)	0.85	6928.1	200.00
11	29466.77	26.47	2.027	0.30 (0.25)	0.85	7091.3	50200.00
12	29494.66	26.53	2.024	0.30 (0.25)	0.85	7121.2	230.00
13	29568.36	26.73	2.015	0.30 (0.25)	0.85	7202.3	50500.00
14	29806.92	27.36	1.987	0.30 (0.25)	0.85	7465.7	110.00
15	29895.46	27.59	1.976	0.30 (0.25)	0.85	7565.5	220.50
16	30707.19	29.74	1.881	0.30 (0.26)	0.85	8485.2	100.00
17	31105.20	30.89	1.846	0.30 (0.26)	0.85	8968.2	100.00
18	31419.43	31.78	1.823	0.30 (0.26)	0.85	9340.9	110.00
19	32107.46	33.89	1.769	0.30 (0.26)	0.86	10208.4	130.00
20	33047.77	36.72	1.697	0.30 (0.26)	0.86	11369.7	10100.00
21	34384.46	40.99	1.592	0.30 (0.26)	0.87	13052.8	150.00
22	36198.95	46.38	1.475	0.30 (0.26)	0.88	15315.5	20100.00
23	36844.71	48.45	1.430	0.30 (0.26)	0.88	16138.4	600.00
24	37522.82	51.50	1.380	0.30 (0.27)	0.89	17601.0	13600.00
25	37860.50	52.95	1.365	0.30 (0.27)	0.89	18283.4	31100.00
26	40564.20	63.98	1.260	0.30 (0.27)	0.91	23509.2	40100.00
27	42742.57	70.98	1.213	0.30 (0.28)	0.92	26872.3	11801.00
28	45604.86	80.17	1.151	0.30 (0.28)	0.93	31902.5	11530.00
29	47044.73	85.40	1.115	0.30 (0.28)	0.93	35454.8	13510.00
30	47859.11	88.51	1.094	0.30 (0.28)	0.93	37506.6	11910.00
31	49329.75	93.79	1.067	0.30 (0.28)	0.94	41241.9	13500.00
32	49789.97	95.43	1.059	0.30 (0.28)	0.94	42392.5	11330.00
33	50561.79	101.69	1.031	0.30 (0.28)	0.95	46823.5	11130.00
34	50113.96	109.29	0.996	0.30 (0.28)	0.95	50817.5	12330.00

35	49577.23	115.96	0.965	0.30 (0.29)	0.95	54160.7	12400.00
36	48695.78	124.67	0.935	0.30 (0.29)	0.95	57529.5	12201.00
37	48114.03	128.67	0.924	0.30 (0.29)	0.95	58614.1	12111.00
38	47325.72	134.08	0.910	0.30 (0.29)	0.95	59983.6	12101.10
39	46693.47	138.15	0.900	0.30 (0.29)	0.96	60832.7	10400.00
40	44940.20	146.29	0.879	0.30 (0.29)	0.96	62147.8	12010.00
41	43487.96	152.27	0.863	0.30 (0.29)	0.96	62461.5	10210.00
42	39388.51	178.63	0.795	0.30 (0.29)	0.96	63194.3	10100.00

TOTAL AREA (ACRES) = 63194.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 50561.79 Tc(MIN.) = 101.692
EFFECTIVE AREA(ACRES) = 46823.54 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63194.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 63194.3 TC(MIN.) = 101.69
EFFECTIVE AREA(ACRES) = 46823.54 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.946
PEAK FLOW RATE(CFS) = 50561.79

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24070.03	15.09	2.915	0.30 (0.26)	0.85	3530.9	429.00
2	25283.41	16.46	2.775	0.30 (0.26)	0.85	3985.3	425.00
3	25653.88	16.88	2.731	0.30 (0.25)	0.85	4124.3	400.00
4	26551.37	18.22	2.595	0.30 (0.25)	0.85	4560.0	300.00
5	27545.23	20.47	2.383	0.30 (0.25)	0.85	5278.4	50800.00
6	27955.04	21.42	2.322	0.30 (0.25)	0.85	5575.2	50700.00
7	28615.06	22.98	2.221	0.30 (0.25)	0.85	6045.7	210.00
8	28859.46	24.03	2.155	0.30 (0.25)	0.85	6346.1	50600.00
9	29103.41	25.06	2.089	0.30 (0.25)	0.85	6662.1	410.00
10	29323.67	25.93	2.051	0.30 (0.25)	0.85	6928.1	200.00
11	29466.77	26.47	2.027	0.30 (0.25)	0.85	7091.3	50200.00
12	29494.66	26.53	2.024	0.30 (0.25)	0.85	7121.2	230.00
13	29568.36	26.73	2.015	0.30 (0.25)	0.85	7202.3	50500.00
14	29806.92	27.36	1.987	0.30 (0.25)	0.85	7465.7	110.00
15	29895.46	27.59	1.976	0.30 (0.25)	0.85	7565.5	220.50
16	30707.19	29.74	1.881	0.30 (0.26)	0.85	8485.2	100.00
17	31105.20	30.89	1.846	0.30 (0.26)	0.85	8968.2	100.00
18	31419.43	31.78	1.823	0.30 (0.26)	0.85	9340.9	110.00
19	32107.46	33.89	1.769	0.30 (0.26)	0.86	10208.4	130.00
20	33047.77	36.72	1.697	0.30 (0.26)	0.86	11369.7	10100.00
21	34384.46	40.99	1.592	0.30 (0.26)	0.87	13052.8	150.00
22	36198.95	46.38	1.475	0.30 (0.26)	0.88	15315.5	20100.00
23	36844.71	48.45	1.430	0.30 (0.26)	0.88	16138.4	600.00
24	37522.82	51.50	1.380	0.30 (0.27)	0.89	17601.0	13600.00
25	37860.50	52.95	1.365	0.30 (0.27)	0.89	18283.4	31100.00
26	40564.20	63.98	1.260	0.30 (0.27)	0.91	23509.2	40100.00
27	42742.57	70.98	1.213	0.30 (0.28)	0.92	26872.3	11801.00
28	45604.86	80.17	1.151	0.30 (0.28)	0.93	31902.5	11530.00
29	47044.73	85.40	1.115	0.30 (0.28)	0.93	35454.8	13510.00
30	47859.11	88.51	1.094	0.30 (0.28)	0.93	37506.6	11910.00
31	49329.75	93.79	1.067	0.30 (0.28)	0.94	41241.9	13500.00
32	49789.97	95.43	1.059	0.30 (0.28)	0.94	42392.5	11330.00

33	50561.79	101.69	1.031	0.30	(0.28)	0.95	46823.5	11130.00
34	50113.96	109.29	0.996	0.30	(0.28)	0.95	50817.5	12330.00
35	49577.23	115.96	0.965	0.30	(0.29)	0.95	54160.7	12400.00
36	48695.78	124.67	0.935	0.30	(0.29)	0.95	57529.5	12201.00
37	48114.03	128.67	0.924	0.30	(0.29)	0.95	58614.1	12111.00
38	47325.72	134.08	0.910	0.30	(0.29)	0.95	59983.6	12101.10
39	46693.47	138.15	0.900	0.30	(0.29)	0.96	60832.7	10400.00
40	44940.20	146.29	0.879	0.30	(0.29)	0.96	62147.8	12010.00
41	43487.96	152.27	0.863	0.30	(0.29)	0.96	62461.5	10210.00
42	39388.51	178.63	0.795	0.30	(0.29)	0.96	63194.3	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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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S36- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV APRIL 2019 ROKAMOTO *

FILE NAME: RI00EV36.DAT
TIME/DATE OF STUDY: 09:36 04/16/2019

=====

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; 5.876
- 2) 10.00; 3.789
- 3) 15.00; 2.933
- 4) 20.00; 2.419
- 5) 25.00; 2.096
- 6) 30.00; 1.873
- 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)	MANNING LIP (FT)	HIKE FACTOR (FT)	(n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.619
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) = 10.13
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 10.13

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) = 0.47
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.328
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) = 20.29
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.11
AVERAGE FLOW DEPTH(FEET) = 0.45 TRAVEL TIME(MIN.) = 1.70
Tc(MIN.) = 12.69
SUBAREA AREA(ACRES) = 7.45 SUBAREA RUNOFF(CFS) = 20.30
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) = 29.54
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.57 FLOW VELOCITY(FEET/SEC.) = 4.68
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) = 1.04
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.930

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) = 66.30

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.55

AVERAGE FLOW DEPTH(FEET) = 1.00 TRAVEL TIME(MIN.) = 2.34

Tc(MIN.) = 15.03

SUBAREA AREA(ACRES) = 30.96 SUBAREA RUNOFF(CFS) = 73.28
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) = 98.94
GIVEN 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.) = 6.31

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) = 1.46
* 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
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) = 123.40

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.63

AVERAGE FLOW DEPTH(FEET) = 1.44 TRAVEL TIME(MIN.) = 2.98

Tc(MIN.) = 18.01

SUBAREA AREA(ACRES) = 23.36 SUBAREA RUNOFF(CFS) = 48.84

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) = 136.24

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.52 FLOW VELOCITY(FEET/SEC.) = 6.86

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) = 1.80
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.404

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) = 156.36

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.48

AVERAGE FLOW DEPTH(FEET) = 1.78 TRAVEL TIME(MIN.) = 2.22

Tc(MIN.) = 20.23

SUBAREA AREA(ACRES) = 21.24 SUBAREA RUNOFF(CFS) = 40.22

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) = 163.62

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.83 FLOW VELOCITY(FEET/SEC.) = 6.56

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) = 1.353
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) = 1378.23
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY( FEET/SEC.) = 13.02

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AVERAGE FLOW DEPTH( FEET) = 2.76 TRAVEL TIME( MIN.) = 2.64
Tc( MIN.) = 54.27
SUBAREA AREA( ACRES) = 26.50 SUBAREA RUNOFF( CFS) = 25.12
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) = 1484.72
GIVEN CHANNEL BASE( FEET) = 30.00 CHANNEL FREEBOARD( FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT( FEET) = 2.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH( FEET) = 2.88 FLOW VELOCITY( FEET/SEC.) = 13.35
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.) = 54.27
*100 YEAR RAINFALL INTENSITY( INCH/HR) = 1.353
SUBAREA LOSS RATE DATA( AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"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) = 1.37
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) = 1486.09

*****
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      1486.09  54.27  1.353  0.30( 0.28) 0.95    1544.9  13510.00
  2      1433.91  62.30  1.275  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      163.62  20.23  2.404  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      1262.40  20.23  2.404  0.30( 0.29) 0.95    662.3   13600.00

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2 1567.98 54.27 1.353 0.30(0.29) 0.95 1631.3 13510.00
 3 1509.70 62.30 1.275 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) = 1567.98 Tc(MIN.) = 54.268
 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) = 3.03
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.334

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) = 1593.36
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.43
 AVERAGE FLOW DEPTH(FEET) = 3.03 TRAVEL TIME(MIN.) = 1.72
 Tc(MIN.) = 55.99
 SUBAREA AREA(ACRES) = 54.52 SUBAREA RUNOFF(CFS) = 50.75
 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) = 1590.99
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 3.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.03 FLOW VELOCITY(FEET/SEC.) = 13.42
 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.) = 55.99
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.334
 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) = 54.32
 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) = 1645.31

 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	1393.82	22.06	2.286	0.30(0.29)	0.96	775.2	13600.00
2	1645.31	55.99	1.334	0.30(0.29)	0.95	1744.2	13510.00
3	1589.66	64.04	1.263	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	2.733	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	1573.06	16.94	2.733	0.30(0.28)	0.94	729.2	20100.00
2	1609.16	22.06	2.286	0.30(0.28)	0.95	909.0	13600.00
3	1759.66	55.99	1.334	0.30(0.28)	0.95	1878.0	13510.00
4	1696.44	64.04	1.263	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) = 1759.66 Tc(MIN.) = 55.986
 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) = 4.08

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.285

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) = 1789.61

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.39

AVERAGE FLOW DEPTH(FEET) = 4.08 TRAVEL TIME(MIN.) = 4.80

Tc(MIN.) = 60.79

SUBAREA AREA(ACRES) = 67.58 SUBAREA RUNOFF(CFS) = 59.89

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) = 1759.66

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) = 4.04

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.04 FLOW VELOCITY(FEET/SEC.) = 10.34

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.) = 60.79

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.285

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) = 92.79

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) = 1844.18

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 60.79

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.285

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) = 7.12

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) = 1851.29

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) = 4.45

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.253

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) = 1945.37

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.10

AVERAGE FLOW DEPTH(FEET) = 4.45 TRAVEL TIME(MIN.) = 4.64

Tc(MIN.) = 65.43

SUBAREA AREA(ACRES) = 219.25 SUBAREA RUNOFF(CFS) = 188.15

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) = 1981.51

GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 4.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 4.49 FLOW VELOCITY (FEET/SEC.) = 10.16
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.) = 65.43
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.253
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 215.43 SUBAREA RUNOFF (CFS) = 184.87
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) = 2166.38

FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 65.43
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.253
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 16.72 SUBAREA RUNOFF (CFS) = 14.35
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) = 2180.73

FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 394.80 DOWNSTREAM (FEET) = 342.39

CHANNEL LENGTH THRU SUBAREA (FEET) = 2913.57 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 4.57
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.224

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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2241.05
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.23
AVERAGE FLOW DEPTH (FEET) = 4.57 TRAVEL TIME (MIN.) = 4.32
Tc (MIN.) = 69.76
SUBAREA AREA (ACRES) = 145.01 SUBAREA RUNOFF (CFS) = 120.64
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) = 2235.63
GIVEN CHANNEL BASE (FEET) = 30.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 4.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 4.56 FLOW VELOCITY (FEET/SEC.) = 11.23
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.) = 69.76
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.224
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 142.80 SUBAREA RUNOFF (CFS) = 118.80
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) = 2354.43

FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 69.76
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.224
 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) = 122.10
 EFFECTIVE AREA(ACRES) = 2944.28 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) = 2476.54

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2514.35	30.95	1.849	0.30(0.29)	0.98	1795.5	20100.00
2	2535.74	36.02	1.719	0.30(0.29)	0.97	1975.3	13600.00
3	2476.54	69.76	1.224	0.30(0.29)	0.97	2944.3	13510.00
4	2381.60	77.94	1.169	0.30(0.29)	0.96	3007.2	13500.00

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2535.74 Tc(MIN.) = 36.02
 AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.97 EFFECTIVE AREA(ACRES) = 1975.27

FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 4.42
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.668
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	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) = 2569.18
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.44
 AVERAGE FLOW DEPTH(FEET) = 4.42 TRAVEL TIME(MIN.) = 1.97

Tc(MIN.) = 38.00
 SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 66.87
 EFFECTIVE AREA(ACRES) = 2029.57 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) = 2535.74
 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) = 4.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 4.39 FLOW VELOCITY(FEET/SEC.) = 13.38
 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.) = 38.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.668
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	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) = 63.00
 EFFECTIVE AREA(ACRES) = 2080.73 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) = 2575.78

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 38.00
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.668
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	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) = 4.67
 EFFECTIVE AREA(ACRES) = 2084.52 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) = 2580.45

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*****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12
-----
>>>>CLEAR MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 1 <<<<<
=====
PEAK FLOWRATE TABLE FILE NAME: 2P00EVAA.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR)    (ACRES)    NODE
1          589.23   13.84   0.30( 0.11) 0.36      173.5    110.00
2          590.10   16.35   0.30( 0.11) 0.38      204.6    100.00
3          582.95   17.51   0.30( 0.11) 0.38      213.9    100.00
4          519.41   20.54   0.30( 0.12) 0.40      221.1    130.00
TOTAL AREA(ACRES) =      221.1

*****
FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31
-----
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 338.00 DOWNSTREAM(FEET) = 300.00
FLOW LENGTH(FEET) = 881.07 MANNING'S N = 0.013
DEPTH OF FLOW IN 114.0 INCH PIPE IS 85.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 45.42
ESTIMATED PIPE DIAMETER(INCH) = 114.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2580.45
PIPE TRAVEL TIME(MIN.) = 0.32 Tc(MIN.) = 38.32
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

*****
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR)    (INCH/HR)    (ACRES)    NODE
1          2579.78   33.25   1.790 0.30( 0.29) 0.98      1904.8    20100.00
2          2580.45   38.32   1.660 0.30( 0.29) 0.98      2084.5    13600.00
3          2530.61   72.07   1.209 0.30( 0.29) 0.97      3053.5    13510.00
4          2429.06   80.28   1.153 0.30( 0.29) 0.97      3116.4    13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR)    (INCH/HR)    (ACRES)    NODE
1          589.23   13.84   3.132 0.30( 0.11) 0.36      173.5    110.00
2          590.10   16.35   2.794 0.30( 0.11) 0.38      204.6    100.00
3          582.95   17.51   2.675 0.30( 0.11) 0.38      213.9    100.00
4          519.41   20.54   2.384 0.30( 0.12) 0.40      221.1    130.00

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LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR)    (INCH/HR)    (ACRES)    NODE
1          2625.72   13.84   3.132 0.30( 0.26) 0.87      966.2    110.00
2          2709.91   16.35   2.794 0.30( 0.26) 0.87      1141.1    100.00
3          2745.07   17.51   2.675 0.30( 0.26) 0.87      1217.0    100.00
4          2745.81   20.54   2.384 0.30( 0.27) 0.89      1397.6    130.00
5          2962.80   33.25   1.790 0.30( 0.28) 0.92      2125.9    20100.00
6          2933.68   38.32   1.660 0.30( 0.28) 0.92      2305.6    13600.00
7          2780.31   72.07   1.209 0.30( 0.28) 0.93      3274.6    13510.00
8          2666.08   80.28   1.153 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) = 2962.80 Tc(MIN.) = 33.250
EFFECTIVE AREA(ACRES) = 2125.88 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.) = 33.25
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.790
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE                GROUP      (ACRES)    (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"FALLOW"                B          1.11      0.30      1.000    86
AGRICULTURAL POOR COVER
"FALLOW"                B          0.44      0.30      1.000    86
NATURAL FAIR COVER
"GRASS"                  B          1.49      0.30      1.000    69
NATURAL FAIR COVER
"GRASS"                  B          1.70      0.30      1.000    69
NATURAL FAIR COVER
"OPEN BRUSH"            B          1.09      0.30      1.000    66
NATURAL FAIR COVER
"OPEN BRUSH"            B          18.57     0.30      1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.40 SUBAREA RUNOFF(CFS) = 32.72
EFFECTIVE AREA(ACRES) = 2150.28 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) = 2962.80
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.) = 33.25

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* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.790
 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) = 65.38
 EFFECTIVE AREA (ACRES) = 2199.04 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) = 2995.89

 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) = 5.83
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.753
 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) = 3008.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.86
 AVERAGE FLOW DEPTH (FEET) = 5.83 TRAVEL TIME (MIN.) = 1.43
 Tc (MIN.) = 34.68
 SUBAREA AREA (ACRES) = 19.98 SUBAREA RUNOFF (CFS) = 26.13
 EFFECTIVE AREA (ACRES) = 2219.02 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) = 2995.89
 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) = 5.82
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 5.82 FLOW VELOCITY (FEET/SEC.) = 10.85
 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.) = 34.68
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.753
 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) = 51.16
 EFFECTIVE AREA (ACRES) = 2258.14 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) = 3000.59

 FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

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

 MAINLINE Tc (MIN.) = 34.68
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.753
 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) = 3.07
 EFFECTIVE AREA (ACRES) = 2260.49 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) = 3003.66

 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12

>>>> CLEAR MEMORY BANK # 3 <<<<<

 FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

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

 MAINLINE Tc (MIN.) = 34.68
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.753

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) = 56.64
EFFECTIVE AREA(ACRES) = 2303.80 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) = 3060.31

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 34.68
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.753
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) = 54.82
EFFECTIVE AREA(ACRES) = 2342.96 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) = 3115.13

FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 34.68
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.753
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) = 0.69
EFFECTIVE AREA(ACRES) = 2343.49 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) = 3115.82

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) = 5.61
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.650

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	-	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) = 3122.92
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.89
AVERAGE FLOW DEPTH(FEET) = 5.61 TRAVEL TIME(MIN.) = 4.01
Tc(MIN.) = 38.69
SUBAREA AREA(ACRES) = 11.67 SUBAREA RUNOFF(CFS) = 14.18
EFFECTIVE AREA(ACRES) = 2355.16 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) = 3115.82
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) = 5.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 5.60 FLOW VELOCITY(FEET/SEC.) = 11.88
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.) = 38.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.650
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	0.30	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) = 106.91

EFFECTIVE AREA (ACRES) = 2443.12 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) = 3115.82
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<<<<<

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MAINLINE Tc (MIN.) = 38.69
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.650
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) = 15.67
EFFECTIVE AREA (ACRES) = 2456.01 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) = 3115.82
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<<<<<

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MAINLINE Tc (MIN.) = 38.69
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.650
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) = 15.29
EFFECTIVE AREA (ACRES) = 2468.59 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) = 3115.82
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<<<<<

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MAINLINE Tc (MIN.) = 38.69
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.650
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) = 30.89
EFFECTIVE AREA (ACRES) = 2493.80 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) = 3115.82
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<<<<<

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MAINLINE Tc (MIN.) = 38.69
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.650
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) = 17.96
EFFECTIVE AREA (ACRES) = 2508.58 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) = 3115.82
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<<<<<

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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) = 5.92
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.563

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) = 3140.94

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.12

AVERAGE FLOW DEPTH (FEET) = 5.92 TRAVEL TIME (MIN.) = 3.79

Tc (MIN.) = 42.48

SUBAREA AREA (ACRES) = 44.19 SUBAREA RUNOFF (CFS) = 50.24

EFFECTIVE AREA (ACRES) = 2552.77 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) = 3115.82

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) = 5.89

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 5.89 FLOW VELOCITY (FEET/SEC.) = 11.09

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.) = 42.48

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.563

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) = 20.60

EFFECTIVE AREA (ACRES) = 2570.89 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) = 3115.82

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.) = 42.48

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.563

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) = 7.32

EFFECTIVE AREA (ACRES) = 2577.09 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) = 3115.82

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.) = 42.48

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 1.563

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) = 8.85

EFFECTIVE AREA (ACRES) = 2584.59 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) = 3115.82

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<<<<

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MAINLINE Tc(MIN.) = 42.48
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.563
 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) = 6.91
 EFFECTIVE AREA(ACRES) = 2590.67 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) = 3115.82
 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.) = 42.48
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.563
 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) = 39.44
 EFFECTIVE AREA(ACRES) = 2625.36 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) = 3115.82
 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.) = 42.48
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 1.563
 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) = 16.27
 EFFECTIVE AREA(ACRES) = 2639.67 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) = 3115.82
 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) = 4.15
 CHANNEL FLOW THRU SUBAREA(CFS) = 3115.82
 FLOW VELOCITY(FEET/SEC.) = 17.70 FLOW DEPTH(FEET) = 4.15
 TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 42.75
 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 = 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) = 6.63
 * 100 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
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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) = 3120.30
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.43
 AVERAGE FLOW DEPTH(FEET) = 6.63 TRAVEL TIME(MIN.) = 3.26
 Tc(MIN.) = 46.01
 SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 8.96
 EFFECTIVE AREA(ACRES) = 2648.06 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) = 3115.82
 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) = 6.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 6.63 FLOW VELOCITY(FEET/SEC.) = 9.43
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

=====
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES) = 3859.7 TC(MIN.) = 46.01
 EFFECTIVE AREA(ACRES) = 2648.06 AREA-AVERAGED Fm(INCH/HR)= 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.928
 PEAK FLOW RATE(CFS) = 3115.82

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2809.02	26.97	2.008	0.30(0.27)	0.90	1488.4	110.00
2	2910.06	29.35	1.902	0.30(0.27)	0.90	1663.3	100.00
3	2918.17	30.50	1.860	0.30(0.27)	0.90	1739.2	100.00
4	2939.45	33.51	1.783	0.30(0.27)	0.91	1919.8	130.00
5	3115.82	46.01	1.487	0.30(0.28)	0.93	2648.1	20100.00
6	3057.66	51.15	1.387	0.30(0.28)	0.93	2827.8	13600.00
7	2949.81	85.07	1.121	0.30(0.28)	0.93	3796.8	13510.00
8	2804.84	93.46	1.072	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)
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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- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV37.DAT
TIME/DATE OF STUDY: 12:22 06/19/2019

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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
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 13700.00 TO NODE 13700.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: RI00EV34.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26551.37	18.22	0.30 (0.25)	0.85	4560.0	300.00
2	28859.46	24.03	0.30 (0.25)	0.85	6346.1	50600.00
3	33047.77	36.72	0.30 (0.26)	0.86	11369.7	10100.00
4	34384.46	40.99	0.30 (0.26)	0.87	13052.8	150.00
5	36844.71	48.45	0.30 (0.26)	0.88	16138.4	600.00
6	37860.50	52.95	0.30 (0.27)	0.89	18283.4	31100.00
7	40564.20	63.98	0.30 (0.27)	0.91	23509.2	40100.00
8	42742.57	70.98	0.30 (0.28)	0.92	26872.3	11801.00
9	45604.86	80.17	0.30 (0.28)	0.93	31902.5	11530.00
10	47859.11	88.51	0.30 (0.28)	0.93	37506.6	11910.00
11	49789.97	95.43	0.30 (0.28)	0.94	42392.5	11330.00
12	50561.79	101.69	0.30 (0.28)	0.95	46823.5	11130.00
13	50113.96	109.29	0.30 (0.28)	0.95	50817.5	12330.00
14	49577.23	115.96	0.30 (0.29)	0.95	54160.7	12400.00
15	48695.78	124.67	0.30 (0.29)	0.95	57529.5	12201.00
16	47325.72	134.08	0.30 (0.29)	0.95	59983.6	12101.10
17	46693.47	138.15	0.30 (0.29)	0.96	60832.7	10400.00
18	44940.20	146.29	0.30 (0.29)	0.96	62147.8	12010.00
19	43487.96	152.27	0.30 (0.29)	0.96	62461.5	10210.00
20	39388.51	178.63	0.30 (0.29)	0.96	63194.3	10100.00
TOTAL AREA (ACRES) =						63194.3

FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	26551.37	18.22	0.30 (0.25)	0.85	4560.0	300.00
2	28859.46	24.03	0.30 (0.25)	0.85	6346.1	50600.00
3	33047.77	36.72	0.30 (0.26)	0.86	11369.7	10100.00
4	34384.46	40.99	0.30 (0.26)	0.87	13052.8	150.00
5	36844.71	48.45	0.30 (0.26)	0.88	16138.4	600.00
6	37860.50	52.95	0.30 (0.27)	0.89	18283.4	31100.00
7	40564.20	63.98	0.30 (0.27)	0.91	23509.2	40100.00
8	42742.57	70.98	0.30 (0.28)	0.92	26872.3	11801.00
9	45604.86	80.17	0.30 (0.28)	0.93	31902.5	11530.00
10	47859.11	88.51	0.30 (0.28)	0.93	37506.6	11910.00
11	49789.97	95.43	0.30 (0.28)	0.94	42392.5	11330.00
12	50561.79	101.69	0.30 (0.28)	0.95	46823.5	11130.00
13	50113.96	109.29	0.30 (0.28)	0.95	50817.5	12330.00

14 49577.23 115.96 0.30(0.29) 0.95 54160.7 12400.00
 15 48695.78 124.67 0.30(0.29) 0.95 57529.5 12201.00
 16 47325.72 134.08 0.30(0.29) 0.95 59983.6 12101.10
 17 46693.47 138.15 0.30(0.29) 0.96 60832.7 10400.00
 18 44940.20 146.29 0.30(0.29) 0.96 62147.8 12010.00
 19 43487.96 152.27 0.30(0.29) 0.96 62461.5 10210.00
 20 39388.51 178.63 0.30(0.29) 0.96 63194.3 10100.00
 TOTAL AREA (ACRES) = 63194.3

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 170.00 DOWNSTREAM (FEET) = 165.51
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1891.83 CHANNEL SLOPE = 0.0024
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT (FEET) = 14.89
 CHANNEL FLOW THRU SUBAREA (CFS) = 50561.79
 FLOW VELOCITY (FEET/SEC.) = 12.38 FLOW DEPTH (FEET) = 14.89
 TRAVEL TIME (MIN.) = 2.55 Tc (MIN.) = 104.24
 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: 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	26551.37	21.34	2.312	0.30(0.25)	0.85	4560.0	300.00
2	28859.46	27.06	1.989	0.30(0.25)	0.85	6346.1	50600.00
3	33047.77	39.63	1.614	0.30(0.26)	0.86	11369.7	10100.00

4	34384.46	43.86	1.522	0.30(0.26)	0.87	13052.8	150.00
5	36844.71	51.26	1.377	0.30(0.26)	0.88	16138.4	600.00
6	37860.50	55.73	1.325	0.30(0.27)	0.89	18283.4	31100.00
7	40564.20	66.71	1.231	0.30(0.27)	0.91	23509.2	40100.00
8	42742.57	73.66	1.184	0.30(0.28)	0.92	26872.3	11801.00
9	45604.86	82.80	1.122	0.30(0.28)	0.93	31902.5	11530.00
10	47859.11	91.11	1.068	0.30(0.28)	0.93	37506.6	11910.00
11	49789.97	97.99	1.037	0.30(0.28)	0.94	42392.5	11330.00
12	50561.79	104.24	1.008	0.30(0.28)	0.95	46823.5	11130.00
13	50113.96	111.85	0.973	0.30(0.28)	0.95	50817.5	12330.00
14	49577.23	118.52	0.943	0.30(0.29)	0.95	54160.7	12400.00
15	48695.78	127.25	0.917	0.30(0.29)	0.95	57529.5	12201.00
16	47325.72	136.68	0.893	0.30(0.29)	0.95	59983.6	12101.10
17	46693.47	140.76	0.882	0.30(0.29)	0.96	60832.7	10400.00
18	44940.20	148.93	0.861	0.30(0.29)	0.96	62147.8	12010.00
19	43487.96	154.94	0.845	0.30(0.29)	0.96	62461.5	10210.00
20	39388.51	181.39	0.778	0.30(0.29)	0.96	63194.3	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	24312.58	14.41	2.998	0.30(0.26)	0.86	3269.5	10230.00
2	26932.40	21.34	2.312	0.30(0.26)	0.85	4787.3	300.00
3	27883.76	23.72	2.161	0.30(0.26)	0.85	5543.3	10200.00
4	28131.17	24.34	2.122	0.30(0.26)	0.85	5739.2	10250.00
5	29206.64	27.06	1.989	0.30(0.26)	0.85	6591.1	50600.00
6	29544.71	28.10	1.943	0.30(0.26)	0.85	7007.6	10220.00
7	33319.43	39.63	1.614	0.30(0.26)	0.86	11615.9	10100.00
8	34637.34	43.86	1.522	0.30(0.26)	0.87	13299.1	150.00
9	37067.86	51.26	1.377	0.30(0.26)	0.88	16384.7	600.00
10	38073.12	55.73	1.325	0.30(0.27)	0.89	18529.6	31100.00
11	40757.50	66.71	1.231	0.30(0.27)	0.91	23755.4	40100.00
12	42926.23	73.66	1.184	0.30(0.28)	0.92	27118.5	11801.00
13	45775.87	82.80	1.122	0.30(0.28)	0.93	32148.8	11530.00
14	48019.12	91.11	1.068	0.30(0.28)	0.94	37752.9	11910.00
15	49943.55	97.99	1.037	0.30(0.28)	0.94	42638.8	11330.00
16	50709.52	104.24	1.008	0.30(0.28)	0.95	47069.8	11130.00
17	50254.59	111.85	0.973	0.30(0.28)	0.95	51063.8	12330.00
18	49711.62	118.52	0.943	0.30(0.29)	0.95	54406.9	12400.00
19	48824.93	127.25	0.917	0.30(0.29)	0.95	57775.7	12201.00
20	47449.85	136.68	0.893	0.30(0.29)	0.95	60229.9	12101.10
21	46815.43	140.76	0.882	0.30(0.29)	0.96	61078.9	10400.00
22	45057.82	148.93	0.861	0.30(0.29)	0.96	62394.1	12010.00
23	43602.38	154.94	0.845	0.30(0.29)	0.96	62707.8	10210.00
24	39489.27	181.39	0.778	0.30(0.29)	0.96	63440.5	10100.00
TOTAL AREA (ACRES) =							63440.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 50709.52 Tc(MIN.) = 104.240
 EFFECTIVE AREA(ACRES) = 47069.79 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA(ACRES) = 63440.5
 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<<<<<

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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
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 15.29
 CHANNEL FLOW THRU SUBAREA(CFS) = 50709.52
 FLOW VELOCITY(FEET/SEC.) = 12.00 FLOW DEPTH(FEET) = 15.29
 TRAVEL TIME(MIN.) = 2.87 Tc(MIN.) = 107.11
 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 <<<<<

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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

 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	24312.58	18.03	2.595	0.30(0.26)	0.86	3269.5	10230.00
2	26932.40	24.84	2.090	0.30(0.26)	0.85	4787.3	300.00
3	27883.76	27.18	1.984	0.30(0.26)	0.85	5543.3	10200.00
4	28131.17	27.79	1.957	0.30(0.26)	0.85	5739.2	10250.00
5	29206.64	30.47	1.847	0.30(0.26)	0.85	6591.1	50600.00

6	29544.71	31.50	1.821	0.30(0.26)	0.85	7007.6	10220.00
7	33319.43	42.90	1.542	0.30(0.26)	0.86	11615.9	10100.00
8	34637.34	47.09	1.453	0.30(0.26)	0.87	13299.1	150.00
9	37067.86	54.42	1.340	0.30(0.26)	0.88	16384.7	600.00
10	38073.12	58.87	1.289	0.30(0.27)	0.89	18529.6	31100.00
11	40757.50	69.78	1.210	0.30(0.27)	0.91	23755.4	40100.00
12	42926.23	76.69	1.163	0.30(0.28)	0.92	27118.5	11801.00
13	45775.87	85.77	1.102	0.30(0.28)	0.93	32148.8	11530.00
14	48019.12	94.03	1.055	0.30(0.28)	0.94	37752.9	11910.00
15	49943.55	100.87	1.023	0.30(0.28)	0.94	42638.8	11330.00
16	50709.52	107.11	0.995	0.30(0.28)	0.95	47069.8	11130.00
17	50254.59	114.73	0.960	0.30(0.28)	0.95	51063.8	12330.00
18	49711.62	121.41	0.932	0.30(0.29)	0.95	54406.9	12400.00
19	48824.93	130.15	0.910	0.30(0.29)	0.95	57775.7	12201.00
20	47449.85	139.61	0.885	0.30(0.29)	0.95	60229.9	12101.10
21	46815.43	143.70	0.874	0.30(0.29)	0.96	61078.9	10400.00
22	45057.82	151.91	0.853	0.30(0.29)	0.96	62394.1	12010.00
23	43602.38	157.94	0.837	0.30(0.29)	0.96	62707.8	10210.00
24	39489.27	184.49	0.775	0.30(0.29)	0.96	63440.5	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	25032.01	17.74	2.623	0.30(0.25)	0.84	3617.8	10300.00
2	25123.98	18.03	2.595	0.30(0.25)	0.84	3673.8	10230.00
3	25321.45	18.53	2.544	0.30(0.25)	0.84	3795.7	10380.00
4	26190.98	20.83	2.345	0.30(0.25)	0.85	4332.7	10320.00
5	27018.95	23.06	2.203	0.30(0.25)	0.85	4841.9	10360.00
6	27676.52	24.84	2.090	0.30(0.25)	0.85	5244.8	300.00
7	28077.90	25.86	2.042	0.30(0.25)	0.85	5579.8	10340.00
8	28588.51	27.18	1.984	0.30(0.25)	0.85	6004.1	10200.00
9	28825.00	27.79	1.957	0.30(0.25)	0.85	6200.0	10250.00
10	29856.46	30.47	1.847	0.30(0.25)	0.85	7051.9	50600.00
11	30184.02	31.50	1.821	0.30(0.25)	0.85	7468.4	10220.00
12	33846.88	42.90	1.542	0.30(0.26)	0.86	12076.7	10100.00
13	35128.91	47.09	1.453	0.30(0.26)	0.87	13759.9	150.00
14	37514.12	54.42	1.340	0.30(0.26)	0.88	16845.5	600.00
15	38498.84	58.87	1.289	0.30(0.27)	0.89	18990.4	31100.00
16	41151.43	69.78	1.210	0.30(0.27)	0.91	24216.2	40100.00
17	43301.39	76.69	1.163	0.30(0.27)	0.92	27579.3	11801.00
18	46126.35	85.77	1.102	0.30(0.28)	0.92	32609.6	11530.00
19	48350.71	94.03	1.055	0.30(0.28)	0.93	38213.7	11910.00
20	50262.57	100.87	1.023	0.30(0.28)	0.94	43099.6	11330.00
21	51017.11	107.11	0.995	0.30(0.28)	0.94	47530.6	11130.00
22	50548.20	114.73	0.960	0.30(0.28)	0.95	51524.6	12330.00
23	49994.10	121.41	0.932	0.30(0.29)	0.95	54867.7	12400.00
24	49098.27	130.15	0.910	0.30(0.29)	0.95	58236.5	12201.00

25 47713.31 139.61 0.885 0.30(0.29) 0.95 60690.7 12101.10
 26 47074.63 143.70 0.874 0.30(0.29) 0.95 61539.7 10400.00
 27 45308.44 151.91 0.853 0.30(0.29) 0.95 62854.9 12010.00
 28 43846.70 157.94 0.837 0.30(0.29) 0.96 63168.6 10210.00
 29 39708.49 184.49 0.775 0.30(0.29) 0.96 63901.3 10100.00
 TOTAL AREA (ACRES) = 63901.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 51017.11 Tc(MIN.) = 107.111
 EFFECTIVE AREA(ACRES) = 47530.59 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
 TOTAL AREA(ACRES) = 63901.3
 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

>>>>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) = 8.89
 CHANNEL FLOW THRU SUBAREA(CFS) = 51017.11
 FLOW VELOCITY(FEET/SEC.) = 42.33 FLOW DEPTH(FEET) = 8.89
 TRAVEL TIME(MIN.) = 0.14 Tc(MIN.) = 107.25
 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

>>>>CLEAR MEMORY BANK # 3 <<<<<

FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506104b.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM 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

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	25032.01	17.92	2.605	0.30(0.25)	0.84	3617.8	10300.00

2	25123.98	18.21	2.577	0.30(0.25)	0.84	3673.8	10230.00
3	25321.45	18.71	2.526	0.30(0.25)	0.84	3795.7	10380.00
4	26190.98	21.00	2.333	0.30(0.25)	0.85	4332.7	10320.00
5	27018.95	23.23	2.192	0.30(0.25)	0.85	4841.9	10360.00
6	27676.52	25.01	2.080	0.30(0.25)	0.85	5244.8	300.00
7	28077.90	26.04	2.034	0.30(0.25)	0.85	5579.8	10340.00
8	28588.51	27.35	1.976	0.30(0.25)	0.85	6004.1	10200.00
9	28825.00	27.97	1.949	0.30(0.25)	0.85	6200.0	10250.00
10	29856.46	30.64	1.843	0.30(0.25)	0.85	7051.9	50600.00
11	30184.02	31.67	1.816	0.30(0.25)	0.85	7468.4	10220.00
12	33846.88	43.06	1.539	0.30(0.26)	0.86	12076.7	10100.00
13	35128.91	47.25	1.450	0.30(0.26)	0.87	13759.9	150.00
14	37514.12	54.58	1.338	0.30(0.26)	0.88	16845.5	600.00
15	38498.84	59.03	1.287	0.30(0.27)	0.89	18990.4	31100.00
16	41151.43	69.93	1.209	0.30(0.27)	0.91	24216.2	40100.00
17	43301.39	76.84	1.162	0.30(0.27)	0.92	27579.3	11801.00
18	46126.35	85.91	1.101	0.30(0.28)	0.92	32609.6	11530.00
19	48350.71	94.17	1.054	0.30(0.28)	0.93	38213.7	11910.00
20	50262.57	101.02	1.023	0.30(0.28)	0.94	43099.6	11330.00
21	51017.11	107.25	0.994	0.30(0.28)	0.94	47530.6	11130.00
22	50548.20	114.87	0.959	0.30(0.28)	0.95	51524.6	12330.00
23	49994.10	121.55	0.932	0.30(0.29)	0.95	54867.7	12400.00
24	49098.27	130.30	0.909	0.30(0.29)	0.95	58236.5	12201.00
25	47713.31	139.76	0.885	0.30(0.29)	0.95	60690.7	12101.10
26	47074.63	143.85	0.874	0.30(0.29)	0.95	61539.7	10400.00
27	45308.44	152.06	0.853	0.30(0.29)	0.95	62854.9	12010.00
28	43846.70	158.09	0.837	0.30(0.29)	0.96	63168.6	10210.00
29	39708.49	184.64	0.775	0.30(0.29)	0.96	63901.3	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	25113.59	17.92	2.605	0.30(0.25)	0.84	3659.3	10300.00
2	25205.86	18.21	2.577	0.30(0.25)	0.84	3716.1	10230.00
3	25403.77	18.71	2.526	0.30(0.25)	0.84	3839.1	10380.00
4	25550.97	19.10	2.487	0.30(0.25)	0.84	3930.7	10400.00
5	26267.92	21.00	2.333	0.30(0.25)	0.84	4377.0	10320.00
6	27090.71	23.23	2.192	0.30(0.25)	0.85	4886.2	10360.00
7	27444.14	25.01	2.080	0.30(0.25)	0.85	5289.1	300.00
8	28143.85	26.04	2.034	0.30(0.25)	0.85	5624.1	10340.00
9	28652.33	27.35	1.976	0.30(0.25)	0.85	6048.4	10200.00
10	28887.82	27.97	1.949	0.30(0.25)	0.85	6244.3	10250.00
11	29915.38	30.64	1.843	0.30(0.25)	0.84	7096.2	50600.00
12	30241.97	31.67	1.816	0.30(0.25)	0.85	7512.7	10220.00
13	33894.62	43.06	1.539	0.30(0.26)	0.86	12121.0	10100.00
14	35173.38	47.25	1.450	0.30(0.26)	0.87	13804.2	150.00
15	37554.50	54.58	1.338	0.30(0.26)	0.88	16889.8	600.00
16	38537.34	59.03	1.287	0.30(0.27)	0.89	19034.7	31100.00
17	41187.05	69.93	1.209	0.30(0.27)	0.91	24260.5	40100.00
18	43335.29	76.84	1.162	0.30(0.27)	0.92	27623.6	11801.00
19	46157.99	85.91	1.101	0.30(0.28)	0.92	32653.9	11530.00

20	48380.64	94.17	1.054	0.30	(0.28)	0.93	38258.0	11910.00
21	50291.36	101.02	1.023	0.30	(0.28)	0.94	43143.9	11330.00
22	51044.84	107.25	0.994	0.30	(0.28)	0.94	47574.9	11130.00
23	50574.66	114.87	0.959	0.30	(0.28)	0.95	51568.9	12330.00
24	50019.54	121.55	0.932	0.30	(0.29)	0.95	54912.0	12400.00
25	49122.88	130.30	0.909	0.30	(0.29)	0.95	58280.8	12201.00
26	47737.02	139.76	0.885	0.30	(0.29)	0.95	60735.0	12101.10
27	47097.95	143.85	0.874	0.30	(0.29)	0.95	61584.0	10400.00
28	45330.97	152.06	0.853	0.30	(0.29)	0.95	62899.2	12010.00
29	43868.66	158.09	0.837	0.30	(0.29)	0.96	63212.9	10210.00
30	39728.16	184.64	0.775	0.30	(0.29)	0.96	63945.6	10100.00

TOTAL AREA (ACRES) = 63945.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 51044.84 Tc (MIN.) = 107.255
EFFECTIVE AREA (ACRES) = 47574.89 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63945.6
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) = 17.91
CHANNEL FLOW THRU SUBAREA (CFS) = 51044.84
FLOW VELOCITY (FEET/SEC.) = 16.61 FLOW DEPTH (FEET) = 17.91
TRAVEL TIME (MIN.) = 1.54 Tc (MIN.) = 108.79
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: 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	25113.59	19.81	2.416	0.30 (0.25)	0.84	3659.3	10300.00
2	25205.86	20.09	2.391	0.30 (0.25)	0.84	3716.1	10230.00
3	25403.77	20.59	2.360	0.30 (0.25)	0.84	3839.1	10380.00
4	25550.97	20.98	2.335	0.30 (0.25)	0.84	3930.7	10400.00
5	26267.92	22.86	2.215	0.30 (0.25)	0.84	4377.0	10320.00
6	27090.71	25.07	2.077	0.30 (0.25)	0.85	4886.2	10360.00
7	27744.14	26.84	1.999	0.30 (0.25)	0.85	5289.1	300.00
8	28143.85	27.86	1.954	0.30 (0.25)	0.85	5624.1	10340.00
9	28652.33	29.16	1.896	0.30 (0.25)	0.85	6048.4	10200.00
10	28887.82	29.77	1.869	0.30 (0.25)	0.85	6244.3	10250.00
11	29915.38	32.43	1.797	0.30 (0.25)	0.84	7096.2	50600.00
12	30241.97	33.45	1.771	0.30 (0.25)	0.85	7512.7	10220.00
13	33894.62	44.79	1.502	0.30 (0.26)	0.86	12121.0	10100.00
14	35173.38	48.96	1.413	0.30 (0.26)	0.87	13804.2	150.00
15	37554.50	56.26	1.319	0.30 (0.26)	0.88	16889.8	600.00
16	38537.34	60.69	1.271	0.30 (0.27)	0.89	19034.7	31100.00
17	41187.05	71.57	1.198	0.30 (0.27)	0.91	24260.5	40100.00
18	43335.29	78.45	1.151	0.30 (0.27)	0.92	27623.6	11801.00
19	46157.99	87.50	1.090	0.30 (0.28)	0.92	32653.9	11530.00
20	48380.64	95.73	1.047	0.30 (0.28)	0.93	38258.0	11910.00
21	50291.36	102.56	1.016	0.30 (0.28)	0.94	43143.9	11330.00
22	51044.84	108.79	0.987	0.30 (0.28)	0.94	47574.9	11130.00
23	50574.66	116.42	0.952	0.30 (0.28)	0.95	51568.9	12330.00
24	50019.54	123.10	0.928	0.30 (0.29)	0.95	54912.0	12400.00
25	49122.88	131.85	0.905	0.30 (0.29)	0.95	58280.8	12201.00
26	47737.02	141.33	0.881	0.30 (0.29)	0.95	60735.0	12101.10
27	47097.95	145.42	0.870	0.30 (0.29)	0.95	61584.0	10400.00
28	45330.97	153.65	0.849	0.30 (0.29)	0.95	62899.2	12010.00
29	43868.66	159.70	0.833	0.30 (0.29)	0.96	63212.9	10210.00
30	39728.16	186.29	0.773	0.30 (0.29)	0.96	63945.6	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	23619.38	14.36	3.006	0.30 (0.25)	0.85	2862.2	10520.00
2	25590.35	19.81	2.416	0.30 (0.25)	0.85	3934.0	10300.00
3	25684.12	20.09	2.391	0.30 (0.25)	0.85	3994.2	10230.00
4	25884.73	20.59	2.360	0.30 (0.25)	0.85	4123.3	10380.00
5	26033.98	20.98	2.335	0.30 (0.25)	0.85	4219.5	10400.00
6	26761.05	22.86	2.215	0.30 (0.25)	0.85	4688.7	10320.00
7	27595.66	25.07	2.077	0.30 (0.26)	0.85	5224.7	10360.00
8	28258.55	26.84	1.999	0.30 (0.26)	0.85	5649.0	300.00
9	28663.72	27.86	1.954	0.30 (0.26)	0.85	5996.3	10340.00
10	29179.19	29.16	1.896	0.30 (0.26)	0.85	6436.4	10200.00

11	29417.95	29.77	1.869	0.30	(0.25)	0.85	6639.7	10250.00
12	29682.89	30.45	1.848	0.30	(0.25)	0.85	6864.6	10500.00
13	30431.94	32.43	1.797	0.30	(0.25)	0.85	7499.8	50600.00
14	30749.68	33.45	1.771	0.30	(0.26)	0.85	7916.3	10220.00
15	34310.88	44.79	1.502	0.30	(0.26)	0.86	12524.6	10100.00
16	35559.40	48.96	1.413	0.30	(0.26)	0.87	14207.8	150.00
17	37908.52	56.26	1.319	0.30	(0.26)	0.88	17293.4	600.00
18	38875.13	60.69	1.271	0.30	(0.27)	0.89	19438.3	31100.00
19	41499.82	71.57	1.198	0.30	(0.27)	0.91	24664.1	40100.00
20	43632.23	78.45	1.151	0.30	(0.27)	0.92	28027.2	11801.00
21	46434.11	87.50	1.090	0.30	(0.28)	0.92	33057.5	11530.00
22	48642.09	95.73	1.047	0.30	(0.28)	0.93	38661.6	11910.00
23	50542.20	102.56	1.016	0.30	(0.28)	0.94	43547.5	11330.00
24	51286.02	108.79	0.987	0.30	(0.28)	0.94	47978.5	11130.00
25	50803.99	116.42	0.952	0.30	(0.28)	0.95	51972.5	12330.00
26	50240.57	123.10	0.928	0.30	(0.28)	0.95	55315.6	12400.00
27	49336.17	131.85	0.905	0.30	(0.29)	0.95	58684.4	12201.00
28	47941.93	141.33	0.881	0.30	(0.29)	0.95	61138.6	12101.10
29	47299.23	145.42	0.870	0.30	(0.29)	0.95	61987.6	10400.00
30	45524.98	153.65	0.849	0.30	(0.29)	0.95	63302.8	12010.00
31	44057.32	159.70	0.833	0.30	(0.29)	0.95	63616.5	10210.00
32	39896.42	186.29	0.773	0.30	(0.29)	0.96	64349.2	10100.00

TOTAL AREA (ACRES) = 64349.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 51286.02 Tc (MIN.) = 108.794
EFFECTIVE AREA (ACRES) = 47978.50 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA (ACRES) = 64349.2
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) = 14.22
CHANNEL FLOW THRU SUBAREA (CFS) = 51286.02
FLOW VELOCITY (FEET/SEC.) = 22.99 FLOW DEPTH (FEET) = 14.22
TRAVEL TIME (MIN.) = 0.15 Tc (MIN.) = 108.94
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 108.94
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 0.986
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL

"1 DWELLING/ACRE" B 48.80 0.30 0.800 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.800
SUBAREA AREA (ACRES) = 48.80 SUBAREA RUNOFF (CFS) = 32.79
EFFECTIVE AREA (ACRES) = 48027.30 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64398.0 PEAK FLOW RATE (CFS) = 51286.02
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506106b.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	73.36	17.31	0.30 (0.20)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =			36.9			

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23619.38	14.55	2.974	0.30 (0.25)	0.85	2911.0	10520.00
2	25590.35	19.99	2.398	0.30 (0.25)	0.85	3982.8	10300.00
3	25684.12	20.27	2.380	0.30 (0.25)	0.85	4043.0	10230.00
4	25884.73	20.77	2.348	0.30 (0.25)	0.85	4172.1	10380.00
5	26033.98	21.16	2.324	0.30 (0.25)	0.85	4268.3	10400.00
6	26761.05	23.05	2.204	0.30 (0.25)	0.85	4737.5	10320.00
7	27595.66	25.25	2.069	0.30 (0.25)	0.85	5273.5	10360.00
8	28258.55	27.02	1.991	0.30 (0.25)	0.85	5697.8	300.00
9	28663.72	28.04	1.946	0.30 (0.25)	0.85	6045.1	10340.00
10	29179.19	29.34	1.888	0.30 (0.25)	0.85	6485.2	10200.00
11	29417.95	29.95	1.861	0.30 (0.25)	0.85	6688.5	10250.00
12	29682.89	30.63	1.843	0.30 (0.25)	0.85	6913.4	10500.00
13	30431.94	32.61	1.793	0.30 (0.25)	0.85	7548.6	50600.00
14	30749.68	33.63	1.767	0.30 (0.25)	0.85	7965.1	10220.00
15	34310.88	44.96	1.498	0.30 (0.26)	0.86	12573.4	10100.00
16	35559.40	49.13	1.410	0.30 (0.26)	0.87	14256.6	150.00
17	37908.52	56.42	1.317	0.30 (0.26)	0.88	17342.2	600.00
18	38875.13	60.86	1.270	0.30 (0.27)	0.89	19487.1	31100.00
19	41499.82	71.72	1.197	0.30 (0.27)	0.91	24712.9	40100.00
20	43632.23	78.60	1.150	0.30 (0.27)	0.92	28076.0	11801.00
21	46434.11	87.65	1.089	0.30 (0.28)	0.92	33106.3	11530.00
22	48642.09	95.89	1.046	0.30 (0.28)	0.93	38710.4	11910.00

23 50542.20 102.71 1.015 0.30(0.28) 0.94 43596.3 11330.00
 24 51286.02 108.94 0.986 0.30(0.28) 0.94 48027.3 11130.00
 25 50803.99 116.57 0.952 0.30(0.28) 0.95 52021.3 12330.00
 26 50240.57 123.25 0.928 0.30(0.28) 0.95 55364.4 12400.00
 27 49336.17 132.01 0.905 0.30(0.29) 0.95 58733.2 12201.00
 28 47941.93 141.48 0.880 0.30(0.29) 0.95 61187.4 12101.10
 29 47299.23 145.58 0.870 0.30(0.29) 0.95 62036.4 10400.00
 30 45524.98 153.80 0.848 0.30(0.29) 0.95 63351.6 12010.00
 31 44057.32 159.86 0.832 0.30(0.29) 0.95 63665.3 10210.00
 32 39896.42 186.46 0.773 0.30(0.29) 0.96 64398.0 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23688.73	14.55	2.974	0.30(0.25)	0.85	2942.0	10520.00
2	24691.49	17.31	2.667	0.30(0.25)	0.85	3491.0	10600.00
3	25655.70	19.99	2.398	0.30(0.25)	0.85	4019.7	10300.00
4	25748.92	20.27	2.380	0.30(0.25)	0.85	4079.9	10230.00
5	25948.59	20.77	2.348	0.30(0.25)	0.85	4209.0	10380.00
6	26097.12	21.16	2.324	0.30(0.25)	0.85	4305.2	10400.00
7	26820.62	23.05	2.204	0.30(0.25)	0.85	4774.4	10320.00
8	27651.22	25.25	2.069	0.30(0.25)	0.85	5310.4	10360.00
9	28311.79	27.02	1.991	0.30(0.25)	0.85	5734.7	300.00
10	28715.62	28.04	1.946	0.30(0.25)	0.85	6082.0	10340.00
11	29229.38	29.34	1.888	0.30(0.25)	0.85	6522.1	10200.00
12	29467.33	29.95	1.861	0.30(0.25)	0.85	6725.4	10250.00
13	29731.74	30.63	1.843	0.30(0.25)	0.85	6950.3	10500.00
14	30479.28	32.61	1.793	0.30(0.25)	0.85	7585.5	50600.00
15	30796.25	33.63	1.767	0.30(0.25)	0.85	8002.0	10220.00
16	34349.47	44.96	1.498	0.30(0.26)	0.86	12610.3	10100.00
17	35595.35	49.13	1.410	0.30(0.26)	0.87	14293.5	150.00
18	37941.71	56.42	1.317	0.30(0.26)	0.88	17379.1	600.00
19	38906.94	60.86	1.270	0.30(0.27)	0.89	19524.0	31100.00
20	41529.44	71.72	1.197	0.30(0.27)	0.91	24749.8	40100.00
21	43660.46	78.60	1.150	0.30(0.27)	0.91	28112.9	11801.00
22	46460.52	87.65	1.089	0.30(0.28)	0.92	33143.2	11530.00
23	48667.23	95.89	1.046	0.30(0.28)	0.93	38747.3	11910.00
24	50566.41	102.71	1.015	0.30(0.28)	0.94	43633.2	11330.00
25	51309.38	108.94	0.986	0.30(0.28)	0.94	48064.2	11130.00
26	50826.32	116.57	0.952	0.30(0.28)	0.95	52058.2	12330.00
27	50262.18	123.25	0.928	0.30(0.28)	0.95	55401.3	12400.00
28	49357.10	132.01	0.905	0.30(0.29)	0.95	58770.1	12201.00
29	47962.13	141.48	0.880	0.30(0.29)	0.95	61224.3	12101.10
30	47319.12	145.58	0.870	0.30(0.29)	0.95	62073.3	10400.00
31	45544.23	153.80	0.848	0.30(0.29)	0.95	63388.5	12010.00
32	44076.11	159.86	0.832	0.30(0.29)	0.95	63702.2	10210.00
33	39913.43	186.46	0.773	0.30(0.29)	0.96	64434.9	10100.00

TOTAL AREA (ACRES) = 64434.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 51309.38 Tc (MIN.) = 108.944

EFFECTIVE AREA (ACRES) = 48064.20 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 64434.9
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 64434.9 TC (MIN.) = 108.94
 EFFECTIVE AREA (ACRES) = 48064.20 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.944
 PEAK FLOW RATE (CFS) = 51309.38

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23688.73	14.55	2.974	0.30(0.25)	0.85	2942.0	10520.00
2	24691.49	17.31	2.667	0.30(0.25)	0.85	3491.0	10600.00
3	25655.70	19.99	2.398	0.30(0.25)	0.85	4019.7	10300.00
4	25748.92	20.27	2.380	0.30(0.25)	0.85	4079.9	10230.00
5	25948.59	20.77	2.348	0.30(0.25)	0.85	4209.0	10380.00
6	26097.12	21.16	2.324	0.30(0.25)	0.85	4305.2	10400.00
7	26820.62	23.05	2.204	0.30(0.25)	0.85	4774.4	10320.00
8	27651.22	25.25	2.069	0.30(0.25)	0.85	5310.4	10360.00
9	28311.79	27.02	1.991	0.30(0.25)	0.85	5734.7	300.00
10	28715.62	28.04	1.946	0.30(0.25)	0.85	6082.0	10340.00
11	29229.38	29.34	1.888	0.30(0.25)	0.85	6522.1	10200.00
12	29467.33	29.95	1.861	0.30(0.25)	0.85	6725.4	10250.00
13	29731.74	30.63	1.843	0.30(0.25)	0.85	6950.3	10500.00
14	30479.28	32.61	1.793	0.30(0.25)	0.85	7585.5	50600.00
15	30796.25	33.63	1.767	0.30(0.25)	0.85	8002.0	10220.00
16	34349.47	44.96	1.498	0.30(0.26)	0.86	12610.3	10100.00
17	35595.35	49.13	1.410	0.30(0.26)	0.87	14293.5	150.00
18	37941.71	56.42	1.317	0.30(0.26)	0.88	17379.1	600.00
19	38906.94	60.86	1.270	0.30(0.27)	0.89	19524.0	31100.00
20	41529.44	71.72	1.197	0.30(0.27)	0.91	24749.8	40100.00
21	43660.46	78.60	1.150	0.30(0.27)	0.91	28112.9	11801.00
22	46460.52	87.65	1.089	0.30(0.28)	0.92	33143.2	11530.00
23	48667.23	95.89	1.046	0.30(0.28)	0.93	38747.3	11910.00
24	50566.41	102.71	1.015	0.30(0.28)	0.94	43633.2	11330.00
25	51309.38	108.94	0.986	0.30(0.28)	0.94	48064.2	11130.00
26	50826.32	116.57	0.952	0.30(0.28)	0.95	52058.2	12330.00
27	50262.18	123.25	0.928	0.30(0.28)	0.95	55401.3	12400.00
28	49357.10	132.01	0.905	0.30(0.29)	0.95	58770.1	12201.00
29	47962.13	141.48	0.880	0.30(0.29)	0.95	61224.3	12101.10
30	47319.12	145.58	0.870	0.30(0.29)	0.95	62073.3	10400.00
31	45544.23	153.80	0.848	0.30(0.29)	0.95	63388.5	12010.00
32	44076.11	159.86	0.832	0.30(0.29)	0.95	63702.2	10210.00
33	39913.43	186.46	0.773	0.30(0.29)	0.96	64434.9	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:

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Santa Ana, CA 92707

***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S38- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV38.DAT
TIME/DATE OF STUDY: 12:23 06/19/2019

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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; 5.750
- 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 <<<<<

=====

PEAK FLOWRATE TABLE FILE NAME: RI00EV37.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24691.49	17.31	0.30 (0.25)	0.85	3491.0	10600.00
2	30796.25	33.63	0.30 (0.25)	0.85	8002.0	10220.00
3	34349.47	44.96	0.30 (0.26)	0.86	12610.3	10100.00
4	35595.35	49.13	0.30 (0.26)	0.87	14293.5	150.00
5	37941.71	56.42	0.30 (0.26)	0.88	17379.1	600.00
6	38906.94	60.86	0.30 (0.27)	0.89	19524.0	31100.00
7	41529.44	71.72	0.30 (0.27)	0.91	24749.8	40100.00
8	43660.46	78.60	0.30 (0.27)	0.91	28112.9	11801.00
9	46460.52	87.65	0.30 (0.28)	0.92	33143.2	11530.00
10	48667.23	95.89	0.30 (0.28)	0.93	38747.3	11910.00
11	50566.41	102.71	0.30 (0.28)	0.94	43633.2	11330.00
12	51309.38	108.94	0.30 (0.28)	0.94	48064.2	11130.00
13	50826.32	116.57	0.30 (0.28)	0.95	52058.2	12330.00
14	50262.18	123.25	0.30 (0.28)	0.95	55401.3	12400.00
15	49357.10	132.01	0.30 (0.29)	0.95	58770.1	12201.00
16	47962.13	141.48	0.30 (0.29)	0.95	61224.3	12101.10
17	47319.12	145.58	0.30 (0.29)	0.95	62073.3	10400.00
18	45544.23	153.80	0.30 (0.29)	0.95	63388.5	12010.00
19	44076.11	159.86	0.30 (0.29)	0.95	63702.2	10210.00
20	39913.43	186.46	0.30 (0.29)	0.96	64434.9	10100.00
TOTAL AREA (ACRES) =						64434.9

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	24691.49	17.31	0.30 (0.25)	0.85	3491.0	10600.00
2	30796.25	33.63	0.30 (0.25)	0.85	8002.0	10220.00
3	34349.47	44.96	0.30 (0.26)	0.86	12610.3	10100.00
4	35595.35	49.13	0.30 (0.26)	0.87	14293.5	150.00
5	37941.71	56.42	0.30 (0.26)	0.88	17379.1	600.00
6	38906.94	60.86	0.30 (0.27)	0.89	19524.0	31100.00
7	41529.44	71.72	0.30 (0.27)	0.91	24749.8	40100.00
8	43660.46	78.60	0.30 (0.27)	0.91	28112.9	11801.00
9	46460.52	87.65	0.30 (0.28)	0.92	33143.2	11530.00
10	48667.23	95.89	0.30 (0.28)	0.93	38747.3	11910.00
11	50566.41	102.71	0.30 (0.28)	0.94	43633.2	11330.00
12	51309.38	108.94	0.30 (0.28)	0.94	48064.2	11130.00
13	50826.32	116.57	0.30 (0.28)	0.95	52058.2	12330.00

14 50262.18 123.25 0.30(0.28) 0.95 55401.3 12400.00
 15 49357.10 132.01 0.30(0.29) 0.95 58770.1 12201.00
 16 47962.13 141.48 0.30(0.29) 0.95 61224.3 12101.10
 17 47319.12 145.58 0.30(0.29) 0.95 62073.3 10400.00
 18 45544.23 153.80 0.30(0.29) 0.95 63388.5 12010.00
 19 44076.11 159.86 0.30(0.29) 0.95 63702.2 10210.00
 20 39913.43 186.46 0.30(0.29) 0.96 64434.9 10100.00
 TOTAL AREA (ACRES) = 64434.9

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) = 18.84

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.979

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) = 51319.06

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.53

AVERAGE FLOW DEPTH(FEET) = 18.84 TRAVEL TIME(MIN.) = 0.99

Tc(MIN.) = 109.94

SUBAREA AREA(ACRES) = 31.44 SUBAREA RUNOFF(CFS) = 19.36

EFFECTIVE AREA(ACRES) = 48095.64 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 64466.4 PEAK FLOW RATE(CFS) = 51309.38

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) = 18.84

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 18.84 FLOW VELOCITY(FEET/SEC.) = 15.53

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.) = 109.94

RAINFALL INTENSITY(INCH/HR) = 0.98

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 48095.64

TOTAL STREAM AREA(ACRES) = 64466.36

PEAK FLOW RATE(CFS) AT CONFLUENCE = 51309.38

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	56	12.29

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF(CFS) = 15.29

TOTAL AREA(ACRES) = 5.58 PEAK FLOW RATE(CFS) = 15.29

FLOW PROCESS FROM NODE 13811.00 TO NODE 13811.50 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 586.02 DOWNSTREAM(FEET) = 437.69
 CHANNEL LENGTH THRU SUBAREA(FEET) = 696.28 CHANNEL SLOPE = 0.2130
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 0.49

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 3.044

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.79	0.30	1.000	-

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33.60

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.45

AVERAGE FLOW DEPTH(FEET) = 0.48 TRAVEL TIME(MIN.) = 1.80

Tc(MIN.) = 14.09

SUBAREA AREA(ACRES) = 14.79 SUBAREA RUNOFF(CFS) = 36.53

EFFECTIVE AREA(ACRES) = 20.37 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 20.4 PEAK FLOW RATE(CFS) = 50.31

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 0.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.60 FLOW VELOCITY(FEET/SEC.) = 7.49

LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13811.50 = 1344.82 FEET.

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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.

*****
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

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.27 FLOW VELOCITY(FEET/SEC.) = 8.34
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31
-----
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00
FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 27.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 22.94
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 133.02
PIPE TRAVEL TIME(MIN.) = 1.75 Tc(MIN.) = 20.69
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 20.69
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 2.350
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp      Ap      SCS
LAND USE           GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -       83.64    0.30    0.570    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570
SUBAREA AREA(ACRES) = 83.64 SUBAREA RUNOFF(CFS) = 164.01
EFFECTIVE AREA(ACRES) = 150.29 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 150.3 PEAK FLOW RATE(CFS) = 288.03

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 20.69
RAINFALL INTENSITY(INCH/HR) = 2.35
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.73
EFFECTIVE STREAM AREA(ACRES) = 150.29
TOTAL STREAM AREA(ACRES) = 150.29

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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	24691.49	18.53	2.540	0.30(0.25)	0.85	3522.5	10600.00
1	30796.25	34.78	1.735	0.30(0.25)	0.85	8033.4	10220.00
1	34349.47	46.07	1.472	0.30(0.26)	0.86	12641.8	10100.00
1	35595.35	50.23	1.386	0.30(0.26)	0.87	14324.9	150.00
1	37941.71	57.51	1.303	0.30(0.26)	0.88	17410.5	600.00
1	38906.94	61.93	1.261	0.30(0.27)	0.89	19555.5	31100.00
1	41529.44	72.78	1.187	0.30(0.27)	0.91	24781.3	40100.00
1	43660.46	79.65	1.140	0.30(0.27)	0.92	28144.4	11801.00
1	46460.52	88.67	1.079	0.30(0.28)	0.92	33174.6	11530.00
1	48667.23	96.90	1.039	0.30(0.28)	0.93	38778.7	11910.00
1	50566.41	103.71	1.007	0.30(0.28)	0.94	43664.6	11330.00
1	51309.38	109.94	0.979	0.30(0.28)	0.94	48095.6	11130.00
1	50826.32	117.56	0.944	0.30(0.28)	0.95	52089.6	12330.00
1	50262.18	124.25	0.922	0.30(0.28)	0.95	55432.8	12400.00
1	49357.10	133.01	0.899	0.30(0.29)	0.95	58801.6	12201.00
1	47962.13	142.49	0.875	0.30(0.29)	0.95	61255.7	12101.10
1	47319.12	146.59	0.864	0.30(0.29)	0.95	62104.8	10400.00
1	45544.23	154.83	0.842	0.30(0.29)	0.95	63419.9	12010.00
1	44076.11	160.89	0.827	0.30(0.29)	0.95	63733.6	10210.00
1	39913.43	187.52	0.768	0.30(0.29)	0.96	64466.4	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	24972.55	18.53	2.540	0.30(0.25)	0.84	3657.1	10600.00
2	25789.40	20.69	2.350	0.30(0.25)	0.84	4271.2	13810.00
3	31001.10	34.78	1.735	0.30(0.25)	0.85	8183.7	10220.00
4	34518.82	46.07	1.472	0.30(0.26)	0.86	12792.0	10100.00
5	35753.07	50.23	1.386	0.30(0.26)	0.87	14475.2	150.00
6	38088.12	57.51	1.303	0.30(0.26)	0.88	17560.8	600.00
7	39047.69	61.93	1.261	0.30(0.27)	0.89	19705.8	31100.00
8	41660.22	72.78	1.187	0.30(0.27)	0.91	24931.6	40100.00
9	43784.93	79.65	1.140	0.30(0.27)	0.91	28294.7	11801.00
10	46576.68	88.67	1.079	0.30(0.28)	0.92	33324.9	11530.00
11	48777.91	96.90	1.039	0.30(0.28)	0.93	38929.0	11910.00
12	50672.88	103.71	1.007	0.30(0.28)	0.94	43814.9	11330.00
13	51412.00	109.94	0.979	0.30(0.28)	0.94	48245.9	11130.00
14	50924.23	117.56	0.944	0.30(0.28)	0.95	52239.9	12330.00
15	50357.09	124.25	0.922	0.30(0.28)	0.95	55583.1	12400.00
16	49448.93	133.01	0.899	0.30(0.29)	0.95	58951.9	12201.00
17	48050.62	142.49	0.875	0.30(0.29)	0.95	61406.0	12101.10
18	47406.18	146.59	0.864	0.30(0.29)	0.95	62255.1	10400.00
19	45628.39	154.83	0.842	0.30(0.29)	0.95	63570.2	12010.00
20	44158.13	160.89	0.827	0.30(0.29)	0.95	63883.9	10210.00
21	39987.57	187.52	0.768	0.30(0.29)	0.95	64616.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 51412.00 Tc(MIN.) = 109.94
EFFECTIVE AREA(ACRES) = 48245.93 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 64616.6

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) = 18.96

* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.973

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

USER-DEFINED - 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) = 51422.92

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.43

AVERAGE FLOW DEPTH(FEET) = 18.96 TRAVEL TIME(MIN.) = 1.36

Tc(MIN.) = 111.30

SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 21.84

EFFECTIVE AREA(ACRES) = 48277.53 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 64648.2 PEAK FLOW RATE(CFS) = 51412.00

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) = 18.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 18.96 FLOW VELOCITY(FEET/SEC.) = 15.43

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.) = 111.30

RAINFALL INTENSITY(INCH/HR) = 0.97

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 48277.53

TOTAL STREAM AREA(ACRES) = 64648.25

PEAK FLOW RATE(CFS) AT CONFLUENCE = 51412.00

FLOW PROCESS FROM NODE 13830.00 TO NODE 13831.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH (FEET) = 744.71
ELEVATION DATA: UPSTREAM (FEET) = 1100.95 DOWNSTREAM (FEET) = 959.21

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 13.858
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.083
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	56	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

FLOW PROCESS FROM NODE 13831.00 TO NODE 13832.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 959.21 DOWNSTREAM (FEET) = 832.83
CHANNEL LENGTH THRU SUBAREA (FEET) = 1076.71 CHANNEL SLOPE = 0.1174
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 0.74
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.711
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 48.16
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.06
AVERAGE FLOW DEPTH (FEET) = 0.70 TRAVEL TIME (MIN.) = 2.96
Tc (MIN.) = 16.82
SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 70.68
EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 81.66
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.95 FLOW VELOCITY (FEET/SEC.) = 7.23
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13832.00 = 1821.42 FEET.

FLOW PROCESS FROM NODE 13832.00 TO NODE 13833.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 832.83 DOWNSTREAM (FEET) = 572.49
CHANNEL LENGTH THRU SUBAREA (FEET) = 1883.58 CHANNEL SLOPE = 0.1382
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 1.11
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.361
SUBAREA LOSS RATE DATA (AMC II):

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

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.18 FLOW VELOCITY (FEET/SEC.) = 8.90
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13833.00 = 3705.00 FEET.

FLOW PROCESS FROM NODE 13833.00 TO NODE 13834.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 572.49 DOWNSTREAM (FEET) = 471.65
CHANNEL LENGTH THRU SUBAREA (FEET) = 943.78 CHANNEL SLOPE = 0.1068
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 1.40
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.246
SUBAREA LOSS RATE DATA (AMC II):

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

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.48 FLOW VELOCITY (FEET/SEC.) = 8.91
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 471.65 DOWNSTREAM (FEET) = 347.06
CHANNEL LENGTH THRU SUBAREA (FEET) = 1647.45 CHANNEL SLOPE = 0.0756
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 2.02

* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 2.058

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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	24972.55	20.20	2.380	0.30 (0.25)	0.84	3688.7	10600.00
1	25789.40	22.34	2.245	0.30 (0.25)	0.84	4302.8	13810.00
1	31001.10	36.35	1.695	0.30 (0.25)	0.85	8215.3	10220.00
1	34518.82	47.59	1.440	0.30 (0.26)	0.86	12823.6	10100.00
1	35753.07	51.74	1.369	0.30 (0.26)	0.87	14506.8	150.00
1	38088.12	58.99	1.286	0.30 (0.26)	0.88	17592.4	600.00
1	39047.69	63.40	1.251	0.30 (0.27)	0.89	19737.4	31100.00
1	41660.22	74.22	1.177	0.30 (0.27)	0.91	24963.2	40100.00
1	43784.93	81.07	1.131	0.30 (0.27)	0.91	28326.3	11801.00
1	46576.68	90.07	1.070	0.30 (0.28)	0.92	33356.5	11530.00
1	48777.91	98.28	1.032	0.30 (0.28)	0.93	38960.6	11910.00
1	50672.88	105.08	1.001	0.30 (0.28)	0.94	43846.5	11330.00
1	51412.00	111.30	0.973	0.30 (0.28)	0.94	48277.5	11130.00
1	50924.23	118.93	0.938	0.30 (0.28)	0.95	52271.5	12330.00

1	50357.09	125.62	0.918	0.30 (0.28)	0.95	55614.7	12400.00
1	49448.93	134.39	0.896	0.30 (0.29)	0.95	58983.5	12201.00
1	48050.62	143.88	0.871	0.30 (0.29)	0.95	61437.6	12101.10
1	47406.18	147.99	0.860	0.30 (0.29)	0.95	62286.7	10400.00
1	45628.39	156.24	0.839	0.30 (0.29)	0.95	63601.8	12010.00
1	44158.13	162.32	0.823	0.30 (0.29)	0.95	63915.5	10210.00
1	39987.57	188.98	0.767	0.30 (0.29)	0.95	64648.2	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	25603.06	20.20	2.380	0.30 (0.26)	0.85	4023.9	10600.00
2	26441.71	22.34	2.245	0.30 (0.26)	0.85	4673.5	13810.00
3	30903.63	34.08	1.752	0.30 (0.26)	0.85	8148.9	13830.00
4	31715.86	36.35	1.695	0.30 (0.26)	0.85	8780.8	10220.00
5	35104.04	47.59	1.440	0.30 (0.26)	0.86	13389.1	10100.00
6	36302.14	51.74	1.369	0.30 (0.26)	0.87	15072.3	150.00
7	38594.77	58.99	1.286	0.30 (0.26)	0.88	18157.9	600.00
8	39536.64	63.40	1.251	0.30 (0.27)	0.89	20302.9	31100.00
9	42111.71	74.22	1.177	0.30 (0.27)	0.91	25528.7	40100.00
10	44212.73	81.07	1.131	0.30 (0.27)	0.91	28891.8	11801.00
11	46973.40	90.07	1.070	0.30 (0.28)	0.92	33922.0	11530.00
12	49155.57	98.28	1.032	0.30 (0.28)	0.93	39526.1	11910.00
13	51034.73	105.08	1.001	0.30 (0.28)	0.94	44412.0	11330.00
14	51759.39	111.30	0.973	0.30 (0.28)	0.94	48843.0	11130.00
15	51253.89	118.93	0.938	0.30 (0.28)	0.95	52837.0	12330.00
16	50676.83	125.62	0.918	0.30 (0.28)	0.95	56180.2	12400.00
17	49757.07	134.39	0.896	0.30 (0.29)	0.95	59549.0	12201.00
18	48346.20	143.88	0.871	0.30 (0.29)	0.95	62003.1	12101.10
19	47696.32	147.99	0.860	0.30 (0.29)	0.95	62852.2	10400.00
20	45907.61	156.24	0.839	0.30 (0.29)	0.95	64167.3	12010.00
21	44429.31	162.32	0.823	0.30 (0.29)	0.95	64481.0	10210.00
22	40230.14	188.98	0.767	0.30 (0.29)	0.95	65213.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 51759.39 Tc (MIN.) = 111.30
 EFFECTIVE AREA (ACRES) = 48843.03 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65213.7
 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) = 17.32
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 0.970
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 6.61 0.30 0.975 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.975
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 51761.41
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 17.65
AVERAGE FLOW DEPTH(FEET) = 17.32 TRAVEL TIME(MIN.) = 0.62
Tc(MIN.) = 111.92
SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 4.03
EFFECTIVE AREA(ACRES) = 48849.64 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65220.4 PEAK FLOW RATE(CFS) = 51759.39
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) = 17.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 17.32 FLOW VELOCITY(FEET/SEC.) = 17.65
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.) = 111.92
RAINFALL INTENSITY(INCH/HR) = 0.97
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48849.64
TOTAL STREAM AREA(ACRES) = 65220.36
PEAK FLOW RATE(CFS) AT CONFLUENCE = 51759.39

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 56 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 **

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STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25603.06	20.96	2.333	0.30(0.26)	0.85	4030.5	10600.00
1	26441.71	23.09	2.198	0.30(0.26)	0.85	4680.1	13810.00
1	30903.63	34.80	1.734	0.30(0.26)	0.85	8155.5	13830.00
1	31715.86	37.06	1.676	0.30(0.26)	0.85	8787.4	10220.00
1	35104.04	48.28	1.425	0.30(0.26)	0.86	13395.8	10100.00
1	36302.14	52.42	1.361	0.30(0.26)	0.87	15078.9	150.00
1	38594.77	59.66	1.278	0.30(0.26)	0.88	18164.5	600.00

1	39536.64	64.07	1.246	0.30(0.27)	0.89	20309.5	31100.00
1	42111.71	74.88	1.173	0.30(0.27)	0.91	25535.3	40100.00
1	44212.73	81.72	1.126	0.30(0.27)	0.91	28898.4	11801.00
1	46973.40	90.71	1.067	0.30(0.28)	0.92	33928.6	11530.00
1	49155.57	98.91	1.029	0.30(0.28)	0.93	39532.7	11910.00
1	51034.73	105.70	0.998	0.30(0.28)	0.94	44418.6	11330.00
1	51759.39	111.92	0.970	0.30(0.28)	0.94	48849.6	11130.00
1	51253.89	119.55	0.935	0.30(0.28)	0.95	52843.6	12330.00
1	50676.83	126.24	0.917	0.30(0.28)	0.95	56186.8	12400.00
1	49757.07	135.01	0.894	0.30(0.29)	0.95	59555.6	12201.00
1	48346.20	144.51	0.869	0.30(0.29)	0.95	62009.7	12101.10
1	47696.32	148.62	0.859	0.30(0.29)	0.95	62858.8	10400.00
1	45907.61	156.88	0.837	0.30(0.29)	0.95	64173.9	12010.00
1	44429.31	162.96	0.821	0.30(0.29)	0.95	64487.6	10210.00
1	40230.14	189.65	0.766	0.30(0.29)	0.95	65220.4	10100.00
2	208.37	24.07	2.136	0.30(0.26)	0.86	123.2	13850.00

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

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** PEAK FLOW RATE TABLE **

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STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25803.42	20.96	2.333	0.30(0.26)	0.85	4137.8	10600.00
2	26648.16	23.09	2.198	0.30(0.26)	0.85	4798.3	13810.00
3	27023.63	24.07	2.136	0.30(0.26)	0.85	5094.3	13850.00
4	31067.38	34.80	1.734	0.30(0.26)	0.85	8278.8	13830.00
5	31873.20	37.06	1.676	0.30(0.26)	0.85	8910.6	10220.00
6	35233.55	48.28	1.425	0.30(0.26)	0.86	13519.0	10100.00
7	36424.53	52.42	1.361	0.30(0.26)	0.87	15202.1	150.00
8	38707.93	59.66	1.278	0.30(0.26)	0.88	18287.8	600.00
9	39646.30	64.07	1.246	0.30(0.27)	0.89	20432.7	31100.00
10	42213.21	74.88	1.173	0.30(0.27)	0.91	25658.5	40100.00
11	44309.07	81.72	1.126	0.30(0.27)	0.91	29021.6	11801.00
12	47063.14	90.71	1.067	0.30(0.28)	0.92	34051.8	11530.00
13	49241.16	98.91	1.029	0.30(0.28)	0.93	39656.0	11910.00
14	51116.88	105.70	0.998	0.30(0.28)	0.94	44541.9	11330.00
15	51838.39	111.92	0.970	0.30(0.28)	0.94	48972.9	11130.00
16	51329.03	119.55	0.935	0.30(0.28)	0.95	52966.8	12330.00
17	50749.93	126.24	0.917	0.30(0.28)	0.95	56310.0	12400.00
18	49827.64	135.01	0.894	0.30(0.29)	0.95	59678.8	12201.00
19	48414.03	144.51	0.869	0.30(0.29)	0.95	62132.9	12101.10
20	47762.97	148.62	0.859	0.30(0.29)	0.95	62982.0	10400.00
21	45971.88	156.88	0.837	0.30(0.29)	0.95	64297.1	12010.00
22	44491.83	162.96	0.821	0.30(0.29)	0.95	64610.8	10210.00
23	40286.53	189.65	0.766	0.30(0.29)	0.95	65343.6	10100.00

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 51838.39 Tc(MIN.) = 111.92
EFFECTIVE AREA(ACRES) = 48972.86 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65343.6
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<<<<

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>>>>TRAVELTIME THRU SUBAREA<<<<

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=====
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) = 12.64
* 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
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) = 51839.86
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 27.25
AVERAGE FLOW DEPTH(FEET) = 12.64 TRAVEL TIME(MIN.) = 0.37
Tc(MIN.) = 112.29
SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 2.94
EFFECTIVE AREA(ACRES) = 48977.75 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65348.5 PEAK FLOW RATE(CFS) = 51838.39
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) = 12.64

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 12.64 FLOW VELOCITY(FEET/SEC.) = 27.25
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<<<<

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=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 112.29
RAINFALL INTENSITY(INCH/HR) = 0.97
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48977.75
TOTAL STREAM AREA(ACRES) = 65348.46
PEAK FLOW RATE(CFS) AT CONFLUENCE = 51838.39

```

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

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* 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   56  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	25803.42	21.42	2.304	0.30 (0.26)	0.85	4142.7	10600.00
1	26648.16	23.55	2.170	0.30 (0.26)	0.85	4803.2	13810.00
1	27023.63	24.53	2.108	0.30 (0.26)	0.85	5099.2	13850.00
1	31067.38	35.23	1.723	0.30 (0.26)	0.85	8283.6	13830.00
1	31873.20	37.49	1.665	0.30 (0.26)	0.85	8915.5	10220.00
1	35233.55	48.70	1.417	0.30 (0.26)	0.86	13523.9	10100.00
1	36424.53	52.84	1.356	0.30 (0.26)	0.87	15207.0	150.00
1	38707.93	60.07	1.274	0.30 (0.26)	0.88	18292.7	600.00
1	39646.30	64.47	1.244	0.30 (0.27)	0.89	20437.6	31100.00
1	42213.21	75.28	1.170	0.30 (0.27)	0.91	25663.4	40100.00
1	44309.07	82.11	1.124	0.30 (0.27)	0.91	29026.5	11801.00
1	47063.14	91.09	1.065	0.30 (0.28)	0.92	34056.7	11530.00
1	49241.16	99.28	1.028	0.30 (0.28)	0.93	39660.8	11910.00
1	51116.88	106.08	0.997	0.30 (0.28)	0.94	44546.8	11330.00
1	51838.39	112.29	0.968	0.30 (0.28)	0.94	48977.7	11130.00
1	51329.03	119.92	0.933	0.30 (0.28)	0.95	52971.7	12330.00
1	50749.93	126.62	0.916	0.30 (0.28)	0.95	56314.9	12400.00
1	49827.64	135.39	0.893	0.30 (0.29)	0.95	59683.7	12201.00
1	48414.03	144.89	0.868	0.30 (0.29)	0.95	62137.8	12101.10
1	47762.97	149.00	0.858	0.30 (0.29)	0.95	62986.9	10400.00
1	45971.88	157.27	0.836	0.30 (0.29)	0.95	64302.0	12010.00
1	44491.83	163.35	0.820	0.30 (0.29)	0.95	64615.7	10210.00
1	40286.53	190.05	0.766	0.30 (0.29)	0.95	65348.5	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	26071.84	21.42	2.304	0.30 (0.26)	0.85	4289.3	10600.00

2	26923.80	23.55	2.170	0.30 (0.26)	0.85	4964.3	13810.00
3	27301.40	24.53	2.108	0.30 (0.26)	0.85	5267.0	13850.00
4	28690.99	28.17	1.938	0.30 (0.26)	0.85	6377.0	13870.00
5	31319.68	35.23	1.723	0.30 (0.26)	0.86	8476.5	13830.00
6	32115.49	37.49	1.665	0.30 (0.26)	0.86	9108.3	10220.00
7	35432.67	48.70	1.417	0.30 (0.26)	0.86	13716.7	10100.00
8	36613.20	52.84	1.356	0.30 (0.26)	0.87	15399.8	150.00
9	38882.23	60.07	1.274	0.30 (0.26)	0.88	18485.5	600.00
10	39815.40	64.47	1.244	0.30 (0.27)	0.89	20630.4	31100.00
11	42369.57	75.28	1.170	0.30 (0.27)	0.91	25856.2	40100.00
12	44457.37	82.11	1.124	0.30 (0.27)	0.91	29219.3	11801.00
13	47201.25	91.09	1.065	0.30 (0.28)	0.92	34249.6	11530.00
14	49372.78	99.28	1.028	0.30 (0.28)	0.93	39853.7	11910.00
15	51243.11	106.08	0.997	0.30 (0.28)	0.94	44739.6	11330.00
16	51959.70	112.29	0.968	0.30 (0.28)	0.94	49170.6	11130.00
17	51444.29	119.92	0.933	0.30 (0.28)	0.95	53164.5	12330.00
18	50862.15	126.62	0.916	0.30 (0.28)	0.95	56507.7	12400.00
19	49935.90	135.39	0.893	0.30 (0.29)	0.95	59876.5	12201.00
20	48518.00	144.89	0.868	0.30 (0.29)	0.95	62330.6	12101.10
21	47865.09	149.00	0.858	0.30 (0.29)	0.95	63179.7	10400.00
22	46070.27	157.27	0.836	0.30 (0.29)	0.95	64494.9	12010.00
23	44587.47	163.35	0.820	0.30 (0.29)	0.95	64808.6	10210.00
24	40372.67	190.05	0.766	0.30 (0.29)	0.95	65541.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 51959.70 Tc (MIN.) = 112.29
 EFFECTIVE AREA (ACRES) = 49170.57 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65541.3
 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) = 27.38
 * 100 YEAR RAINFALL INTENSITY (INCH/HR) = 0.958
 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) = 51998.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 9.06
 AVERAGE FLOW DEPTH (FEET) = 27.38 TRAVEL TIME (MIN.) = 2.19
 Tc (MIN.) = 114.48
 SUBAREA AREA (ACRES) = 117.69 SUBAREA RUNOFF (CFS) = 78.49
 EFFECTIVE AREA (ACRES) = 49288.27 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65659.0 PEAK FLOW RATE (CFS) = 51959.70
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 100.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 27.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 27.37 FLOW VELOCITY (FEET/SEC.) = 9.06
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.) = 114.48
RAINFALL INTENSITY (INCH/HR) = 0.96
AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA (ACRES) = 49288.27
TOTAL STREAM AREA (ACRES) = 65658.98
PEAK FLOW RATE (CFS) AT CONFLUENCE = 51959.70

FLOW PROCESS FROM NODE 13889.00 TO NODE 13890.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH (FEET) = 447.89
ELEVATION DATA: UPSTREAM (FEET) = 564.89 DOWNSTREAM (FEET) = 421.92

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)] ** 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 6.976
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.951
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
PUBLIC PARK - 3.03 0.30 0.960 56 6.98
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.960
SUBAREA RUNOFF (CFS) = 12.71
TOTAL AREA (ACRES) = 3.03 PEAK FLOW RATE (CFS) = 12.71

FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 421.92 DOWNSTREAM (FEET) = 392.64
CHANNEL LENGTH THRU SUBAREA (FEET) = 435.33 CHANNEL SLOPE = 0.0673
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.49
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 4.410
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 8.12 0.30 0.986 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.986
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 27.80
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.43
AVERAGE FLOW DEPTH (FEET) = 0.47 TRAVEL TIME (MIN.) = 1.34
Tc (MIN.) = 8.31

SUBAREA AREA (ACRES) = 8.12 SUBAREA RUNOFF (CFS) = 30.07
EFFECTIVE AREA (ACRES) = 11.15 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA (ACRES) = 11.1 PEAK FLOW RATE (CFS) = 41.31
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.59 FLOW VELOCITY (FEET/SEC.) = 6.26
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 392.64 DOWNSTREAM (FEET) = 324.46
CHANNEL LENGTH THRU SUBAREA (FEET) = 662.40 CHANNEL SLOPE = 0.1029
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.68
* 100 YEAR RAINFALL INTENSITY (INCH/HR) = 3.868

SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 12.50 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 61.43
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.24
AVERAGE FLOW DEPTH (FEET) = 0.66 TRAVEL TIME (MIN.) = 1.34
Tc (MIN.) = 9.65
SUBAREA AREA (ACRES) = 12.50 SUBAREA RUNOFF (CFS) = 40.14
EFFECTIVE AREA (ACRES) = 23.65 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA (ACRES) = 23.6 PEAK FLOW RATE (CFS) = 76.00
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.74 FLOW VELOCITY (FEET/SEC.) = 8.88
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 56

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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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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	26071.84	24.06	2.137	0.30(0.26)	0.85	4407.0	10600.00
1	26923.80	26.16	2.027	0.30(0.26)	0.85	5082.0	13810.00
1	27301.40	27.13	1.984	0.30(0.26)	0.85	5384.7	13850.00
1	28690.99	30.74	1.838	0.30(0.26)	0.85	6494.7	13870.00
1	31319.68	37.74	1.659	0.30(0.26)	0.85	8594.2	13830.00
1	32115.49	39.98	1.602	0.30(0.26)	0.85	9226.0	10220.00
1	35432.67	51.13	1.376	0.30(0.26)	0.86	13834.4	10100.00
1	36613.20	55.24	1.329	0.30(0.26)	0.87	15517.5	150.00
1	38882.23	62.43	1.257	0.30(0.26)	0.88	18603.2	600.00
1	39815.40	66.82	1.228	0.30(0.27)	0.89	20748.1	31100.00
1	42369.57	77.59	1.154	0.30(0.27)	0.91	25973.9	40100.00
1	44457.37	84.39	1.108	0.30(0.27)	0.91	29337.0	11801.00
1	47201.25	93.34	1.055	0.30(0.28)	0.92	34367.3	11530.00
1	49372.78	101.50	1.017	0.30(0.28)	0.93	39971.4	11910.00
1	51243.11	108.27	0.987	0.30(0.28)	0.94	44857.3	11330.00
1	51959.70	114.48	0.958	0.30(0.28)	0.94	49288.3	11130.00
1	51444.29	122.12	0.927	0.30(0.28)	0.95	53282.2	12330.00
1	50862.15	128.82	0.910	0.30(0.28)	0.95	56625.4	12400.00
1	49935.90	137.60	0.887	0.30(0.29)	0.95	59994.2	12201.00
1	48518.00	147.12	0.862	0.30(0.29)	0.95	62448.3	12101.10
1	47865.09	151.24	0.852	0.30(0.29)	0.95	63297.4	10400.00
1	46070.27	159.53	0.830	0.30(0.29)	0.95	64612.6	12010.00
1	44587.47	165.63	0.814	0.30(0.29)	0.95	64926.3	10210.00
1	40372.67	192.39	0.763	0.30(0.29)	0.95	65659.0	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	23060.04	15.14	2.879	0.30(0.26)	0.85	2853.5	13889.00
2	26204.84	24.06	2.137	0.30(0.26)	0.85	4486.6	10600.00
3	27048.87	26.16	2.027	0.30(0.26)	0.85	5161.6	13810.00
4	27423.40	27.13	1.984	0.30(0.26)	0.85	5464.3	13850.00
5	28802.54	30.74	1.838	0.30(0.26)	0.85	6574.3	13870.00
6	31418.39	37.74	1.659	0.30(0.26)	0.85	8673.8	13830.00
7	32210.10	39.98	1.602	0.30(0.26)	0.85	9305.7	10220.00
8	35511.11	51.13	1.376	0.30(0.26)	0.86	13914.0	10100.00
9	36688.26	55.24	1.329	0.30(0.26)	0.87	15597.2	150.00
10	38952.18	62.43	1.257	0.30(0.26)	0.88	18682.8	600.00
11	39883.21	66.82	1.228	0.30(0.27)	0.89	20827.7	31100.00
12	42432.13	77.59	1.154	0.30(0.27)	0.91	26053.5	40100.00
13	44516.62	84.39	1.108	0.30(0.27)	0.91	29416.6	11801.00
14	47256.67	93.34	1.055	0.30(0.28)	0.92	34446.9	11530.00
15	49425.53	101.50	1.017	0.30(0.28)	0.93	40051.0	11910.00
16	51293.64	108.27	0.987	0.30(0.28)	0.94	44936.9	11330.00
17	52008.20	114.48	0.958	0.30(0.28)	0.94	49367.9	11130.00
18	51490.59	122.12	0.927	0.30(0.28)	0.95	53361.9	12330.00
19	50907.20	128.82	0.910	0.30(0.28)	0.95	56705.0	12400.00
20	49979.32	137.60	0.887	0.30(0.29)	0.95	60073.8	12201.00
21	48559.64	147.12	0.862	0.30(0.29)	0.95	62527.9	12101.10
22	47905.96	151.24	0.852	0.30(0.29)	0.95	63377.0	10400.00
23	46109.60	159.53	0.830	0.30(0.29)	0.95	64692.2	12010.00
24	44625.66	165.63	0.814	0.30(0.29)	0.95	65005.9	10210.00

25 40407.18 192.39 0.763 0.30(0.29) 0.95 65738.6 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 52008.20 Tc(MIN.) = 114.48
EFFECTIVE AREA(ACRES) = 49367.89 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65738.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 65738.6 TC(MIN.) = 114.48
EFFECTIVE AREA(ACRES) = 49367.89 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
PEAK FLOW RATE(CFS) = 52008.20

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23060.04	15.14	2.879	0.30(0.26)	0.85	2853.5	13889.00
2	26204.84	24.06	2.137	0.30(0.26)	0.85	4486.6	10600.00
3	27048.87	26.16	2.027	0.30(0.26)	0.85	5161.6	13810.00
4	27423.40	27.13	1.984	0.30(0.26)	0.85	5464.3	13850.00
5	28802.54	30.74	1.838	0.30(0.26)	0.85	6574.3	13870.00
6	31418.39	37.74	1.659	0.30(0.26)	0.85	8673.8	13830.00
7	32210.10	39.98	1.602	0.30(0.26)	0.85	9305.7	10220.00
8	35511.11	51.13	1.376	0.30(0.26)	0.86	13914.0	10100.00
9	36688.26	55.24	1.329	0.30(0.26)	0.87	15597.2	150.00
10	38952.18	62.43	1.257	0.30(0.26)	0.88	18682.8	600.00
11	39883.21	66.82	1.228	0.30(0.27)	0.89	20827.7	31100.00
12	42432.13	77.59	1.154	0.30(0.27)	0.91	26053.5	40100.00
13	44516.62	84.39	1.108	0.30(0.27)	0.91	29416.6	11801.00
14	47256.67	93.34	1.055	0.30(0.28)	0.92	34446.9	11530.00
15	49425.53	101.50	1.017	0.30(0.28)	0.93	40051.0	11910.00
16	51293.64	108.27	0.987	0.30(0.28)	0.94	44936.9	11330.00
17	52008.20	114.48	0.958	0.30(0.28)	0.94	49367.9	11130.00
18	51490.59	122.12	0.927	0.30(0.28)	0.95	53361.9	12330.00
19	50907.20	128.82	0.910	0.30(0.28)	0.95	56705.0	12400.00
20	49979.32	137.60	0.887	0.30(0.29)	0.95	60073.8	12201.00
21	48559.64	147.12	0.862	0.30(0.29)	0.95	62527.9	12101.10
22	47905.96	151.24	0.852	0.30(0.29)	0.95	63377.0	10400.00
23	46109.60	159.53	0.830	0.30(0.29)	0.95	64692.2	12010.00
24	44625.66	165.63	0.814	0.30(0.29)	0.95	65005.9	10210.00
25	40407.18	192.39	0.763	0.30(0.29)	0.95	65738.6	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S39- COMPLEX - PHASE CONDITION NO PA5 *
* 100-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI00EV39.DAT
TIME/DATE OF STUDY: 12:23 06/19/2019

=====

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 (FT)	LIP 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
* 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	56	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<<<<<

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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) = 0.34
* 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 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 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<<<<<

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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	-

* 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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: ri00ev38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23060.04	15.14	0.30 (0.26)	0.85	2853.5	13889.00
2	28802.54	30.74	0.30 (0.26)	0.85	6574.3	13870.00
3	32210.10	39.98	0.30 (0.26)	0.85	9305.7	10220.00
4	36688.26	55.24	0.30 (0.26)	0.87	15597.2	150.00
5	38952.18	62.43	0.30 (0.26)	0.88	18682.8	600.00
6	39883.21	66.82	0.30 (0.27)	0.89	20827.7	31100.00
7	42432.13	77.59	0.30 (0.27)	0.91	26053.5	40100.00
8	44516.62	84.39	0.30 (0.27)	0.91	29416.6	11801.00
9	47256.67	93.34	0.30 (0.28)	0.92	34446.9	11530.00
10	49425.53	101.50	0.30 (0.28)	0.93	40051.0	11910.00
11	51293.64	108.27	0.30 (0.28)	0.94	44936.9	11330.00
12	52008.20	114.48	0.30 (0.28)	0.94	49367.9	11130.00
13	51490.59	122.12	0.30 (0.28)	0.95	53361.9	12330.00
14	50907.20	128.82	0.30 (0.28)	0.95	56705.0	12400.00
15	49979.32	137.60	0.30 (0.29)	0.95	60073.8	12201.00
16	48559.64	147.12	0.30 (0.29)	0.95	62527.9	12101.10
17	47905.96	151.24	0.30 (0.29)	0.95	63377.0	10400.00
18	46109.60	159.53	0.30 (0.29)	0.95	64692.2	12010.00
19	44625.66	165.63	0.30 (0.29)	0.95	65005.9	10210.00
20	40407.18	192.39	0.30 (0.29)	0.95	65738.6	10100.00
TOTAL AREA (ACRES) =						65738.6

 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	23060.04	15.14	0.30 (0.26)	0.85	2853.5	13889.00
2	28802.54	30.74	0.30 (0.26)	0.85	6574.3	13870.00
3	32210.10	39.98	0.30 (0.26)	0.85	9305.7	10220.00
4	36688.26	55.24	0.30 (0.26)	0.87	15597.2	150.00
5	38952.18	62.43	0.30 (0.26)	0.88	18682.8	600.00
6	39883.21	66.82	0.30 (0.27)	0.89	20827.7	31100.00
7	42432.13	77.59	0.30 (0.27)	0.91	26053.5	40100.00
8	44516.62	84.39	0.30 (0.27)	0.91	29416.6	11801.00
9	47256.67	93.34	0.30 (0.28)	0.92	34446.9	11530.00
10	49425.53	101.50	0.30 (0.28)	0.93	40051.0	11910.00
11	51293.64	108.27	0.30 (0.28)	0.94	44936.9	11330.00
12	52008.20	114.48	0.30 (0.28)	0.94	49367.9	11130.00
13	51490.59	122.12	0.30 (0.28)	0.95	53361.9	12330.00
14	50907.20	128.82	0.30 (0.28)	0.95	56705.0	12400.00
15	49979.32	137.60	0.30 (0.29)	0.95	60073.8	12201.00
16	48559.64	147.12	0.30 (0.29)	0.95	62527.9	12101.10
17	47905.96	151.24	0.30 (0.29)	0.95	63377.0	10400.00
18	46109.60	159.53	0.30 (0.29)	0.95	64692.2	12010.00
19	44625.66	165.63	0.30 (0.29)	0.95	65005.9	10210.00
20	40407.18	192.39	0.30 (0.29)	0.95	65738.6	10100.00
TOTAL AREA (ACRES) =						65738.6

 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) = 24.12
* 100 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 - 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) = 52042.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.99
AVERAGE FLOW DEPTH(FEET) = 24.11 TRAVEL TIME(MIN.) = 2.09
Tc(MIN.) = 116.57
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 68.09
EFFECTIVE AREA(ACRES) = 49463.98 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65834.7 PEAK FLOW RATE(CFS) = 52008.20
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) = 24.10
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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 24.10 FLOW VELOCITY(FEET/SEC.) = 10.99

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

>>>>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	23060.04	17.75	2.616	0.30 (0.25)	0.84	2949.6	13889.00
2	28802.54	33.20	1.775	0.30 (0.25)	0.85	6670.4	13870.00
3	32210.10	42.36	1.551	0.30 (0.26)	0.85	9401.7	10220.00
4	36688.26	57.54	1.302	0.30 (0.26)	0.87	15693.2	150.00
5	38952.18	64.69	1.241	0.30 (0.26)	0.88	18778.9	600.00
6	39883.21	69.07	1.212	0.30 (0.27)	0.89	20923.8	31100.00
7	42432.13	79.79	1.139	0.30 (0.27)	0.91	26149.6	40100.00
8	44516.62	86.57	1.093	0.30 (0.27)	0.91	29512.7	11801.00
9	47256.67	95.48	1.045	0.30 (0.28)	0.92	34543.0	11530.00
10	49425.53	103.62	1.007	0.30 (0.28)	0.93	40147.1	11910.00
11	51293.64	110.37	0.976	0.30 (0.28)	0.94	45033.0	11330.00
12	52008.20	116.57	0.948	0.30 (0.28)	0.94	49464.0	11130.00
13	51490.59	124.21	0.921	0.30 (0.28)	0.95	53457.9	12330.00
14	50907.20	130.92	0.904	0.30 (0.28)	0.95	56801.1	12400.00
15	49979.32	139.71	0.881	0.30 (0.28)	0.95	60169.9	12201.00
16	48559.64	149.25	0.856	0.30 (0.29)	0.95	62624.0	12101.10

17 47905.96 153.37 0.846 0.30(0.29) 0.95 63473.1 10400.00
 18 46109.60 161.68 0.824 0.30(0.29) 0.95 64788.3 12010.00
 19 44625.66 167.81 0.808 0.30(0.29) 0.95 65102.0 10210.00
 20 40407.18 194.63 0.760 0.30(0.29) 0.95 65834.7 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	22792.26	16.50	2.742	0.30(0.25)	0.84	2842.3	13900.00
2	23275.18	17.75	2.616	0.30(0.25)	0.84	3050.7	13889.00
3	28941.02	33.20	1.775	0.30(0.25)	0.85	6771.5	13870.00
4	32328.25	42.36	1.551	0.30(0.26)	0.85	9502.9	10220.00
5	36783.70	57.54	1.302	0.30(0.26)	0.87	15794.4	150.00
6	39042.13	64.69	1.241	0.30(0.26)	0.88	18880.0	600.00
7	39970.46	69.07	1.212	0.30(0.27)	0.89	21025.0	31100.00
8	42512.77	79.79	1.139	0.30(0.27)	0.90	26250.7	40100.00
9	44593.09	86.57	1.093	0.30(0.27)	0.91	29613.9	11801.00
10	47328.74	95.48	1.045	0.30(0.28)	0.92	34644.1	11530.00
11	49494.18	103.62	1.007	0.30(0.28)	0.93	40248.2	11910.00
12	51359.48	110.37	0.976	0.30(0.28)	0.94	45134.1	11330.00
13	52071.44	116.57	0.948	0.30(0.28)	0.94	49565.1	11130.00
14	51551.40	124.21	0.921	0.30(0.28)	0.95	53559.1	12330.00
15	50966.43	130.92	0.904	0.30(0.28)	0.95	56902.3	12400.00
16	50036.48	139.71	0.881	0.30(0.28)	0.95	60271.0	12201.00
17	48614.57	149.25	0.856	0.30(0.29)	0.95	62725.2	12101.10
18	47959.91	153.37	0.846	0.30(0.29)	0.95	63574.3	10400.00
19	46161.60	161.68	0.824	0.30(0.29)	0.95	64889.4	12010.00
20	44676.22	167.81	0.808	0.30(0.29)	0.95	65203.1	10210.00
21	40453.34	194.63	0.760	0.30(0.29)	0.95	65935.8	10100.00

TOTAL AREA (ACRES) = 65935.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 52071.44 Tc(MIN.) = 116.569
 EFFECTIVE AREA(ACRES) = 49565.12 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65935.8
 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

>>>>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) = 15.01
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.947
 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) = 52116.72
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 21.71
 AVERAGE FLOW DEPTH(FEET) = 15.00 TRAVEL TIME(MIN.) = 0.26
 Tc(MIN.) = 116.83
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 90.56
 EFFECTIVE AREA(ACRES) = 49699.42 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66070.1 PEAK FLOW RATE(CFS) = 52071.44
 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) = 15.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 15.00 FLOW VELOCITY(FEET/SEC.) = 21.70
 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) = 13.88
 * 100 YEAR RAINFALL INTENSITY(INCH/HR) = 0.942
 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) = 52102.86
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 24.15
 AVERAGE FLOW DEPTH(FEET) = 13.87 TRAVEL TIME(MIN.) = 0.96
 Tc(MIN.) = 117.79
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 62.84
 EFFECTIVE AREA(ACRES) = 49795.69 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66166.4 PEAK FLOW RATE(CFS) = 52071.44
 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) = 13.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 13.87 FLOW VELOCITY(FEET/SEC.) = 24.15
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 66166.4 TC (MIN.) = 117.79
 EFFECTIVE AREA (ACRES) = 49795.69 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.940
 PEAK FLOW RATE (CFS) = 52071.44

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22792.26	18.05	2.586	0.30 (0.25)	0.83	3072.9	13900.00
2	23275.18	19.30	2.462	0.30 (0.25)	0.83	3281.3	13889.00
3	28941.02	34.65	1.738	0.30 (0.25)	0.84	7002.1	13870.00
4	32328.25	43.76	1.521	0.30 (0.25)	0.85	9733.5	10220.00
5	36783.70	58.89	1.286	0.30 (0.26)	0.86	16025.0	150.00
6	39042.13	66.02	1.232	0.30 (0.26)	0.88	19110.6	600.00
7	39970.46	70.38	1.203	0.30 (0.27)	0.88	21255.5	31100.00
8	42512.77	81.09	1.130	0.30 (0.27)	0.90	26481.3	40100.00
9	44593.09	87.84	1.085	0.30 (0.27)	0.91	29844.4	11801.00
10	47328.74	96.74	1.039	0.30 (0.28)	0.92	34874.7	11530.00
11	49494.18	104.86	1.002	0.30 (0.28)	0.93	40478.8	11910.00
12	51359.48	111.59	0.971	0.30 (0.28)	0.93	45364.7	11330.00
13	52071.44	117.79	0.942	0.30 (0.28)	0.94	49795.7	11130.00
14	51551.40	125.44	0.918	0.30 (0.28)	0.94	53789.7	12330.00
15	50966.43	132.15	0.901	0.30 (0.28)	0.95	57132.8	12400.00
16	50036.48	140.95	0.878	0.30 (0.28)	0.95	60501.6	12201.00
17	48614.57	150.49	0.853	0.30 (0.28)	0.95	62955.8	12101.10
18	47959.91	154.62	0.843	0.30 (0.29)	0.95	63804.8	10400.00
19	46161.60	162.95	0.821	0.30 (0.29)	0.95	65120.0	12010.00
20	44676.22	169.08	0.805	0.30 (0.29)	0.95	65433.7	10210.00
21	40453.34	195.94	0.759	0.30 (0.29)	0.95	66166.4	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S19 - COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JANUARY 2019 ROKAMOTO *

FILE NAME: RI50EV19.DAT
TIME/DATE OF STUDY: 09:26 06/14/2019

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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; 5.535
- 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	0.0313	0.167	0.0150

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

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

FLOW PROCESS FROM NODE 11900.00 TO NODE 11901.00 IS CODE = 21

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

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

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 7.203
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 4.651
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	65	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) = 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)	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) = 18.40
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.34
AVERAGE FLOW DEPTH(FEET) = 0.50 TRAVEL TIME(MIN.) = 3.31
 T_c (MIN.) = 10.52
SUBAREA AREA(ACRES) = 8.35 SUBAREA RUNOFF(CFS) = 23.83
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) = 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
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USER-DEFINED	-	34.48	0.30	0.904	-
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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
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USER-DEFINED	-	23.65	0.30	0.958	-
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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
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USER-DEFINED	-	68.53	0.30	0.961	-
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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.961

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 188.28

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.16

AVERAGE FLOW DEPTH(FEET) = 2.14 TRAVEL TIME(MIN.) = 5.20

Tc(MIN.) = 22.91

SUBAREA AREA(ACRES) = 68.53 SUBAREA RUNOFF(CFS) = 109.71

EFFECTIVE AREA(ACRES) = 136.63 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 136.6 PEAK FLOW RATE(CFS) = 219.39

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.32 FLOW VELOCITY(FEET/SEC.) = 6.45

LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11904.00 = 4708.67 FEET.

FLOW PROCESS FROM NODE 11904.00 TO NODE 11905.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 2186.04 DOWNSTREAM(FEET) = 1957.34
CHANNEL LENGTH THRU SUBAREA(FEET) = 1926.87 CHANNEL SLOPE = 0.1187
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.86

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.901
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 63.15 0.30 1.000 -
 SUBAREA AVERAGE 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/ 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) = 347.25
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.54
 AVERAGE FLOW DEPTH (FEET) = 1.67 TRAVEL TIME (MIN.) = 2.68
 Tc (MIN.) = 28.62
 SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 114.38
 EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 385.73
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.77

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.77 FLOW VELOCITY (FEET/SEC.) = 16.06
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 2.70
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.659
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 199.43 0.30 1.000 -
 SUBAREA AVERAGE 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	65	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

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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) = 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.

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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<<<<
=====
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

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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	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.

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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) = 6.07
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.599
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) = 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

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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.

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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) = 6.18
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.527
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) = 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

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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) = 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<<<<<

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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<<<<<

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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<<<<<

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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) = 7.65
* 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<<<<

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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<<<<

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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 <<<<

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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

>>>>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

>>>>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

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

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

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

PEAK FLOWRATE TABLE FILE NAME: S18X50.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM 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

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: s25x50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	0.30 (0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	0.30 (0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	0.30 (0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	0.30 (0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	0.30 (0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.30 (0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.30 (0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.30 (0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.30 (0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.30 (0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.30 (0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.30 (0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.30 (0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =						13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM	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	

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	6814.52	66.91	1.167	0.30 (0.30)	0.99	6393.3	12500.00
2	7515.45	80.53	1.074	0.30 (0.30)	0.99	8363.5	12300.00
3	7623.90	81.91	1.065	0.30 (0.30)	0.98	8652.7	12330.00
4	7789.58	84.57	1.047	0.30 (0.30)	0.98	9163.3	12410.00
5	7994.43	88.75	1.018	0.30 (0.29)	0.98	9893.3	12400.00
6	8150.23	93.51	0.995	0.30 (0.29)	0.98	10584.1	12211.00
7	8242.61	97.70	0.977	0.30 (0.29)	0.98	11179.8	12201.00
8	8205.03	101.92	0.958	0.30 (0.29)	0.98	11654.1	12111.00
9	8180.32	104.56	0.947	0.30 (0.29)	0.98	11967.4	12231.00
10	8145.23	107.37	0.935	0.30 (0.29)	0.98	12265.9	12101.10
11	8125.55	108.34	0.931	0.30 (0.29)	0.98	12357.2	12261.00
12	7675.64	119.74	0.881	0.30 (0.29)	0.98	13113.0	12010.00
13	7214.09	128.35	0.863	0.30 (0.29)	0.98	13237.1	12000.00

LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18863.84	37.77	1.535	0.30 (0.30)	1.00	7696.5	11831.00
2	19171.93	40.18	1.472	0.30 (0.30)	1.00	8206.0	11801.00
3	20870.42	51.52	1.298	0.30 (0.30)	1.00	11178.6	11530.00
4	21741.74	56.15	1.252	0.30 (0.30)	1.00	12836.1	11701.00
5	22206.97	58.56	1.228	0.30 (0.30)	1.00	13761.0	11000.00
6	24578.79	68.37	1.157	0.30 (0.30)	1.00	18741.7	11330.00
7	24998.78	70.58	1.142	0.30 (0.30)	1.00	19900.2	10800.00
8	25620.24	74.96	1.112	0.30 (0.30)	1.00	22211.8	11130.00
9	25459.58	83.55	1.054	0.30 (0.30)	1.00	25307.4	11620.00
10	25389.29	85.79	1.039	0.30 (0.30)	1.00	26059.8	11600.00
11	25269.09	87.43	1.027	0.30 (0.30)	1.00	26526.1	10600.00
12	25052.94	92.79	0.998	0.30 (0.30)	1.00	28070.1	11201.00
13	24726.86	98.42	0.974	0.30 (0.30)	1.00	29254.4	10710.00
14	24565.08	100.41	0.965	0.30 (0.30)	1.00	29586.3	10410.00
15	24070.54	105.10	0.945	0.30 (0.30)	1.00	30247.3	10700.00

16 23353.04 112.10 0.914 0.30(0.30) 1.00 31166.7 10400.00
 17 23163.67 114.42 0.904 0.30(0.30) 1.00 31437.3 10200.00
 18 22543.84 120.36 0.879 0.30(0.30) 1.00 32015.5 10300.00
 19 21907.93 125.43 0.869 0.30(0.30) 1.00 32220.3 10210.00
 20 19363.37 152.55 0.815 0.30(0.30) 1.00 32916.6 10100.00
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24335.68	37.77	1.535	0.30(0.30)	0.99	11305.9	11831.00
2	24697.44	40.18	1.472	0.30(0.30)	0.99	12045.5	11801.00
3	26906.53	51.52	1.298	0.30(0.30)	0.99	16101.8	11530.00
4	28019.04	56.15	1.252	0.30(0.30)	0.99	18201.1	11701.00
5	28590.34	58.56	1.228	0.30(0.30)	0.99	19356.3	11000.00
6	31039.95	66.91	1.167	0.30(0.30)	0.99	24392.9	12500.00
7	31468.57	68.37	1.157	0.30(0.30)	0.99	25346.5	11330.00
8	32002.18	70.58	1.142	0.30(0.30)	0.99	26824.3	10800.00
9	32849.10	74.96	1.112	0.30(0.30)	0.99	29769.7	11130.00
10	33031.62	80.53	1.074	0.30(0.30)	0.99	32580.5	12300.00
11	33114.20	81.91	1.065	0.30(0.30)	0.99	33368.0	12330.00
12	33186.01	83.55	1.054	0.30(0.30)	0.99	34276.0	11620.00
13	33217.38	84.57	1.047	0.30(0.30)	0.99	34810.9	12410.00
14	33238.92	85.79	1.039	0.30(0.30)	0.99	35437.1	11600.00
15	33199.04	87.43	1.027	0.30(0.30)	0.99	36189.6	10600.00
16	33210.37	88.75	1.018	0.30(0.30)	0.99	36799.1	12400.00
17	33179.69	92.79	0.998	0.30(0.30)	0.99	38550.0	11201.00
18	33161.66	93.51	0.995	0.30(0.30)	0.99	38804.9	12211.00
19	33011.46	97.70	0.977	0.30(0.30)	0.99	40281.7	12201.00
20	32963.01	98.42	0.974	0.30(0.30)	0.99	40515.8	10710.00
21	32783.54	100.41	0.965	0.30(0.30)	0.99	41070.9	10410.00
22	32611.09	101.92	0.958	0.30(0.30)	0.99	41453.0	12111.00
23	32307.60	104.56	0.947	0.30(0.30)	0.99	42138.9	12231.00
24	32244.16	105.10	0.945	0.30(0.30)	0.99	42271.8	10700.00
25	31982.44	107.37	0.935	0.30(0.30)	0.99	42812.2	12101.10
26	31863.89	108.34	0.931	0.30(0.30)	0.99	43030.2	12261.00
27	31330.23	112.10	0.914	0.30(0.30)	0.99	43773.2	10400.00
28	31049.28	114.42	0.904	0.30(0.30)	0.99	44197.6	10200.00
29	30284.07	119.74	0.881	0.30(0.30)	0.99	45068.3	12010.00
30	30186.30	120.36	0.879	0.30(0.30)	0.99	45137.4	10300.00
31	29278.79	125.43	0.869	0.30(0.30)	0.99	45415.2	10210.00
32	28847.68	128.35	0.863	0.30(0.30)	0.99	45532.4	12000.00
33	25964.49	152.55	0.815	0.30(0.30)	0.99	46153.7	10100.00
TOTAL AREA (ACRES) =		46153.7					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 33238.92 Tc(MIN.) = 85.792
 EFFECTIVE AREA(ACRES) = 35437.09 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 46153.7
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

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

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

ELEVATION DATA: UPSTREAM(FEET) = 347.47 DOWNSTREAM(FEET) = 341.63
 CHANNEL LENGTH THRU SUBAREA(FEET) = 532.38 CHANNEL SLOPE = 0.0110
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.03
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.035

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	14.37	0.30	0.987	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987					
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33243.70					
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.02					
AVERAGE FLOW DEPTH(FEET) = 9.03 TRAVEL TIME(MIN.) = 0.59					
Tc(MIN.) = 86.38					
SUBAREA AREA(ACRES) = 14.37 SUBAREA RUNOFF(CFS) = 9.55					
EFFECTIVE AREA(ACRES) = 35451.46 AREA-AVERAGED Fm(INCH/HR) = 0.30					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99					
TOTAL AREA(ACRES) = 46168.0 PEAK FLOW RATE(CFS) = 33238.92					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0					
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040					
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.03					

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.03 FLOW VELOCITY(FEET/SEC.) = 15.01
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

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

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	24335.68	38.43	1.517	0.30(0.30)	0.99	11320.3	11831.00
2	24697.44	40.83	1.461	0.30(0.30)	0.99	12059.9	11801.00
3	26906.53	52.16	1.292	0.30(0.30)	0.99	16116.2	11530.00
4	28019.04	56.77	1.246	0.30(0.30)	0.99	18215.4	11701.00
5	28590.34	59.18	1.222	0.30(0.30)	0.99	19370.6	11000.00
6	31039.95	67.51	1.163	0.30(0.30)	0.99	24407.3	12500.00
7	31468.57	68.97	1.153	0.30(0.30)	0.99	25360.9	11330.00
8	32002.18	71.18	1.138	0.30(0.30)	0.99	26838.7	10800.00
9	32849.10	75.55	1.108	0.30(0.30)	0.99	29784.1	11130.00
10	33031.62	81.12	1.070	0.30(0.30)	0.99	32594.9	12300.00
11	33114.20	82.50	1.061	0.30(0.30)	0.99	33382.4	12330.00
12	33186.01	84.14	1.050	0.30(0.30)	0.99	34290.4	11620.00
13	33217.38	85.16	1.043	0.30(0.30)	0.99	34825.3	12410.00
14	33238.92	86.38	1.035	0.30(0.30)	0.99	35451.5	11600.00
15	33199.04	88.02	1.023	0.30(0.30)	0.99	36204.0	10600.00
16	33210.37	89.34	1.014	0.30(0.30)	0.99	36813.4	12400.00
17	33179.69	93.38	0.995	0.30(0.30)	0.99	38564.4	11201.00
18	33161.66	94.10	0.992	0.30(0.30)	0.99	38819.3	12211.00
19	33011.46	98.29	0.974	0.30(0.30)	0.99	40296.1	12201.00
20	32963.01	99.01	0.971	0.30(0.30)	0.99	40530.1	10710.00

21	32783.54	101.00	0.962	0.30 (0.30)	0.99	41085.2	10410.00
22	32611.09	102.51	0.956	0.30 (0.30)	0.99	41467.3	12111.00
23	32307.60	105.16	0.944	0.30 (0.30)	0.99	42153.2	12231.00
24	32244.16	105.69	0.942	0.30 (0.30)	0.99	42286.1	10700.00
25	31982.44	107.97	0.932	0.30 (0.30)	0.99	42826.5	12101.10
26	31863.89	108.94	0.928	0.30 (0.30)	0.99	43044.6	12261.00
27	31330.23	112.70	0.912	0.30 (0.30)	0.99	43787.5	10400.00
28	31049.28	115.02	0.902	0.30 (0.30)	0.99	44211.9	10200.00
29	30284.07	120.35	0.879	0.30 (0.30)	0.99	45082.6	12010.00
30	30186.30	120.97	0.878	0.30 (0.30)	0.99	45151.8	10300.00
31	29278.79	126.04	0.868	0.30 (0.30)	0.99	45429.6	10210.00
32	28847.68	128.97	0.862	0.30 (0.30)	0.99	45546.8	12000.00
33	25964.49	153.19	0.814	0.30 (0.30)	0.99	46168.0	10100.00

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

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2608.92	30.83	1.722	0.30 (0.30)	1.00	1923.9	40130.00
2	2644.22	32.64	1.673	0.30 (0.30)	1.00	2037.9	40100.00
3	2794.41	60.19	1.213	0.30 (0.30)	1.00	3323.0	11900.00
4	2790.44	60.46	1.211	0.30 (0.30)	1.00	3327.6	11910.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25406.30	30.83	1.722	0.30 (0.30)	0.99	11007.2	40130.00
2	25952.56	32.64	1.673	0.30 (0.30)	0.99	11652.1	40100.00
3	27011.47	38.43	1.517	0.30 (0.30)	0.99	13628.3	11831.00
4	27386.34	40.83	1.461	0.30 (0.30)	0.99	14480.1	11801.00
5	29657.15	52.16	1.292	0.30 (0.30)	0.99	19064.5	11530.00
6	30794.82	56.77	1.246	0.30 (0.30)	0.99	21379.0	11701.00
7	31379.23	59.18	1.222	0.30 (0.30)	0.99	22646.4	11000.00
8	31682.43	60.19	1.213	0.30 (0.30)	0.99	23305.7	11900.00
9	31757.19	60.46	1.211	0.30 (0.30)	0.99	23472.2	11910.00
10	33683.59	67.51	1.163	0.30 (0.30)	0.99	27734.9	12500.00
11	34081.84	68.97	1.153	0.30 (0.30)	0.99	28688.5	11330.00
12	34569.59	71.18	1.138	0.30 (0.30)	0.99	30166.4	10800.00
13	35325.47	75.55	1.108	0.30 (0.30)	0.99	33111.7	11130.00
14	35392.14	81.12	1.070	0.30 (0.30)	0.99	35922.5	12300.00
15	35445.93	82.50	1.061	0.30 (0.30)	0.99	36710.1	12330.00
16	35483.55	84.14	1.050	0.30 (0.30)	0.99	37618.1	11620.00
17	35493.85	85.16	1.043	0.30 (0.30)	0.99	38152.9	12410.00
18	35489.87	86.38	1.035	0.30 (0.30)	0.99	38779.1	11600.00
19	35415.85	88.02	1.023	0.30 (0.30)	0.99	39531.6	10600.00
20	35399.76	89.34	1.014	0.30 (0.30)	0.99	40141.1	12400.00
21	35310.54	93.38	0.995	0.30 (0.30)	0.99	41892.0	11201.00
22	35283.00	94.10	0.992	0.30 (0.30)	0.99	42146.9	12211.00
23	35077.23	98.29	0.974	0.30 (0.30)	0.99	43623.7	12201.00
24	35019.16	99.01	0.971	0.30 (0.30)	0.99	43857.8	10710.00
25	34813.35	101.00	0.962	0.30 (0.30)	0.99	44412.9	10410.00
26	34620.89	102.51	0.956	0.30 (0.30)	0.99	44795.0	12111.00
27	34282.30	105.16	0.944	0.30 (0.30)	0.99	45480.9	12231.00
28	34211.72	105.69	0.942	0.30 (0.30)	0.99	45613.8	10700.00
29	33919.79	107.97	0.932	0.30 (0.30)	0.99	46154.2	12101.10
30	33788.43	108.94	0.928	0.30 (0.30)	0.99	46372.2	12261.00
31	33204.87	112.70	0.912	0.30 (0.30)	0.99	47115.2	10400.00

32	32893.12	115.02	0.902	0.30 (0.30)	0.99	47539.6	10200.00
33	32059.78	120.35	0.879	0.30 (0.30)	0.99	48410.3	12010.00
34	31958.21	120.97	0.878	0.30 (0.30)	0.99	48479.4	10300.00
35	31019.66	126.04	0.868	0.30 (0.30)	0.99	48757.2	10210.00
36	30570.63	128.97	0.862	0.30 (0.30)	0.99	48874.4	12000.00
37	27539.19	153.19	0.814	0.30 (0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 35493.85 Tc (MIN.) = 85.157
EFFECTIVE AREA (ACRES) = 38152.91 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA (ACRES) = 49495.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 11929.00 = 98400.52 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 49495.7 TC (MIN.) = 85.16
EFFECTIVE AREA (ACRES) = 38152.91 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.994
PEAK FLOW RATE (CFS) = 35493.85

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	25406.30	30.83	1.722	0.30 (0.30)	0.99	11007.2	40130.00
2	25952.56	32.64	1.673	0.30 (0.30)	0.99	11652.1	40100.00
3	27011.47	38.43	1.517	0.30 (0.30)	0.99	13628.3	11831.00
4	27386.34	40.83	1.461	0.30 (0.30)	0.99	14480.1	11801.00
5	29657.15	52.16	1.292	0.30 (0.30)	0.99	19064.5	11530.00
6	30794.82	56.77	1.246	0.30 (0.30)	0.99	21379.0	11701.00
7	31379.23	59.18	1.222	0.30 (0.30)	0.99	22646.4	11000.00
8	31682.43	60.19	1.213	0.30 (0.30)	0.99	23305.7	11900.00
9	31757.19	60.46	1.211	0.30 (0.30)	0.99	23472.2	11910.00
10	33683.59	67.51	1.163	0.30 (0.30)	0.99	27734.9	12500.00
11	34081.84	68.97	1.153	0.30 (0.30)	0.99	28688.5	11330.00
12	34569.59	71.18	1.138	0.30 (0.30)	0.99	30166.4	10800.00
13	35325.47	75.55	1.108	0.30 (0.30)	0.99	33111.7	11130.00
14	35392.14	81.12	1.070	0.30 (0.30)	0.99	35922.5	12300.00
15	35445.93	82.50	1.061	0.30 (0.30)	0.99	36710.1	12330.00
16	35483.55	84.14	1.050	0.30 (0.30)	0.99	37618.1	11620.00
17	35493.85	85.16	1.043	0.30 (0.30)	0.99	38152.9	12410.00
18	35489.87	86.38	1.035	0.30 (0.30)	0.99	38779.1	11600.00
19	35415.85	88.02	1.023	0.30 (0.30)	0.99	39531.6	10600.00
20	35399.76	89.34	1.014	0.30 (0.30)	0.99	40141.1	12400.00
21	35310.54	93.38	0.995	0.30 (0.30)	0.99	41892.0	11201.00
22	35283.00	94.10	0.992	0.30 (0.30)	0.99	42146.9	12211.00
23	35077.23	98.29	0.974	0.30 (0.30)	0.99	43623.7	12201.00
24	35019.16	99.01	0.971	0.30 (0.30)	0.99	43857.8	10710.00
25	34813.35	101.00	0.962	0.30 (0.30)	0.99	44412.9	10410.00
26	34620.89	102.51	0.956	0.30 (0.30)	0.99	44795.0	12111.00
27	34282.30	105.16	0.944	0.30 (0.30)	0.99	45480.9	12231.00
28	34211.72	105.69	0.942	0.30 (0.30)	0.99	45613.8	10700.00
29	33919.79	107.97	0.932	0.30 (0.30)	0.99	46154.2	12101.10
30	33788.43	108.94	0.928	0.30 (0.30)	0.99	46372.2	12261.00
31	33204.87	112.70	0.912	0.30 (0.30)	0.99	47115.2	10400.00
32	32893.12	115.02	0.902	0.30 (0.30)	0.99	47539.6	10200.00
33	32059.78	120.35	0.879	0.30 (0.30)	0.99	48410.3	12010.00
34	31958.21	120.97	0.878	0.30 (0.30)	0.99	48479.4	10300.00

35	31019.66	126.04	0.868	0.30	(0.30)	0.99	48757.2	10210.00
36	30570.63	128.97	0.862	0.30	(0.30)	0.99	48874.4	12000.00
37	27539.19	153.19	0.814	0.30	(0.30)	0.99	49495.7	10100.00

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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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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 - COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV26.DAT
TIME/DATE OF STUDY: 09:27 06/14/2019

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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; 5.516
- 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

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

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PEAK FLOWRATE TABLE FILE NAME: RI50EV19.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

>>>>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	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

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

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 88.08
RAINFALL INTENSITY(INCH/HR) = 1.02
AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 38215.42
TOTAL STREAM AREA(ACRES) = 49558.19
PEAK FLOW RATE(CFS) AT CONFLUENCE = 35525.95

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

=====

USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 9.43 RAINFALL INTENSITY(INCH/HR) = 3.75
EFFECTIVE AREA(ACRES) = 99.30
TOTAL AREA(ACRES) = 171.00 PEAK FLOW RATE(CFS) = 208.20
AREA-AVERAGED Fm(INCH/HR) = 0.17 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.58
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.43
RAINFALL INTENSITY(INCH/HR) = 3.75
AREA-AVERAGED Fm(INCH/HR) = 0.17
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.58
EFFECTIVE STREAM AREA(ACRES) = 99.30
TOTAL STREAM AREA(ACRES) = 171.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 208.20

** CONFLUENCE DATA **

STREAM 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
1	26010.79	35.89	1.584	0.30(0.30)	0.99	11714.6	40100.00
1	27436.06	44.03	1.408	0.30(0.30)	0.99	14542.6	11801.00
1	29699.86	55.26	1.258	0.30(0.30)	0.99	19127.0	11530.00
1	30835.52	59.84	1.213	0.30(0.30)	0.99	21441.5	11701.00
1	31796.55	63.49	1.187	0.30(0.30)	0.99	23534.7	11910.00
1	34605.80	74.13	1.115	0.30(0.30)	0.99	30228.9	10800.00
1	35360.39	78.48	1.086	0.30(0.30)	0.99	33174.2	11130.00
1	35478.81	85.43	1.039	0.30(0.30)	0.99	36772.6	12330.00
1	35525.95	88.08	1.021	0.30(0.30)	0.99	38215.4	12410.00
1	35447.10	90.95	1.004	0.30(0.30)	0.99	39594.1	10600.00
1	35340.70	96.31	0.980	0.30(0.30)	0.99	41954.5	11201.00
1	35106.46	101.23	0.959	0.30(0.30)	0.99	43686.2	12201.00
1	34842.06	103.95	0.947	0.30(0.30)	0.99	44475.4	10410.00
1	34310.21	108.12	0.929	0.30(0.30)	0.99	45543.4	12231.00
1	33947.17	110.95	0.917	0.30(0.30)	0.99	46216.7	12101.10
1	33231.35	115.69	0.896	0.30(0.30)	0.99	47177.7	10400.00
1	32084.98	123.38	0.870	0.30(0.30)	0.99	48472.8	12010.00

1	31044.36	129.10	0.859	0.30	(0.30)	0.99	48819.8	10210.00
1	30595.07	132.05	0.853	0.30	(0.30)	0.99	48937.0	12000.00
1	27561.52	156.38	0.804	0.30	(0.30)	0.99	49558.2	10100.00
2	208.20	9.43	3.748	0.30	(0.17)	0.58	99.3	12603.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18294.97	9.43	3.748	0.30(0.29)	0.98	3015.3	12603.00
2	21501.23	18.51	2.375	0.30(0.30)	0.99	5823.1	600.00
3	26092.92	35.89	1.584	0.30(0.30)	0.99	11813.9	40100.00
4	27507.94	44.03	1.408	0.30(0.30)	0.99	14641.9	11801.00
5	29763.04	55.26	1.258	0.30(0.30)	0.99	19226.3	11530.00
6	30896.03	59.84	1.213	0.30(0.30)	0.99	21540.8	11701.00
7	31855.59	63.49	1.187	0.30(0.30)	0.99	23634.0	11910.00
8	34660.64	74.13	1.115	0.30(0.30)	0.99	30328.2	10800.00
9	35413.53	78.48	1.086	0.30(0.30)	0.99	33273.5	11130.00
10	35529.20	85.43	1.039	0.30(0.30)	0.99	36871.9	12330.00
11	35575.29	88.08	1.021	0.30(0.30)	0.99	38314.7	12410.00
12	35495.45	90.95	1.004	0.30(0.30)	0.99	39693.4	10600.00
13	35387.68	96.31	0.980	0.30(0.30)	0.99	42053.8	11201.00
14	35152.19	101.23	0.959	0.30(0.30)	0.99	43785.5	12201.00
15	34887.10	103.95	0.947	0.30(0.30)	0.99	44574.7	10410.00
16	34354.20	108.12	0.929	0.30(0.30)	0.99	45642.7	12231.00
17	33990.43	110.95	0.917	0.30(0.30)	0.99	46316.0	12101.10
18	33273.40	115.69	0.896	0.30(0.30)	0.99	47277.0	10400.00
19	32125.54	123.38	0.870	0.30(0.30)	0.99	48572.1	12010.00
20	31084.26	129.10	0.859	0.30(0.30)	0.99	48919.1	10210.00
21	30634.63	132.05	0.853	0.30(0.30)	0.99	49036.3	12000.00
22	27598.24	156.38	0.804	0.30(0.30)	0.99	49657.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 35575.29 Tc(MIN.) = 88.08
EFFECTIVE AREA(ACRES) = 38314.72 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.996					
SUBAREA AREA(ACRES) = 43.40					
SUBAREA RUNOFF(CFS) = 28.20					
EFFECTIVE AREA(ACRES) = 38358.12					
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) = 35575.29					
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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.850					
SUBAREA AREA(ACRES) = 0.90					
SUBAREA RUNOFF(CFS) = 0.62					
EFFECTIVE AREA(ACRES) = 38359.02					
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) = 35575.29					
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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.974					
SUBAREA AREA(ACRES) = 12.20					
SUBAREA RUNOFF(CFS) = 8.00					
EFFECTIVE AREA(ACRES) = 38371.22					
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) = 35575.29
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<<<<<

=====

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) = 38382.02 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) = 35575.29
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<<<<<

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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) = 2.66
EFFECTIVE AREA (ACRES) = 38386.12 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) = 35575.29

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) = 9.24
CHANNEL FLOW THRU SUBAREA (CFS) = 35575.29
FLOW VELOCITY (FEET/SEC.) = 15.65 FLOW DEPTH (FEET) = 9.24
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<<<<<

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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) = 1.04
EFFECTIVE AREA (ACRES) = 38387.72 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) = 35575.29
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) = 10.15
CHANNEL FLOW THRU SUBAREA (CFS) = 35575.29
FLOW VELOCITY (FEET/SEC.) = 13.98 FLOW DEPTH (FEET) = 10.15
TRAVEL TIME (MIN.) = 0.51 Tc (MIN.) = 89.08
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<<<<
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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) = 38398.32  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) = 35575.29
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) = 38403.12  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) = 35575.29
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<<<<

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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
GIVEN CHANNEL BASE(FEET) = 200.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000  MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.49
CHANNEL FLOW THRU SUBAREA(CFS) = 35575.29
FLOW VELOCITY(FEET/SEC.) = 17.29  FLOW DEPTH(FEET) = 8.49
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 = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 91.16
RAINFALL INTENSITY(INCH/HR) = 1.00
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 38403.12
TOTAL STREAM AREA(ACRES) = 49817.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 35575.29

*****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 7
-----
>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<
=====
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 16.81  RAINFALL INTENSITY(INCH/HR) = 2.53
EFFECTIVE AREA(ACRES) = 457.00
TOTAL AREA(ACRES) = 553.80      PEAK FLOW RATE(CFS) = 824.90
AREA-AVERAGED Fm(INCH/HR) = 0.26  AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

*****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.81
RAINFALL INTENSITY(INCH/HR) = 2.53
AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 457.00
TOTAL STREAM AREA(ACRES) = 553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 824.90

```

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18294.97	13.29	2.972	0.30 (0.29)	0.98	3103.7	12603.00
1	21501.23	22.16	2.109	0.30 (0.30)	0.99	5911.5	600.00
1	26092.92	39.30	1.492	0.30 (0.30)	0.99	11902.3	40100.00
1	27507.94	47.38	1.353	0.30 (0.30)	0.99	14730.3	11801.00
1	29763.04	58.53	1.226	0.30 (0.30)	0.99	19314.7	11530.00
1	30896.03	63.07	1.190	0.30 (0.30)	0.99	21629.2	11701.00
1	31855.59	66.69	1.166	0.30 (0.30)	0.99	23722.4	11910.00
1	34660.64	77.24	1.094	0.30 (0.30)	0.99	30416.6	10800.00
1	35413.53	81.57	1.065	0.30 (0.30)	0.99	33361.9	11130.00
1	35529.20	88.51	1.018	0.30 (0.30)	0.99	36960.3	12330.00
1	35575.29	91.16	1.003	0.30 (0.30)	0.99	38403.1	12410.00
1	35495.45	94.04	0.990	0.30 (0.30)	0.99	39781.8	10600.00
1	35387.68	99.40	0.967	0.30 (0.30)	0.99	42142.2	11201.00
1	35152.19	104.32	0.945	0.30 (0.30)	0.99	43873.9	12201.00
1	34887.10	107.05	0.934	0.30 (0.30)	0.99	44663.1	10410.00
1	34354.20	111.23	0.915	0.30 (0.30)	0.99	45731.1	12231.00
1	33990.43	114.07	0.903	0.30 (0.30)	0.99	46404.4	12101.10
1	33273.40	118.84	0.882	0.30 (0.30)	0.99	47365.4	10400.00
1	32125.54	126.57	0.864	0.30 (0.30)	0.99	48660.5	12010.00
1	31084.26	132.33	0.852	0.30 (0.30)	0.99	49007.5	10210.00
1	30634.63	135.28	0.846	0.30 (0.30)	0.99	49124.7	12000.00
1	27598.24	159.73	0.798	0.30 (0.30)	0.99	49745.9	10100.00
2	824.90	16.81	2.526	0.30 (0.26)	0.85	457.0	12606.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19075.18	13.29	2.972	0.30 (0.29)	0.97	3464.9	12603.00
2	20393.14	16.81	2.526	0.30 (0.29)	0.97	4675.7	12606.00
3	22174.87	22.16	2.109	0.30 (0.29)	0.98	6368.5	600.00
4	26542.16	39.30	1.492	0.30 (0.30)	0.98	12359.3	40100.00
5	27906.93	47.38	1.353	0.30 (0.30)	0.99	15187.3	11801.00
6	30115.62	58.53	1.226	0.30 (0.30)	0.99	19771.7	11530.00
7	31235.75	63.07	1.190	0.30 (0.30)	0.99	22086.2	11701.00
8	32186.40	66.69	1.166	0.30 (0.30)	0.99	24179.4	11910.00
9	34965.55	77.24	1.094	0.30 (0.30)	0.99	30873.6	10800.00
10	35707.78	81.57	1.065	0.30 (0.30)	0.99	33818.9	11130.00
11	35806.39	88.51	1.018	0.30 (0.30)	0.99	37417.3	12330.00
12	35846.96	91.16	1.003	0.30 (0.30)	0.99	38860.1	12410.00
13	35762.57	94.04	0.990	0.30 (0.30)	0.99	40238.8	10600.00
14	35646.30	99.40	0.967	0.30 (0.30)	0.99	42599.2	11201.00
15	35403.00	104.32	0.945	0.30 (0.30)	0.99	44330.9	12201.00
16	35133.59	107.05	0.934	0.30 (0.30)	0.99	45120.1	10410.00
17	34594.04	111.23	0.915	0.30 (0.30)	0.99	46188.1	12231.00
18	34225.77	114.07	0.903	0.30 (0.30)	0.99	46861.4	12101.10
19	33501.18	118.84	0.882	0.30 (0.30)	0.99	47822.4	10400.00
20	32346.71	126.57	0.864	0.30 (0.30)	0.99	49117.5	12010.00
21	31301.24	132.33	0.852	0.30 (0.30)	0.99	49464.5	10210.00
22	30849.46	135.28	0.846	0.30 (0.30)	0.99	49581.7	12000.00
23	27795.32	159.73	0.798	0.30 (0.30)	0.99	50202.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 35846.96 Tc(MIN.) = 91.16
EFFECTIVE AREA(ACRES) = 38860.12 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) = 38876.12 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) = 35846.96
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) = 38892.73 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) = 35846.96
 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
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NATURAL FAIR COVER

"OPEN BRUSH"	B	1.80	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

SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 1.14

EFFECTIVE AREA(ACRES) = 38894.53 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) = 35846.96

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 91.16

EFFECTIVE AREA(ACRES) = 38894.53 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991

PEAK FLOW RATE(CFS) = 35846.96

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19075.18	13.29	2.972	0.30(0.29)	0.97	3499.3	12603.00
2	20393.14	16.81	2.526	0.30(0.29)	0.97	4710.1	12606.00
3	22174.87	22.16	2.109	0.30(0.29)	0.98	6402.9	600.00
4	26542.16	39.30	1.492	0.30(0.30)	0.98	12393.7	40100.00
5	27906.93	47.38	1.353	0.30(0.30)	0.99	15221.7	11801.00
6	30115.62	58.53	1.226	0.30(0.30)	0.99	19806.1	11530.00
7	31235.75	63.07	1.190	0.30(0.30)	0.99	22120.6	11701.00
8	32186.40	66.69	1.166	0.30(0.30)	0.99	24213.8	11910.00
9	34965.55	77.24	1.094	0.30(0.30)	0.99	30908.0	10800.00
10	35707.78	81.57	1.065	0.30(0.30)	0.99	33853.3	11130.00
11	35806.39	88.51	1.018	0.30(0.30)	0.99	37451.7	12330.00
12	35846.96	91.16	1.003	0.30(0.30)	0.99	38894.5	12410.00
13	35762.57	94.04	0.990	0.30(0.30)	0.99	40273.2	10600.00
14	35646.30	99.40	0.967	0.30(0.30)	0.99	42633.6	11201.00
15	35403.00	104.32	0.945	0.30(0.30)	0.99	44365.3	12201.00
16	35133.59	107.05	0.934	0.30(0.30)	0.99	45154.5	10410.00
17	34594.04	111.23	0.915	0.30(0.30)	0.99	46222.5	12231.00
18	34225.77	114.07	0.903	0.30(0.30)	0.99	46895.8	12101.10
19	33501.18	118.84	0.882	0.30(0.30)	0.99	47856.8	10400.00
20	32346.71	126.57	0.864	0.30(0.30)	0.99	49151.9	12010.00
21	31301.24	132.33	0.852	0.30(0.30)	0.99	49498.9	10210.00
22	30849.46	135.28	0.846	0.30(0.30)	0.99	49616.1	12000.00
23	27795.32	159.73	0.798	0.30(0.30)	0.99	50237.3	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S27- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV27.DAT
TIME/DATE OF STUDY: 09:52 06/14/2019

=====

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; 5.453
- 2) 10.00; 3.490
- 3) 15.00; 2.670
- 4) 20.00; 2.230
- 5) 25.00; 1.926
- 6) 30.00; 1.733
- 7) 40.00; 1.467
- 8) 50.00; 1.305
- 9) 60.00; 1.202
- 10) 90.00; 0.999
- 11) 120.00; 0.869
- 12) 180.00; 0.747
- 13) 360.00; 0.555
- 14) 1200.00; 0.244

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 12606.00 TO NODE 12606.00 IS CODE = 15.1

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

=====

PEAK FLOWRATE TABLE FILE NAME: RI50EV26.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19075.18	13.29	0.30 (0.29)	0.97	3499.3	12603.00
2	20393.14	16.81	0.30 (0.29)	0.97	4710.1	12606.00
3	22174.87	22.16	0.30 (0.29)	0.98	6402.9	600.00
4	26542.16	39.30	0.30 (0.30)	0.98	12393.7	40100.00
5	27906.93	47.38	0.30 (0.30)	0.99	15221.7	11801.00
6	30115.62	58.53	0.30 (0.30)	0.99	19806.1	11530.00
7	31235.75	63.07	0.30 (0.30)	0.99	22120.6	11701.00
8	32186.40	66.69	0.30 (0.30)	0.99	24213.8	11910.00
9	34965.55	77.24	0.30 (0.30)	0.99	30908.0	10800.00
10	35707.78	81.57	0.30 (0.30)	0.99	33853.3	11130.00
11	35846.96	91.16	0.30 (0.30)	0.99	38894.5	12410.00
12	35646.30	99.40	0.30 (0.30)	0.99	42633.6	11201.00
13	35403.00	104.32	0.30 (0.30)	0.99	44365.3	12201.00
14	34594.04	111.23	0.30 (0.30)	0.99	46222.5	12231.00
15	34225.77	114.07	0.30 (0.30)	0.99	46895.8	12101.10
16	33501.18	118.84	0.30 (0.30)	0.99	47856.8	10400.00
17	32346.71	126.57	0.30 (0.30)	0.99	49151.9	12010.00
18	31301.24	132.33	0.30 (0.30)	0.99	49498.9	10210.00
19	30849.46	135.28	0.30 (0.30)	0.99	49616.1	12000.00
20	27795.32	159.73	0.30 (0.30)	0.99	50237.3	10100.00
TOTAL AREA (ACRES) =						50237.3

FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 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	19075.18	13.29	0.30 (0.29)	0.97	3499.3	12603.00
2	20393.14	16.81	0.30 (0.29)	0.97	4710.1	12606.00
3	22174.87	22.16	0.30 (0.29)	0.98	6402.9	600.00
4	26542.16	39.30	0.30 (0.30)	0.98	12393.7	40100.00
5	27906.93	47.38	0.30 (0.30)	0.99	15221.7	11801.00
6	30115.62	58.53	0.30 (0.30)	0.99	19806.1	11530.00
7	31235.75	63.07	0.30 (0.30)	0.99	22120.6	11701.00
8	32186.40	66.69	0.30 (0.30)	0.99	24213.8	11910.00
9	34965.55	77.24	0.30 (0.30)	0.99	30908.0	10800.00
10	35707.78	81.57	0.30 (0.30)	0.99	33853.3	11130.00
11	35846.96	91.16	0.30 (0.30)	0.99	38894.5	12410.00
12	35646.30	99.40	0.30 (0.30)	0.99	42633.6	11201.00
13	35403.00	104.32	0.30 (0.30)	0.99	44365.3	12201.00

14	34594.04	111.23	0.30	(0.30)	0.99	46222.5	12231.00
15	34225.77	114.07	0.30	(0.30)	0.99	46895.8	12101.10
16	33501.18	118.84	0.30	(0.30)	0.99	47856.8	10400.00
17	32346.71	126.57	0.30	(0.30)	0.99	49151.9	12010.00
18	31301.24	132.33	0.30	(0.30)	0.99	49498.9	10210.00
19	30849.46	135.28	0.30	(0.30)	0.99	49616.1	12000.00
20	27795.32	159.73	0.30	(0.30)	0.99	50237.3	10100.00

TOTAL AREA (ACRES) = 50237.3

FLOW PROCESS FROM NODE 12606.00 TO NODE 12701.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 286.00 DOWNSTREAM (FEET) = 276.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 1260.19 CHANNEL SLOPE = 0.0079
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT (FEET) = 8.78

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.989

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) = 35850.22

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 16.75

AVERAGE FLOW DEPTH (FEET) = 8.78 TRAVEL TIME (MIN.) = 1.25

Tc (MIN.) = 92.42

SUBAREA AREA (ACRES) = 7.55 SUBAREA RUNOFF (CFS) = 6.51

EFFECTIVE AREA (ACRES) = 38902.08 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 50244.8 PEAK FLOW RATE (CFS) = 35846.96

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT (FEET) = 8.78

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 8.78 FLOW VELOCITY (FEET/SEC.) = 16.75

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12701.00 = 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.) = 92.42

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.989

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) = 19.55

EFFECTIVE AREA (ACRES) = 38933.48 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 50276.2 PEAK FLOW RATE (CFS) = 35846.96

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.) = 92.42

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.989

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) = 1.05

EFFECTIVE AREA (ACRES) = 38935.18 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA (ACRES) = 50277.9 PEAK FLOW RATE (CFS) = 35846.96

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) = 9.18

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.988

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) = 35847.46

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 15.88

AVERAGE FLOW DEPTH (FEET) = 9.18 TRAVEL TIME (MIN.) = 0.15

Tc (MIN.) = 92.57

SUBAREA AREA (ACRES) = 1.49 SUBAREA RUNOFF (CFS) = 0.98

EFFECTIVE AREA(ACRES) = 38936.66 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 50279.4 PEAK FLOW RATE(CFS) = 35846.96
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 9.18 FLOW VELOCITY(FEET/SEC.) = 15.88
 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) = 38936.66
 TOTAL STREAM AREA(ACRES) = 50279.43
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 35846.96

 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) = 2.849
 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) = 15.05
 TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 15.05

 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) = 2.559
 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) = 42.49
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.42
 AVERAGE FLOW DEPTH(FEET) = 0.69 TRAVEL TIME(MIN.) = 2.36
 Tc(MIN.) = 16.27

SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 54.76
 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) = 68.09
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.91 FLOW VELOCITY(FEET/SEC.) = 6.32
 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) = 2.353

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) = 83.50
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.33
 AVERAGE FLOW DEPTH(FEET) = 0.96 TRAVEL TIME(MIN.) = 2.33
 Tc(MIN.) = 18.60

SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 30.80
 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) = 92.70
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 1.01

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.01 FLOW VELOCITY(FEET/SEC.) = 7.62
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) = 2.182

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	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) = 195.00

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.73

AVERAGE FLOW DEPTH(FEET) = 1.67 TRAVEL TIME(MIN.) = 2.19

Tc(MIN.) = 20.79

SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 204.58

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) = 289.85

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.08 FLOW VELOCITY(FEET/SEC.) = 9.85

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) = 2.73

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.044

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) = 405.07

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.65

AVERAGE FLOW DEPTH(FEET) = 2.72 TRAVEL TIME(MIN.) = 2.27

Tc(MIN.) = 23.06

SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 230.40

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) = 501.13

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.) = 10.25

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) = 2.04

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 = 501.13

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19075.18	15.03	2.667	0.30(0.29)	0.96	3541.5	12603.00
1	20393.14	18.51	2.361	0.30(0.29)	0.97	4752.3	12606.00
1	22174.87	23.81	1.998	0.30(0.29)	0.97	6445.0	600.00
1	26542.16	40.86	1.453	0.30(0.30)	0.98	12435.9	40100.00
1	27906.93	48.91	1.323	0.30(0.30)	0.99	15263.8	11801.00
1	30115.62	60.03	1.202	0.30(0.30)	0.99	19848.2	11530.00
1	31235.75	64.54	1.171	0.30(0.30)	0.99	22162.8	11701.00
1	32186.40	68.15	1.147	0.30(0.30)	0.99	24256.0	11910.00
1	34965.55	78.66	1.076	0.30(0.30)	0.99	30950.1	10800.00
1	35707.78	82.98	1.047	0.30(0.30)	0.99	33895.5	11130.00
1	35846.96	92.57	0.988	0.30(0.30)	0.99	38936.7	12410.00
1	35646.30	100.81	0.952	0.30(0.30)	0.99	42675.8	11201.00
1	35403.00	105.73	0.931	0.30(0.30)	0.99	44407.5	12201.00
1	34594.04	112.66	0.901	0.30(0.30)	0.99	46264.6	12231.00
1	34225.77	115.50	0.888	0.30(0.30)	0.99	46937.9	12101.10
1	33501.18	120.28	0.868	0.30(0.30)	0.99	47898.9	10400.00
1	32346.71	128.02	0.853	0.30(0.30)	0.99	49194.0	12010.00
1	31301.24	133.80	0.841	0.30(0.30)	0.99	49541.0	10210.00
1	30849.46	136.77	0.835	0.30(0.30)	0.99	49658.2	12000.00
1	27795.32	161.27	0.785	0.30(0.30)	0.99	50279.4	10100.00
2	501.13	23.06	2.044	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	19504.53	15.03	2.667	0.30 (0.28)	0.93	3724.6	12603.00
2	20859.76	18.51	2.361	0.30 (0.28)	0.93	4977.8	12606.00
3	22423.92	23.06	2.044	0.30 (0.28)	0.94	6486.6	12710.00
4	22664.47	23.81	1.998	0.30 (0.28)	0.94	6726.0	600.00
5	26893.90	40.86	1.453	0.30 (0.29)	0.97	12716.9	40100.00
6	28225.69	48.91	1.323	0.30 (0.29)	0.97	15544.8	11801.00
7	30403.84	60.03	1.202	0.30 (0.29)	0.98	20129.2	11530.00
8	31516.23	64.54	1.171	0.30 (0.29)	0.98	22443.8	11701.00
9	32460.71	68.15	1.147	0.30 (0.29)	0.98	24537.0	11910.00
10	35221.88	78.66	1.076	0.30 (0.29)	0.98	31231.1	10800.00
11	35956.72	82.98	1.047	0.30 (0.30)	0.98	34176.5	11130.00
12	36081.06	92.57	0.988	0.30 (0.30)	0.99	39217.7	12410.00
13	35871.38	100.81	0.952	0.30 (0.30)	0.99	42956.8	11201.00
14	35622.68	105.73	0.931	0.30 (0.30)	0.99	44688.5	12201.00
15	34806.13	112.66	0.901	0.30 (0.30)	0.98	46545.6	12231.00
16	34434.75	115.50	0.888	0.30 (0.30)	0.98	47218.9	12101.10
17	33705.07	120.28	0.868	0.30 (0.30)	0.99	48179.9	10400.00
18	32546.63	128.02	0.853	0.30 (0.30)	0.99	49475.0	12010.00
19	31498.19	133.80	0.841	0.30 (0.30)	0.99	49822.0	10210.00
20	31044.88	136.77	0.835	0.30 (0.30)	0.99	49939.2	12000.00
21	27978.14	161.27	0.785	0.30 (0.30)	0.99	50560.4	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 36081.06 Tc(MIN.) = 92.57
 EFFECTIVE AREA(ACRES) = 39217.66 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 50560.4
 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.) = 92.57
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.988
 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) = 2.83
 EFFECTIVE AREA(ACRES) = 39222.16 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 50564.9 PEAK FLOW RATE(CFS) = 36081.06
 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) = 9.38
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.975
 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) = 36107.50
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.59
 AVERAGE FLOW DEPTH(FEET) = 9.38 TRAVEL TIME(MIN.) = 2.85
 Tc(MIN.) = 95.43
 SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 52.89
 EFFECTIVE AREA(ACRES) = 39284.31 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 50627.1 PEAK FLOW RATE(CFS) = 36081.06
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.37 FLOW VELOCITY(FEET/SEC.) = 15.59
 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.) = 95.43
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.975
 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) = 11.89
 EFFECTIVE AREA(ACRES) = 39303.81 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 50646.6 PEAK FLOW RATE (CFS) = 36081.06
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 81

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

MAINLINE Tc (MIN.) = 95.43
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.975
 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) = 2.17
 EFFECTIVE AREA (ACRES) = 39307.31 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 50650.1 PEAK FLOW RATE (CFS) = 36081.06
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION (MIN.) = 95.43
 RAINFALL INTENSITY (INCH/HR) = 0.98
 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 39307.31
 TOTAL STREAM AREA (ACRES) = 50650.08
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 36081.06

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 18.30 RAINFALL INTENSITY (INCH/HR) = 2.38
 EFFECTIVE AREA (ACRES) = 146.90

TOTAL AREA (ACRES) = 439.50 PEAK FLOW RATE (CFS) = 211.00
 AREA-AVERAGED Fm (INCH/HR) = 0.14 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.48
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION (MIN.) = 18.30
 RAINFALL INTENSITY (INCH/HR) = 2.38
 AREA-AVERAGED Fm (INCH/HR) = 0.14
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.48
 EFFECTIVE STREAM AREA (ACRES) = 146.90
 TOTAL STREAM AREA (ACRES) = 439.50
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 211.00

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19504.53	18.53	2.359	0.30 (0.27)	0.91	3814.3	12603.00
1	20859.76	21.94	2.112	0.30 (0.28)	0.92	5067.5	12606.00
1	22423.92	26.41	1.872	0.30 (0.28)	0.93	6576.2	12710.00
1	22664.47	27.14	1.843	0.30 (0.28)	0.94	6815.7	600.00
1	26893.90	44.01	1.402	0.30 (0.29)	0.96	12806.5	40100.00
1	28225.69	52.01	1.284	0.30 (0.29)	0.97	15634.5	11801.00
1	30403.84	63.04	1.181	0.30 (0.29)	0.97	20218.9	11530.00
1	31516.23	67.53	1.151	0.30 (0.29)	0.98	22533.4	11701.00
1	32460.71	71.11	1.127	0.30 (0.29)	0.98	24626.6	11910.00
1	35221.88	81.53	1.056	0.30 (0.29)	0.98	31320.8	10800.00
1	35956.72	85.83	1.027	0.30 (0.29)	0.98	34266.1	11130.00
1	36081.06	95.43	0.975	0.30 (0.30)	0.98	39307.3	12410.00
1	35871.38	103.67	0.940	0.30 (0.30)	0.98	43046.4	11201.00
1	35622.68	108.60	0.918	0.30 (0.30)	0.98	44778.1	12201.00
1	34806.13	115.55	0.888	0.30 (0.30)	0.98	46635.3	12231.00
1	34434.75	118.40	0.876	0.30 (0.30)	0.98	47308.6	12101.10
1	33705.07	123.20	0.862	0.30 (0.30)	0.98	48269.6	10400.00
1	32546.63	130.97	0.847	0.30 (0.30)	0.98	49564.7	12010.00
1	31498.19	136.78	0.835	0.30 (0.30)	0.98	49911.6	10210.00
1	31044.88	139.76	0.829	0.30 (0.30)	0.98	50028.8	12000.00
1	27978.14	164.37	0.779	0.30 (0.30)	0.98	50650.1	10100.00
2	211.00	18.30	2.380	0.30 (0.14)	0.48	146.9	12720.50

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19659.96	18.30	2.380	0.30 (0.27)	0.90	3913.4	12720.50
2	19713.61	18.53	2.359	0.30 (0.27)	0.90	3961.2	12603.00
3	21045.53	21.94	2.112	0.30 (0.27)	0.91	5214.4	12606.00

4	22586.99	26.41	1.872	0.30	(0.28)	0.92	6723.1	12710.00
5	22824.85	27.14	1.843	0.30	(0.28)	0.93	6962.6	600.00
6	27012.65	44.01	1.402	0.30	(0.29)	0.96	12953.4	40100.00
7	28333.32	52.01	1.284	0.30	(0.29)	0.96	15781.4	11801.00
8	30501.75	63.04	1.181	0.30	(0.29)	0.97	20365.8	11530.00
9	31611.28	67.53	1.151	0.30	(0.29)	0.97	22680.3	11701.00
10	32553.48	71.11	1.127	0.30	(0.29)	0.97	24773.5	11910.00
11	35307.98	81.53	1.056	0.30	(0.29)	0.98	31467.7	10800.00
12	36040.07	85.83	1.027	0.30	(0.29)	0.98	34413.0	11130.00
13	36159.54	95.43	0.975	0.30	(0.29)	0.98	39454.2	12410.00
14	35946.48	103.67	0.940	0.30	(0.29)	0.98	43193.3	11201.00
15	35695.77	108.60	0.918	0.30	(0.29)	0.98	44925.0	12201.00
16	34876.38	115.55	0.888	0.30	(0.29)	0.98	46782.2	12231.00
17	34503.83	118.40	0.876	0.30	(0.29)	0.98	47455.5	12101.10
18	33772.89	123.20	0.862	0.30	(0.29)	0.98	48416.5	10400.00
19	32612.95	130.97	0.847	0.30	(0.29)	0.98	49711.6	12010.00
20	31563.39	136.78	0.835	0.30	(0.29)	0.98	50058.5	10210.00
21	31109.52	139.76	0.829	0.30	(0.29)	0.98	50175.7	12000.00
22	28038.05	164.37	0.779	0.30	(0.29)	0.98	50797.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 36159.54 Tc(MIN.) = 95.43
EFFECTIVE AREA(ACRES) = 39454.21 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51089.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

FLOW PROCESS FROM NODE 12720.50 TO NODE 12721.00 IS CODE = 56

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

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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) = 10.32
CHANNEL FLOW THRU SUBAREA(CFS) = 36159.54
FLOW VELOCITY(FEET/SEC.) = 13.93 FLOW DEPTH(FEET) = 10.32
TRAVEL TIME(MIN.) = 0.52 Tc(MIN.) = 95.95
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

>>>>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) = 14.92
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.966
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

COMMERCIAL B 11.24 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) = 36164.28
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.83
AVERAGE FLOW DEPTH(FEET) = 14.92 TRAVEL TIME(MIN.) = 1.57
Tc(MIN.) = 97.52
SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 9.47
EFFECTIVE AREA(ACRES) = 39465.45 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51100.8 PEAK FLOW RATE(CFS) = 36159.54
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) = 14.92

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 14.92 FLOW VELOCITY(FEET/SEC.) = 8.83
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<<<<<

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MAINLINE Tc(MIN.) = 97.52
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.966
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 5.94
EFFECTIVE AREA(ACRES) = 39475.35 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51110.7 PEAK FLOW RATE(CFS) = 36159.54
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 97.52
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.966
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
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) = 39477.95 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51113.3 PEAK FLOW RATE(CFS) = 36159.54
 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<<<<

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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) = 10.26
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.963

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) = 36165.06

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.03

AVERAGE FLOW DEPTH(FEET) = 10.26 TRAVEL TIME(MIN.) = 0.74

Tc(MIN.) = 98.26

SUBAREA AREA(ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 11.05

EFFECTIVE AREA(ACRES) = 39495.85 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 51131.2 PEAK FLOW RATE(CFS) = 36159.54

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) = 10.26

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 10.26 FLOW VELOCITY(FEET/SEC.) = 14.03

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.) = 98.26

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.963

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) = 26.50

EFFECTIVE AREA(ACRES) = 39540.25 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 51175.6 PEAK FLOW RATE(CFS) = 36159.54

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<<<<

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TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 98.26

RAINFALL INTENSITY(INCH/HR) = 0.96

AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.98

EFFECTIVE STREAM AREA(ACRES) = 39540.25

TOTAL STREAM AREA(ACRES) = 51175.62

PEAK FLOW RATE(CFS) AT CONFLUENCE = 36159.54

 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) = 2.863

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" B 6.33 0.30 1.000 63 13.82
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA RUNOFF(CFS) = 14.60
 TOTAL AREA (ACRES) = 6.33 PEAK FLOW RATE (CFS) = 14.60

 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) = 0.91
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.489
 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) = 52.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.00
 AVERAGE FLOW DEPTH(FEET) = 0.90 TRAVEL TIME(MIN.) = 3.24
 Tc(MIN.) = 17.06
 SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 76.61
 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) = 89.07
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 1.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.21 FLOW VELOCITY(FEET/SEC.) = 5.93
 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) = 1.68
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.239
 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) = 148.29
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.78
 AVERAGE FLOW DEPTH(FEET) = 1.65 TRAVEL TIME(MIN.) = 2.84
 Tc(MIN.) = 19.90
 SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 118.31
 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) = 198.17
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 1.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.93 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<<<<<

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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) = 1.997
 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) = 254.93
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.03
 AVERAGE FLOW DEPTH(FEET) = 2.44 TRAVEL TIME(MIN.) = 3.92
 Tc(MIN.) = 23.83
 SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 113.41
 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) = 289.76
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 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<<<<<

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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) = 1.833
 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) = 310.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.76
 AVERAGE FLOW DEPTH (FEET) = 2.40 TRAVEL TIME (MIN.) = 3.58
 Tc (MIN.) = 27.41
 SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 42.23
 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) = 307.67
 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.) = 8.73
 LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12740.00 = 6225.32 FEET.

 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION (MIN.) = 27.41
 RAINFALL INTENSITY (INCH/HR) = 1.83
 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 = 307.67

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19659.96	21.75	2.124	0.30 (0.27)	0.90	3999.5	12720.50
1	19713.61	21.98	2.110	0.30 (0.27)	0.90	4047.2	12603.00
1	21045.53	25.31	1.914	0.30 (0.27)	0.91	5300.4	12606.00
1	22586.99	29.70	1.745	0.30 (0.28)	0.92	6809.1	12710.00
1	22824.85	30.42	1.722	0.30 (0.28)	0.93	7048.6	600.00
1	27012.65	47.11	1.352	0.30 (0.29)	0.96	13039.5	40100.00
1	28333.32	55.07	1.253	0.30 (0.29)	0.96	15867.4	11801.00
1	30501.75	66.03	1.161	0.30 (0.29)	0.97	20451.8	11530.00
1	31611.28	70.48	1.131	0.30 (0.29)	0.97	22766.4	11701.00
1	32553.48	74.04	1.107	0.30 (0.29)	0.97	24859.5	11910.00
1	35307.98	84.39	1.037	0.30 (0.29)	0.98	31553.7	10800.00

1	36040.07	88.67	1.008	0.30 (0.29)	0.98	34499.0	11130.00
1	36159.54	98.26	0.963	0.30 (0.29)	0.98	39540.2	12410.00
1	35946.48	106.51	0.927	0.30 (0.29)	0.98	43279.4	11201.00
1	35695.77	111.45	0.906	0.30 (0.29)	0.98	45011.1	12201.00
1	34876.38	118.41	0.876	0.30 (0.29)	0.98	46868.2	12231.00
1	34503.83	121.28	0.866	0.30 (0.29)	0.98	47541.5	12101.10
1	33772.89	126.10	0.857	0.30 (0.29)	0.98	48502.5	10400.00
1	32612.95	133.90	0.841	0.30 (0.29)	0.98	49797.6	12010.00
1	31563.39	139.74	0.829	0.30 (0.29)	0.98	50144.6	10210.00
1	31109.52	142.73	0.823	0.30 (0.29)	0.98	50261.8	12000.00
1	28038.05	167.44	0.773	0.30 (0.29)	0.98	50883.0	10100.00
2	307.67	27.41	1.833	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	19943.65	21.75	2.124	0.30 (0.26)	0.87	4150.6	12720.50
2	19998.37	21.98	2.110	0.30 (0.26)	0.87	4200.0	12603.00
3	21342.47	25.31	1.914	0.30 (0.27)	0.88	5476.4	12606.00
4	22089.84	27.41	1.833	0.30 (0.27)	0.89	6212.0	12730.00
5	22879.49	29.70	1.745	0.30 (0.27)	0.90	6999.7	12710.00
6	23113.42	30.42	1.722	0.30 (0.27)	0.90	7239.2	600.00
7	27237.77	47.11	1.352	0.30 (0.28)	0.94	13230.0	40100.00
8	28541.47	55.07	1.253	0.30 (0.29)	0.95	16058.0	11801.00
9	30694.19	66.03	1.161	0.30 (0.29)	0.96	20642.4	11530.00
10	31798.56	70.48	1.131	0.30 (0.29)	0.97	22956.9	11701.00
11	32736.63	74.04	1.107	0.30 (0.29)	0.97	25050.1	11910.00
12	35479.13	84.39	1.037	0.30 (0.29)	0.97	31744.2	10800.00
13	36206.25	88.67	1.008	0.30 (0.29)	0.98	34689.6	11130.00
14	36318.03	98.26	0.963	0.30 (0.29)	0.98	39730.8	12410.00
15	36098.84	106.51	0.927	0.30 (0.29)	0.98	43469.9	11201.00
16	35844.46	111.45	0.906	0.30 (0.29)	0.98	45201.6	12201.00
17	35019.90	118.41	0.876	0.30 (0.29)	0.98	47058.8	12231.00
18	34645.72	121.28	0.866	0.30 (0.29)	0.98	47732.0	12101.10
19	33913.10	126.10	0.857	0.30 (0.29)	0.98	48693.0	10400.00
20	32750.44	133.90	0.841	0.30 (0.29)	0.98	49988.1	12010.00
21	31698.85	139.74	0.829	0.30 (0.29)	0.98	50335.1	10210.00
22	31243.93	142.73	0.823	0.30 (0.29)	0.98	50452.3	12000.00
23	28163.85	167.44	0.773	0.30 (0.29)	0.98	51073.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 36318.03 Tc (MIN.) = 98.26
 EFFECTIVE AREA (ACRES) = 39730.79 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51366.2
 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) = 7.73
 CHANNEL FLOW THRU SUBAREA (CFS) = 36318.03
 FLOW VELOCITY (FEET/SEC.) = 19.68 FLOW DEPTH (FEET) = 7.73
 TRAVEL TIME (MIN.) = 0.34 Tc (MIN.) = 98.60
 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.) = 98.60
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.962
 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) = 8.52
 EFFECTIVE AREA (ACRES) = 39744.09 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51379.5 PEAK FLOW RATE (CFS) = 36318.03
 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.) = 98.60
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.962
 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) = 39744.98 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51380.4 PEAK FLOW RATE (CFS) = 36318.03
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 98.60
 RAINFALL INTENSITY (INCH/HR) = 0.96
 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 39744.98
 TOTAL STREAM AREA (ACRES) = 51380.36
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 36318.03

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 23.67 RAINFALL INTENSITY (INCH/HR) = 2.01
 EFFECTIVE AREA (ACRES) = 68.40
 TOTAL AREA (ACRES) = 870.60 PEAK FLOW RATE (CFS) = 104.80
 AREA-AVERAGED Fm (INCH/HR) = 0.15 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 23.67
 RAINFALL INTENSITY (INCH/HR) = 2.01
 AREA-AVERAGED Fm (INCH/HR) = 0.15
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 EFFECTIVE STREAM AREA (ACRES) = 68.40
 TOTAL STREAM AREA (ACRES) = 870.60
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 104.80

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19943.65	22.16	2.098	0.30 (0.26)	0.87	4164.8	12720.50
1	19998.37	22.39	2.085	0.30 (0.26)	0.87	4214.2	12603.00
1	21342.47	25.71	1.898	0.30 (0.27)	0.88	5490.6	12606.00
1	22089.84	27.81	1.818	0.30 (0.27)	0.89	6226.2	12730.00
1	22879.49	30.10	1.730	0.30 (0.27)	0.90	7013.9	12710.00
1	23113.42	30.82	1.711	0.30 (0.27)	0.90	7253.4	600.00
1	27237.77	47.49	1.346	0.30 (0.28)	0.94	13244.2	40100.00
1	28541.47	55.44	1.249	0.30 (0.29)	0.95	16072.2	11801.00
1	30694.19	66.39	1.159	0.30 (0.29)	0.96	20656.6	11530.00
1	31798.56	70.84	1.129	0.30 (0.29)	0.97	22971.1	11701.00

1	32736.63	74.39	1.105	0.30 (0.29)	0.97	25064.3	11910.00
1	35479.13	84.73	1.035	0.30 (0.29)	0.97	31758.4	10800.00
1	36206.25	89.01	1.006	0.30 (0.29)	0.98	34703.8	11130.00
1	36318.03	98.60	0.962	0.30 (0.29)	0.98	39745.0	12410.00
1	36098.84	106.85	0.926	0.30 (0.29)	0.98	43484.1	11201.00
1	35844.46	111.79	0.905	0.30 (0.29)	0.98	45215.8	12201.00
1	35019.90	118.76	0.874	0.30 (0.29)	0.98	47072.9	12231.00
1	34645.72	121.62	0.866	0.30 (0.29)	0.98	47746.2	12101.10
1	33913.10	126.44	0.856	0.30 (0.29)	0.98	48707.2	10400.00
1	32750.44	134.25	0.840	0.30 (0.29)	0.98	50002.3	12010.00
1	31698.85	140.10	0.828	0.30 (0.29)	0.98	50349.3	10210.00
1	31243.93	143.09	0.822	0.30 (0.29)	0.98	50466.5	12000.00
1	28163.85	167.81	0.772	0.30 (0.29)	0.98	51087.8	10100.00
2	104.80	23.67	2.007	0.30 (0.15)	0.50	68.4	12741.00

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	20046.62	22.16	2.098	0.30 (0.26)	0.86	4228.9	12720.50
2	20101.66	22.39	2.085	0.30 (0.26)	0.86	4278.9	12603.00
3	20620.09	23.67	2.007	0.30 (0.26)	0.87	4773.5	12741.00
4	21441.15	25.71	1.898	0.30 (0.26)	0.88	5559.0	12606.00
5	22183.96	27.81	1.818	0.30 (0.27)	0.89	6294.6	12730.00
6	22968.68	30.10	1.730	0.30 (0.27)	0.90	7082.3	12710.00
7	23201.53	30.82	1.711	0.30 (0.27)	0.90	7321.8	600.00
8	27305.25	47.49	1.346	0.30 (0.28)	0.94	13312.6	40100.00
9	28603.50	55.44	1.249	0.30 (0.29)	0.95	16140.6	11801.00
10	30751.12	66.39	1.159	0.30 (0.29)	0.96	20725.0	11530.00
11	31853.80	70.84	1.129	0.30 (0.29)	0.96	23039.5	11701.00
12	32790.52	74.39	1.105	0.30 (0.29)	0.97	25132.7	11910.00
13	35529.06	84.73	1.035	0.30 (0.29)	0.97	31826.8	10800.00
14	36254.54	89.01	1.006	0.30 (0.29)	0.97	34772.2	11130.00
15	36363.84	98.60	0.962	0.30 (0.29)	0.98	39813.4	12410.00
16	36142.64	106.85	0.926	0.30 (0.29)	0.98	43552.5	11201.00
17	35887.05	111.79	0.905	0.30 (0.29)	0.98	45284.2	12201.00
18	35060.78	118.76	0.874	0.30 (0.29)	0.98	47141.3	12231.00
19	34686.12	121.62	0.866	0.30 (0.29)	0.98	47814.6	12101.10
20	33952.94	126.44	0.856	0.30 (0.29)	0.98	48775.6	10400.00
21	32789.38	134.25	0.840	0.30 (0.29)	0.98	50070.7	12010.00
22	31737.12	140.10	0.828	0.30 (0.29)	0.98	50417.7	10210.00
23	31281.86	143.09	0.822	0.30 (0.29)	0.98	50534.9	12000.00
24	28198.94	167.81	0.772	0.30 (0.29)	0.98	51156.2	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 36363.84 Tc(MIN.) = 98.60
EFFECTIVE AREA(ACRES) = 39813.38 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52251.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

FLOW PROCESS FROM NODE 12741.00 TO NODE 12800.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

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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) = 8.66
CHANNEL FLOW THRU SUBAREA(CFS) = 36363.84
FLOW VELOCITY(FEET/SEC.) = 17.25 FLOW DEPTH(FEET) = 8.66
TRAVEL TIME(MIN.) = 0.79 Tc(MIN.) = 99.39
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.) = 99.39

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.958

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	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) = 10.26					
EFFECTIVE AREA(ACRES) = 39830.69 AREA-AVERAGED Fm(INCH/HR) = 0.29					
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98					
TOTAL AREA(ACRES) = 52268.3 PEAK FLOW RATE(CFS) = 36363.84					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52268.3 TC(MIN.) = 99.39
EFFECTIVE AREA(ACRES) = 39830.69 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.977
PEAK FLOW RATE(CFS) = 36363.84

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20046.62	23.13	2.040	0.30 (0.26)	0.86	4246.2	12720.50
2	20101.66	23.36	2.026	0.30 (0.26)	0.86	4296.2	12603.00
3	20620.09	24.63	1.949	0.30 (0.26)	0.87	4790.8	12741.00
4	21441.15	26.66	1.862	0.30 (0.26)	0.88	5576.3	12606.00
5	22183.96	28.74	1.782	0.30 (0.27)	0.89	6311.9	12730.00
6	22968.68	31.02	1.706	0.30 (0.27)	0.90	7099.6	12710.00
7	23201.53	31.74	1.687	0.30 (0.27)	0.90	7339.1	600.00
8	27305.25	48.36	1.332	0.30 (0.28)	0.94	13329.9	40100.00
9	28603.50	56.30	1.240	0.30 (0.29)	0.95	16157.9	11801.00
10	30751.12	67.23	1.153	0.30 (0.29)	0.96	20742.3	11530.00
11	31853.80	71.66	1.123	0.30 (0.29)	0.96	23056.8	11701.00
12	32790.52	75.21	1.099	0.30 (0.29)	0.97	25150.0	11910.00
13	35529.06	85.53	1.029	0.30 (0.29)	0.97	31844.2	10800.00
14	36254.54	89.80	1.000	0.30 (0.29)	0.97	34789.5	11130.00
15	36363.84	99.39	0.958	0.30 (0.29)	0.98	39830.7	12410.00
16	36142.64	107.64	0.923	0.30 (0.29)	0.98	43569.8	11201.00
17	35887.05	112.58	0.901	0.30 (0.29)	0.98	45301.5	12201.00
18	35060.78	119.56	0.871	0.30 (0.29)	0.98	47158.7	12231.00

19	34686.12	122.43	0.864	0.30 (0.29)	0.98	47831.9	12101.10
20	33952.94	127.25	0.854	0.30 (0.29)	0.98	48792.9	10400.00
21	32789.38	135.07	0.838	0.30 (0.29)	0.98	50088.1	12010.00
22	31737.12	140.92	0.826	0.30 (0.29)	0.98	50435.0	10210.00
23	31281.86	143.92	0.820	0.30 (0.29)	0.98	50552.2	12000.00
24	28198.94	168.67	0.770	0.30 (0.29)	0.98	51173.5	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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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S28- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV28.DAT
TIME/DATE OF STUDY: 09:52 06/14/2019

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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; 5.453
- 2) 10.00; 3.490
- 3) 15.00; 2.670
- 4) 20.00; 2.230
- 5) 25.00; 1.926
- 6) 30.00; 1.733
- 7) 40.00; 1.467
- 8) 50.00; 1.305
- 9) 60.00; 1.202
- 10) 90.00; 0.999
- 11) 120.00; 0.869
- 12) 180.00; 0.747
- 13) 360.00; 0.555
- 14) 1200.00; 0.244

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 # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RI50EV27.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21441.15	26.66	0.30 (0.26)	0.88	5576.3	12606.00
2	22183.96	28.74	0.30 (0.27)	0.89	6311.9	12730.00
3	23201.53	31.74	0.30 (0.27)	0.90	7339.1	600.00
4	27305.25	48.36	0.30 (0.28)	0.94	13329.9	40100.00
5	28603.50	56.30	0.30 (0.29)	0.95	16157.9	11801.00
6	30751.12	67.23	0.30 (0.29)	0.96	20742.3	11530.00
7	31853.80	71.66	0.30 (0.29)	0.96	23056.8	11701.00
8	32790.52	75.21	0.30 (0.29)	0.97	25150.0	11910.00
9	35529.06	85.53	0.30 (0.29)	0.97	31844.2	10800.00
10	36254.54	89.80	0.30 (0.29)	0.97	34789.5	11130.00
11	36363.84	99.39	0.30 (0.29)	0.98	39830.7	12410.00
12	36142.64	107.64	0.30 (0.29)	0.98	43569.8	11201.00
13	35887.05	112.58	0.30 (0.29)	0.98	45301.5	12201.00
14	35060.78	119.56	0.30 (0.29)	0.98	47158.7	12231.00
15	34686.12	122.43	0.30 (0.29)	0.98	47831.9	12101.10
16	33952.94	127.25	0.30 (0.29)	0.98	48792.9	10400.00
17	32789.38	135.07	0.30 (0.29)	0.98	50088.1	12010.00
18	31737.12	140.92	0.30 (0.29)	0.98	50435.0	10210.00
19	31281.86	143.92	0.30 (0.29)	0.98	50552.2	12000.00
20	28198.94	168.67	0.30 (0.29)	0.98	51173.5	10100.00
TOTAL AREA (ACRES) =						51173.5

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1

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

=====

PEAK FLOWRATE TABLE FILE NAME: 0610501X.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1506.93	25.94	0.30 (0.29)	0.98	1025.8	50120.00
2	1480.85	27.19	0.30 (0.29)	0.98	1040.8	50150.00
3	1382.53	30.77	0.30 (0.29)	0.98	1063.4	50100.00
TOTAL AREA (ACRES) =						1063.4

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0

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

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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	21441.15	26.66	0.30 (0.26)	0.88	5576.3
2	22183.96	28.74	0.30 (0.27)	0.89	6311.9
3	23201.53	31.74	0.30 (0.27)	0.90	7339.1
4	27305.25	48.36	0.30 (0.28)	0.94	13329.9
5	28603.50	56.30	0.30 (0.29)	0.95	16157.9
6	30751.12	67.23	0.30 (0.29)	0.96	20742.3
7	31853.80	71.66	0.30 (0.29)	0.96	23056.8
8	32790.52	75.21	0.30 (0.29)	0.97	25150.0
9	35529.06	85.53	0.30 (0.29)	0.97	31844.2
10	36254.54	89.80	0.30 (0.29)	0.97	34789.5
11	36363.84	99.39	0.30 (0.29)	0.98	39830.7
12	36142.64	107.64	0.30 (0.29)	0.98	43569.8
13	35887.05	112.58	0.30 (0.29)	0.98	45301.5
14	35060.78	119.56	0.30 (0.29)	0.98	47158.7
15	34686.12	122.43	0.30 (0.29)	0.98	47831.9
16	33952.94	127.25	0.30 (0.29)	0.98	48792.9
17	32789.38	135.07	0.30 (0.29)	0.98	50088.1
18	31737.12	140.92	0.30 (0.29)	0.98	50435.0
19	31281.86	143.92	0.30 (0.29)	0.98	50552.2
20	28198.94	168.67	0.30 (0.29)	0.98	51173.5
TOTAL AREA (ACRES) =		51173.5			

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 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	21441.15	26.66	1.862	0.30 (0.26)	0.88	5576.3	12606.00
2	22183.96	28.74	1.782	0.30 (0.27)	0.89	6311.9	12730.00
3	23201.53	31.74	1.687	0.30 (0.27)	0.90	7339.1	600.00
4	27305.25	48.36	1.332	0.30 (0.28)	0.94	13329.9	40100.00
5	28603.50	56.30	1.240	0.30 (0.29)	0.95	16157.9	11801.00
6	30751.12	67.23	1.153	0.30 (0.29)	0.96	20742.3	11530.00
7	31853.80	71.66	1.123	0.30 (0.29)	0.96	23056.8	11701.00
8	32790.52	75.21	1.099	0.30 (0.29)	0.97	25150.0	11910.00
9	35529.06	85.53	1.029	0.30 (0.29)	0.97	31844.2	10800.00
10	36254.54	89.80	1.000	0.30 (0.29)	0.97	34789.5	11130.00
11	36363.84	99.39	0.958	0.30 (0.29)	0.98	39830.7	12410.00
12	36142.64	107.64	0.923	0.30 (0.29)	0.98	43569.8	11201.00
13	35887.05	112.58	0.901	0.30 (0.29)	0.98	45301.5	12201.00
14	35060.78	119.56	0.871	0.30 (0.29)	0.98	47158.7	12231.00
15	34686.12	122.43	0.864	0.30 (0.29)	0.98	47831.9	12101.10
16	33952.94	127.25	0.854	0.30 (0.29)	0.98	48792.9	10400.00
17	32789.38	135.07	0.838	0.30 (0.29)	0.98	50088.1	12010.00
18	31737.12	140.92	0.826	0.30 (0.29)	0.98	50435.0	10210.00
19	31281.86	143.92	0.820	0.30 (0.29)	0.98	50552.2	12000.00
20	28198.94	168.67	0.770	0.30 (0.29)	0.98	51173.5	10100.00
LONGEST FLOWPATH FROM NODE		10100.00 TO NODE 12800.00 =					111795.71 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	1506.93	25.94	1.890	0.30 (0.29)	0.98	1025.8	50120.00

2	1480.85	27.19	1.841	0.30 (0.29)	0.98	1040.8	50150.00
3	1382.53	30.77	1.713	0.30 (0.29)	0.98	1063.4	50100.00
LONGEST FLOWPATH FROM NODE		50150.00 TO NODE 12800.00 =					11349.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22731.28	25.94	1.890	0.30 (0.27)	0.90	6451.0	50120.00
2	22933.05	26.66	1.862	0.30 (0.27)	0.90	6610.7	12606.00
3	23111.20	27.19	1.841	0.30 (0.27)	0.90	6804.5	50150.00
4	23622.16	28.74	1.782	0.30 (0.27)	0.90	7362.5	12730.00
5	24254.43	30.77	1.713	0.30 (0.27)	0.91	8069.7	50100.00
6	24558.88	31.74	1.687	0.30 (0.27)	0.91	8402.5	600.00
7	28316.38	48.36	1.332	0.30 (0.28)	0.94	14393.3	40100.00
8	29525.51	56.30	1.240	0.30 (0.29)	0.95	17221.3	11801.00
9	31588.22	67.23	1.153	0.30 (0.29)	0.96	21805.7	11530.00
10	32661.65	71.66	1.123	0.30 (0.29)	0.96	24120.2	11701.00
11	33575.00	75.21	1.099	0.30 (0.29)	0.97	26213.4	11910.00
12	36245.46	85.53	1.029	0.30 (0.29)	0.97	32907.5	10800.00
13	36942.72	89.80	1.000	0.30 (0.29)	0.97	35852.9	11130.00
14	37011.05	99.39	0.958	0.30 (0.29)	0.98	40894.1	12410.00
15	36755.00	107.64	0.923	0.30 (0.29)	0.98	44633.2	11201.00
16	36478.54	112.58	0.901	0.30 (0.29)	0.98	46364.9	12201.00
17	35622.80	119.56	0.871	0.30 (0.29)	0.98	48222.0	12231.00
18	35241.46	122.43	0.864	0.30 (0.29)	0.98	48895.3	12101.10
19	34498.71	127.25	0.854	0.30 (0.29)	0.98	49856.3	10400.00
20	33319.65	135.07	0.838	0.30 (0.29)	0.98	51151.4	12010.00
21	32255.79	140.92	0.826	0.30 (0.29)	0.98	51498.4	10210.00
22	31794.58	143.92	0.820	0.30 (0.29)	0.98	51615.6	12000.00
23	28662.60	168.67	0.770	0.30 (0.29)	0.98	52236.8	10100.00
TOTAL AREA (ACRES) =		52236.8					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 37011.05 Tc(MIN.) = 99.392
EFFECTIVE AREA(ACRES) = 40894.08 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 52236.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52236.8 TC(MIN.) = 99.39
EFFECTIVE AREA(ACRES) = 40894.08 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.977
PEAK FLOW RATE(CFS) = 37011.05

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22731.28	25.94	1.890	0.30 (0.27)	0.90	6451.0	50120.00
2	22933.05	26.66	1.862	0.30 (0.27)	0.90	6610.7	12606.00
3	23111.20	27.19	1.841	0.30 (0.27)	0.90	6804.5	50150.00
4	23622.16	28.74	1.782	0.30 (0.27)	0.90	7362.5	12730.00
5	24254.43	30.77	1.713	0.30 (0.27)	0.91	8069.7	50100.00
6	24558.88	31.74	1.687	0.30 (0.27)	0.91	8402.5	600.00
7	28316.38	48.36	1.332	0.30 (0.28)	0.94	14393.3	40100.00
8	29525.51	56.30	1.240	0.30 (0.29)	0.95	17221.3	11801.00
9	31588.22	67.23	1.153	0.30 (0.29)	0.96	21805.7	11530.00
10	32661.65	71.66	1.123	0.30 (0.29)	0.96	24120.2	11701.00

11	33575.00	75.21	1.099	0.30	(0.29)	0.97	26213.4	11910.00
12	36245.46	85.53	1.029	0.30	(0.29)	0.97	32907.5	10800.00
13	36942.72	89.80	1.000	0.30	(0.29)	0.97	35852.9	11130.00
14	37011.05	99.39	0.958	0.30	(0.29)	0.98	40894.1	12410.00
15	36755.00	107.64	0.923	0.30	(0.29)	0.98	44633.2	11201.00
16	36478.54	112.58	0.901	0.30	(0.29)	0.98	46364.9	12201.00
17	35622.80	119.56	0.871	0.30	(0.29)	0.98	48222.0	12231.00
18	35241.46	122.43	0.864	0.30	(0.29)	0.98	48895.3	12101.10
19	34498.71	127.25	0.854	0.30	(0.29)	0.98	49856.3	10400.00
20	33319.65	135.07	0.838	0.30	(0.29)	0.98	51151.4	12010.00
21	32255.79	140.92	0.826	0.30	(0.29)	0.98	51498.4	10210.00
22	31794.58	143.92	0.820	0.30	(0.29)	0.98	51615.6	12000.00
23	28662.60	168.67	0.770	0.30	(0.29)	0.98	52236.8	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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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- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV29.DAT
TIME/DATE OF STUDY: 09:53 06/14/2019

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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; 5.437
- 2) 10.00; 3.483
- 3) 15.00; 2.666
- 4) 20.00; 2.227
- 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; 0.243

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: RI50EV28.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	23111.20	27.19	0.30 (0.27)	0.90	6804.5	50150.00
2	23622.16	28.74	0.30 (0.27)	0.90	7362.5	12730.00
3	24558.88	31.74	0.30 (0.27)	0.91	8402.5	600.00
4	28316.38	48.36	0.30 (0.28)	0.94	14393.3	40100.00
5	29525.51	56.30	0.30 (0.29)	0.95	17221.3	11801.00
6	31588.22	67.23	0.30 (0.29)	0.96	21805.7	11530.00
7	32661.65	71.66	0.30 (0.29)	0.96	24120.2	11701.00
8	33575.00	75.21	0.30 (0.29)	0.97	26213.4	11910.00
9	36245.46	85.53	0.30 (0.29)	0.97	32907.5	10800.00
10	36942.72	89.80	0.30 (0.29)	0.97	35852.9	11130.00
11	37011.05	99.39	0.30 (0.29)	0.98	40894.1	12410.00
12	36755.00	107.64	0.30 (0.29)	0.98	44633.2	11201.00
13	36478.54	112.58	0.30 (0.29)	0.98	46364.9	12201.00
14	35622.80	119.56	0.30 (0.29)	0.98	48222.0	12231.00
15	35241.46	122.43	0.30 (0.29)	0.98	48895.3	12101.10
16	34498.71	127.25	0.30 (0.29)	0.98	49856.3	10400.00
17	33319.65	135.07	0.30 (0.29)	0.98	51151.4	12010.00
18	32255.79	140.92	0.30 (0.29)	0.98	51498.4	10210.00
19	31794.58	143.92	0.30 (0.29)	0.98	51615.6	12000.00
20	28662.60	168.67	0.30 (0.29)	0.98	52236.8	10100.00
TOTAL AREA (ACRES) =						52236.8

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 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	23111.20	27.19	0.30 (0.27)	0.90	6804.5	50150.00
2	23622.16	28.74	0.30 (0.27)	0.90	7362.5	12730.00
3	24558.88	31.74	0.30 (0.27)	0.91	8402.5	600.00
4	28316.38	48.36	0.30 (0.28)	0.94	14393.3	40100.00
5	29525.51	56.30	0.30 (0.29)	0.95	17221.3	11801.00
6	31588.22	67.23	0.30 (0.29)	0.96	21805.7	11530.00
7	32661.65	71.66	0.30 (0.29)	0.96	24120.2	11701.00
8	33575.00	75.21	0.30 (0.29)	0.97	26213.4	11910.00
9	36245.46	85.53	0.30 (0.29)	0.97	32907.5	10800.00
10	36942.72	89.80	0.30 (0.29)	0.97	35852.9	11130.00
11	37011.05	99.39	0.30 (0.29)	0.98	40894.1	12410.00
12	36755.00	107.64	0.30 (0.29)	0.98	44633.2	11201.00
13	36478.54	112.58	0.30 (0.29)	0.98	46364.9	12201.00

14	35622.80	119.56	0.30	(0.29)	0.98	48222.0	12231.00
15	35241.46	122.43	0.30	(0.29)	0.98	48895.3	12101.10
16	34498.71	127.25	0.30	(0.29)	0.98	49856.3	10400.00
17	33319.65	135.07	0.30	(0.29)	0.98	51151.4	12010.00
18	32255.79	140.92	0.30	(0.29)	0.98	51498.4	10210.00
19	31794.58	143.92	0.30	(0.29)	0.98	51615.6	12000.00
20	28662.60	168.67	0.30	(0.29)	0.98	52236.8	10100.00

TOTAL AREA (ACRES) = 52236.8

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) = 9.02
 CHANNEL FLOW THRU SUBAREA (CFS) = 37011.05
 FLOW VELOCITY (FEET/SEC.) = 16.75 FLOW DEPTH (FEET) = 9.02
 TRAVEL TIME (MIN.) = 3.10 Tc (MIN.) = 102.50
 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.) = 102.50
 * 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 PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.409
 SUBAREA AREA (ACRES) = 19.40 SUBAREA RUNOFF (CFS) = 14.32
 EFFECTIVE AREA (ACRES) = 40913.48 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52256.2 PEAK FLOW RATE (CFS) = 37011.05
 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.) = 102.50
 * 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 PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.823
 SUBAREA AREA (ACRES) = 7.90 SUBAREA RUNOFF (CFS) = 4.95
 EFFECTIVE AREA (ACRES) = 40921.38 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52264.1 PEAK FLOW RATE (CFS) = 37011.05
 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.) = 102.50
 * 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 PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.917
 SUBAREA AREA (ACRES) = 69.40 SUBAREA RUNOFF (CFS) = 41.71
 EFFECTIVE AREA (ACRES) = 40990.77 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52333.5 PEAK FLOW RATE (CFS) = 37011.05
 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.) = 102.50

* 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) = 41004.57 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52347.3 PEAK FLOW RATE (CFS) = 37011.05
 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.) = 102.50
 * 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) = 41015.38 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52358.1 PEAK FLOW RATE (CFS) = 37011.05
 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) = 8.85
 CHANNEL FLOW THRU SUBAREA (CFS) = 37011.05
 FLOW VELOCITY (FEET/SEC.) = 17.11 FLOW DEPTH (FEET) = 8.85
 TRAVEL TIME (MIN.) = 0.12 Tc (MIN.) = 102.62
 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 # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: E502XX50.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 66.04 11.15 0.30 (0.27) 0.91 28.7 50200.00
 TOTAL AREA (ACRES) = 28.7

 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 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	23111.20	30.97	1.705	0.30 (0.27)	0.90	6925.8	50150.00
2	23622.16	32.49	1.665	0.30 (0.27)	0.90	7483.8	12730.00
3	24558.88	35.44	1.586	0.30 (0.27)	0.91	8523.8	600.00
4	28316.38	51.88	1.284	0.30 (0.28)	0.94	14514.6	40100.00
5	29525.51	59.77	1.202	0.30 (0.29)	0.95	17342.6	11801.00
6	31588.22	70.63	1.128	0.30 (0.29)	0.96	21927.0	11530.00
7	32661.65	75.02	1.098	0.30 (0.29)	0.96	24241.5	11701.00
8	33575.00	78.54	1.075	0.30 (0.29)	0.97	26334.7	11910.00
9	36245.46	88.77	1.005	0.30 (0.29)	0.97	33028.8	10800.00
10	36942.72	93.03	0.984	0.30 (0.29)	0.97	35974.2	11130.00
11	37011.05	102.62	0.942	0.30 (0.29)	0.98	41015.4	12410.00
12	36755.00	110.87	0.907	0.30 (0.29)	0.98	44754.5	11201.00
13	36478.54	115.82	0.885	0.30 (0.29)	0.98	46486.2	12201.00
14	35622.80	122.82	0.861	0.30 (0.29)	0.98	48343.3	12231.00
15	35241.46	125.70	0.855	0.30 (0.29)	0.98	49016.6	12101.10
16	34498.71	130.55	0.846	0.30 (0.29)	0.98	49977.6	10400.00
17	33319.65	138.41	0.830	0.30 (0.29)	0.98	51272.7	12010.00
18	32255.79	144.30	0.818	0.30 (0.29)	0.98	51619.7	10210.00
19	31794.58	147.31	0.811	0.30 (0.29)	0.98	51736.9	12000.00
20	28662.60	172.18	0.761	0.30 (0.29)	0.98	52358.1	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 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	66.04	11.15	3.296	0.30 (0.27)	0.91	28.7	50200.00

LONGEST FLOWPATH FROM NODE 50200.00 TO NODE 12902.00 = 1426.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	66.04	11.15	3.296	0.30 (0.27)	0.91	28.7	50200.00

1	17594.50	11.15	3.296	0.30	(0.27)	0.90	2521.5	50200.00
2	23142.49	30.97	1.705	0.30	(0.27)	0.90	6954.5	50150.00
3	23652.57	32.49	1.665	0.30	(0.27)	0.90	7512.5	12730.00
4	24587.57	35.44	1.586	0.30	(0.27)	0.91	8552.5	600.00
5	28338.46	51.88	1.284	0.30	(0.28)	0.94	14543.3	40100.00
6	29545.81	59.77	1.202	0.30	(0.29)	0.95	17371.3	11801.00
7	31606.90	70.63	1.128	0.30	(0.29)	0.96	21955.7	11530.00
8	32679.68	75.02	1.098	0.30	(0.29)	0.96	24270.2	11701.00
9	33592.52	78.54	1.075	0.30	(0.29)	0.97	26363.4	11910.00
10	36261.46	88.77	1.005	0.30	(0.29)	0.97	33057.5	10800.00
11	36958.25	93.03	0.984	0.30	(0.29)	0.97	36002.9	11130.00
12	37025.68	102.62	0.942	0.30	(0.29)	0.98	41044.1	12410.00
13	36768.84	110.87	0.907	0.30	(0.29)	0.98	44783.2	11201.00
14	36491.91	115.82	0.885	0.30	(0.29)	0.98	46514.9	12201.00
15	35635.65	122.82	0.861	0.30	(0.29)	0.98	48372.0	12231.00
16	35254.18	125.70	0.855	0.30	(0.29)	0.98	49045.3	12101.10
17	34511.22	130.55	0.846	0.30	(0.29)	0.98	50006.3	10400.00
18	33331.81	138.41	0.830	0.30	(0.29)	0.98	51301.4	12010.00
19	32267.69	144.30	0.818	0.30	(0.29)	0.98	51648.4	10210.00
20	31806.35	147.31	0.811	0.30	(0.29)	0.98	51765.6	12000.00
21	28673.26	172.18	0.761	0.30	(0.29)	0.98	52386.8	10100.00

TOTAL AREA (ACRES) = 52386.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 37025.68 Tc (MIN.) = 102.615
EFFECTIVE AREA (ACRES) = 41044.07 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 52386.8
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 # 3 <<<<<

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: E503XX50.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	496.69	24.76	1.939	0.30 (0.30)	0.99	366.4	50300.00
TOTAL AREA (ACRES) =							366.4

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	17594.50	11.15	3.296	0.30 (0.27)	0.90	2521.5	50200.00

2	23142.49	30.97	1.705	0.30	(0.27)	0.90	6954.5	50150.00
3	23652.57	32.49	1.665	0.30	(0.27)	0.90	7512.5	12730.00
4	24587.57	35.44	1.586	0.30	(0.27)	0.91	8552.5	600.00
5	28338.46	51.88	1.284	0.30	(0.28)	0.94	14543.3	40100.00
6	29545.81	59.77	1.202	0.30	(0.29)	0.95	17371.3	11801.00
7	31606.90	70.63	1.128	0.30	(0.29)	0.96	21955.7	11530.00
8	32679.68	75.02	1.098	0.30	(0.29)	0.96	24270.2	11701.00
9	33592.52	78.54	1.075	0.30	(0.29)	0.97	26363.4	11910.00
10	36261.46	88.77	1.005	0.30	(0.29)	0.97	33057.5	10800.00
11	36958.25	93.03	0.984	0.30	(0.29)	0.97	36002.9	11130.00
12	37025.68	102.62	0.942	0.30	(0.29)	0.98	41044.1	12410.00
13	36768.84	110.87	0.907	0.30	(0.29)	0.98	44783.2	11201.00
14	36491.91	115.82	0.885	0.30	(0.29)	0.98	46514.9	12201.00
15	35635.65	122.82	0.861	0.30	(0.29)	0.98	48372.0	12231.00
16	35254.18	125.70	0.855	0.30	(0.29)	0.98	49045.3	12101.10
17	34511.22	130.55	0.846	0.30	(0.29)	0.98	50006.3	10400.00
18	33331.81	138.41	0.830	0.30	(0.29)	0.98	51301.4	12010.00
19	32267.69	144.30	0.818	0.30	(0.29)	0.98	51648.4	10210.00
20	31806.35	147.31	0.811	0.30	(0.29)	0.98	51765.6	12000.00
21	28673.26	172.18	0.761	0.30	(0.29)	0.98	52386.8	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	496.69	24.76	1.939	0.30 (0.30)	0.99	366.4	50300.00

LONGEST FLOWPATH FROM NODE 50300.00 TO NODE 12902.00 = 8614.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18002.79	11.15	3.296	0.30 (0.27)	0.90	2686.5	50200.00
2	21900.87	24.76	1.939	0.30 (0.27)	0.90	5931.9	50300.00
3	23568.61	30.97	1.705	0.30 (0.27)	0.90	7320.9	50150.00
4	24066.44	32.49	1.665	0.30 (0.27)	0.90	7878.9	12730.00
5	24977.72	35.44	1.586	0.30 (0.27)	0.91	8918.9	600.00
6	28637.11	51.88	1.284	0.30 (0.28)	0.94	14909.7	40100.00
7	29819.91	59.77	1.202	0.30 (0.29)	0.95	17737.7	11801.00
8	31858.55	70.63	1.128	0.30 (0.29)	0.96	22322.1	11530.00
9	32922.34	75.02	1.098	0.30 (0.29)	0.96	24636.6	11701.00
10	33827.99	78.54	1.075	0.30 (0.29)	0.97	26729.8	11910.00
11	36476.00	88.77	1.005	0.30 (0.29)	0.97	33423.9	10800.00
12	37166.31	93.03	0.984	0.30 (0.29)	0.97	36369.3	11130.00
13	37221.19	102.62	0.942	0.30 (0.29)	0.98	41410.5	12410.00
14	36953.53	110.87	0.907	0.30 (0.29)	0.98	45149.6	11201.00
15	36670.12	115.82	0.885	0.30 (0.29)	0.98	46881.3	12201.00
16	35806.66	122.82	0.861	0.30 (0.29)	0.98	48738.4	12231.00
17	35423.41	125.70	0.855	0.30 (0.29)	0.98	49411.7	12101.10
18	34677.47	130.55	0.846	0.30 (0.29)	0.98	50372.7	10400.00
19	33493.23	138.41	0.830	0.30 (0.29)	0.98	51667.8	12010.00
20	32425.49	144.30	0.818	0.30 (0.29)	0.98	52014.8	10210.00
21	31962.30	147.31	0.811	0.30 (0.29)	0.98	52132.0	12000.00
22	28813.93	172.18	0.761	0.30 (0.29)	0.98	52753.2	10100.00

TOTAL AREA (ACRES) = 52753.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 37221.19 Tc (MIN.) = 102.615
EFFECTIVE AREA (ACRES) = 41410.47 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52753.2
 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) = 15.47
 CHANNEL FLOW THRU SUBAREA(CFS) = 37221.19
 FLOW VELOCITY(FEET/SEC.) = 8.68 FLOW DEPTH(FEET) = 15.47
 TRAVEL TIME(MIN.) = 1.72 Tc(MIN.) = 104.34
 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: E504XX50.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	123.35	17.17	0.30 (0.29)	0.97	70.5	50400.00
TOTAL AREA (ACRES) = 70.5						

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	18002.79	13.31	2.943	0.30 (0.27)	0.90	2686.5	50200.00
2	21900.87	26.78	1.855	0.30 (0.27)	0.90	5931.9	50300.00
3	23568.61	32.95	1.653	0.30 (0.27)	0.90	7320.9	50150.00
4	24066.44	34.46	1.612	0.30 (0.27)	0.90	7878.9	12730.00
5	24977.72	37.39	1.535	0.30 (0.27)	0.91	8918.9	600.00
6	28637.11	53.75	1.264	0.30 (0.28)	0.94	14909.7	40100.00
7	29819.91	61.61	1.189	0.30 (0.29)	0.95	17737.7	11801.00
8	31858.55	72.43	1.116	0.30 (0.29)	0.96	22322.1	11530.00
9	32922.34	76.81	1.086	0.30 (0.29)	0.96	24636.6	11701.00
10	33827.99	80.31	1.063	0.30 (0.29)	0.97	26729.8	11910.00
11	36476.00	90.50	0.995	0.30 (0.29)	0.97	33423.9	10800.00

12	37166.31	94.75	0.976	0.30 (0.29)	0.97	36369.3	11130.00
13	37221.19	104.34	0.935	0.30 (0.29)	0.98	41410.5	12410.00
14	36953.53	112.60	0.899	0.30 (0.29)	0.98	45149.6	11201.00
15	36670.12	117.55	0.878	0.30 (0.29)	0.98	46881.3	12201.00
16	35806.66	124.56	0.858	0.30 (0.29)	0.98	48738.4	12231.00
17	35423.41	127.45	0.852	0.30 (0.29)	0.98	49411.7	12101.00
18	34677.47	132.31	0.842	0.30 (0.29)	0.98	50372.7	10400.00
19	33493.23	140.19	0.826	0.30 (0.29)	0.98	51667.8	12010.00
20	32425.49	146.09	0.814	0.30 (0.29)	0.98	52014.8	10210.00
21	31962.30	149.12	0.808	0.30 (0.29)	0.98	52132.0	12000.00
22	28813.93	174.04	0.757	0.30 (0.29)	0.98	52753.2	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	123.35	17.17	2.476	0.30 (0.29)	0.97	70.5	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	18118.84	13.31	2.943	0.30 (0.27)	0.90	2741.2	50200.00
2	19242.30	17.17	2.476	0.30 (0.27)	0.90	3686.3	50400.00
3	21989.20	26.78	1.855	0.30 (0.27)	0.90	6002.4	50300.00
4	23645.50	32.95	1.653	0.30 (0.27)	0.90	7391.4	50150.00
5	24141.07	34.46	1.612	0.30 (0.27)	0.90	7949.4	12730.00
6	25047.96	37.39	1.535	0.30 (0.27)	0.91	8989.4	600.00
7	28692.10	53.75	1.264	0.30 (0.28)	0.94	14980.2	40100.00
8	29870.65	61.61	1.189	0.30 (0.29)	0.95	17808.2	11801.00
9	31905.16	72.43	1.116	0.30 (0.29)	0.96	22392.6	11530.00
10	32967.27	76.81	1.086	0.30 (0.29)	0.96	24707.1	11701.00
11	33871.59	80.31	1.063	0.30 (0.29)	0.97	26800.3	11910.00
12	36515.78	90.50	0.995	0.30 (0.29)	0.97	33494.4	10800.00
13	37205.05	94.75	0.976	0.30 (0.29)	0.97	36439.8	11130.00
14	37257.58	104.34	0.935	0.30 (0.29)	0.98	41481.0	12410.00
15	36987.90	112.60	0.899	0.30 (0.29)	0.98	45220.1	11201.00
16	36703.29	117.55	0.878	0.30 (0.29)	0.98	46951.8	12201.00
17	35838.70	124.56	0.858	0.30 (0.29)	0.98	48808.9	12231.00
18	35455.12	127.45	0.852	0.30 (0.29)	0.98	49482.2	12101.10
19	34708.62	132.31	0.842	0.30 (0.29)	0.98	50443.2	10400.00
20	33523.48	140.19	0.826	0.30 (0.29)	0.98	51738.3	12010.00
21	32455.06	146.09	0.814	0.30 (0.29)	0.98	52085.3	10210.00
22	31991.52	149.12	0.808	0.30 (0.29)	0.98	52202.5	12000.00
23	28840.29	174.04	0.757	0.30 (0.29)	0.98	52823.7	10100.00

TOTAL AREA (ACRES) = 52823.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 37257.58 Tc (MIN.) = 104.336
 EFFECTIVE AREA (ACRES) = 41480.97 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52823.7
 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 <<<<<

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*****
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) = 14.84
CHANNEL FLOW THRU SUBAREA(CFS) = 37257.58
FLOW VELOCITY(FEET/SEC.) = 9.15 FLOW DEPTH(FEET) = 14.84
TRAVEL TIME(MIN.) = 1.40 Tc(MIN.) = 105.73
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 = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
-----
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 105.73
RAINFALL INTENSITY(INCH/HR) = 0.93
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98
EFFECTIVE STREAM AREA(ACRES) = 41480.97
TOTAL STREAM AREA(ACRES) = 52823.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 37257.58
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7
-----
>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<
-----
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 17.75 RAINFALL INTENSITY(INCH/HR) = 2.42
EFFECTIVE AREA(ACRES) = 36.30
TOTAL AREA(ACRES) = 214.70 PEAK FLOW RATE(CFS) = 67.40
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.42
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
-----
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 17.75
RAINFALL INTENSITY(INCH/HR) = 2.42

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AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.42
EFFECTIVE STREAM AREA(ACRES) = 36.30
TOTAL STREAM AREA(ACRES) = 214.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 67.40

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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	18118.84	15.06	2.661	0.30 (0.27)	0.90	2741.2	50200.00
1	19242.30	18.89	2.325	0.30 (0.27)	0.90	3686.3	50400.00
1	21989.20	28.43	1.792	0.30 (0.27)	0.90	6002.4	50300.00
1	23645.50	34.56	1.610	0.30 (0.27)	0.90	7391.4	50150.00
1	24141.07	36.06	1.570	0.30 (0.27)	0.90	7949.4	12730.00
1	25047.96	38.97	1.493	0.30 (0.27)	0.91	8989.4	600.00
1	28692.10	55.26	1.249	0.30 (0.28)	0.94	14980.2	40100.00
1	29870.65	63.11	1.179	0.30 (0.29)	0.95	17808.2	11801.00
1	31905.16	73.90	1.106	0.30 (0.29)	0.96	22392.6	11530.00
1	32967.27	78.26	1.076	0.30 (0.29)	0.96	24707.1	11701.00
1	33871.59	81.75	1.053	0.30 (0.29)	0.97	26800.3	11910.00
1	36515.78	91.91	0.989	0.30 (0.29)	0.97	33494.4	10800.00
1	37205.05	96.15	0.970	0.30 (0.29)	0.97	36439.8	11130.00
1	37257.58	105.73	0.929	0.30 (0.29)	0.98	41481.0	12410.00
1	36987.90	114.00	0.893	0.30 (0.29)	0.98	45220.1	11201.00
1	36703.29	118.95	0.872	0.30 (0.29)	0.98	46951.8	12201.00
1	35838.70	125.98	0.855	0.30 (0.29)	0.98	48808.9	12231.00
1	35455.12	128.87	0.849	0.30 (0.29)	0.98	49482.2	12101.10
1	34708.62	133.74	0.839	0.30 (0.29)	0.98	50443.2	10400.00
1	33523.48	141.63	0.823	0.30 (0.29)	0.98	51738.3	12010.00
1	32455.06	147.55	0.811	0.30 (0.29)	0.98	52085.3	10210.00
1	31991.52	150.58	0.805	0.30 (0.29)	0.98	52202.5	12000.00
1	28840.29	175.56	0.754	0.30 (0.29)	0.98	52823.7	10100.00
2	67.40	17.75	2.425	0.30 (0.13)	0.42	36.3	12904.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18181.90	15.06	2.661	0.30 (0.27)	0.90	2772.0	50200.00
2	18976.25	17.75	2.425	0.30 (0.27)	0.90	3442.1	12904.00
3	19306.78	18.89	2.325	0.30 (0.27)	0.90	3722.6	50400.00
4	22038.04	28.43	1.792	0.30 (0.27)	0.90	6038.7	50300.00
5	23689.01	34.56	1.610	0.30 (0.27)	0.90	7427.7	50150.00
6	24183.41	36.06	1.570	0.30 (0.27)	0.90	7985.7	12730.00
7	25088.03	38.97	1.493	0.30 (0.27)	0.91	9025.7	600.00
8	28725.02	55.26	1.249	0.30 (0.28)	0.94	15016.5	40100.00
9	29901.53	63.11	1.179	0.30 (0.29)	0.95	17844.5	11801.00
10	31933.89	73.90	1.106	0.30 (0.29)	0.96	22428.9	11530.00
11	32995.14	78.26	1.076	0.30 (0.29)	0.96	24743.4	11701.00
12	33898.77	81.75	1.053	0.30 (0.29)	0.97	26836.6	11910.00
13	36541.08	91.91	0.989	0.30 (0.29)	0.97	33530.7	10800.00
14	37229.81	96.15	0.970	0.30 (0.29)	0.97	36476.1	11130.00
15	37281.12	105.73	0.929	0.30 (0.29)	0.98	41517.3	12410.00
16	37010.39	114.00	0.893	0.30 (0.29)	0.98	45256.4	11201.00
17	36725.14	118.95	0.872	0.30 (0.29)	0.98	46988.1	12201.00

18	35860.07	125.98	0.855	0.30	(0.29)	0.98	48845.2	12231.00
19	35476.32	128.87	0.849	0.30	(0.29)	0.98	49518.5	12101.10
20	34729.53	133.74	0.839	0.30	(0.29)	0.98	50479.5	10400.00
21	33543.91	141.63	0.823	0.30	(0.29)	0.98	51774.6	12010.00
22	32475.15	147.55	0.811	0.30	(0.29)	0.98	52121.6	10210.00
23	32011.42	150.58	0.805	0.30	(0.29)	0.98	52238.8	12000.00
24	28858.71	175.56	0.754	0.30	(0.29)	0.98	52860.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 37281.12 Tc(MIN.) = 105.73
EFFECTIVE AREA(ACRES) = 41517.27 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 53038.4
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.) = 105.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
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) = 22.97
EFFECTIVE AREA(ACRES) = 41556.38 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 53077.5 PEAK FLOW RATE(CFS) = 37281.12
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc(MIN.) = 105.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
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) = 2.95
EFFECTIVE AREA(ACRES) = 41561.38 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 53082.5 PEAK FLOW RATE(CFS) = 37281.12
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc(MIN.) = 105.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
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) = 3.41
EFFECTIVE AREA(ACRES) = 41567.27 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 53088.4 PEAK FLOW RATE(CFS) = 37281.12
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53088.4 TC(MIN.) = 105.73
EFFECTIVE AREA(ACRES) = 41567.27 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.976
PEAK FLOW RATE(CFS) = 37281.12

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18181.90	15.06	2.661	0.30(0.27)	0.90	2822.0	50200.00
2	18976.25	17.75	2.425	0.30(0.27)	0.90	3492.1	12904.00
3	19306.78	18.89	2.325	0.30(0.27)	0.90	3772.6	50400.00
4	22038.04	28.43	1.792	0.30(0.27)	0.90	6088.7	50300.00
5	23689.01	34.56	1.610	0.30(0.27)	0.90	7477.7	50150.00
6	24183.41	36.06	1.570	0.30(0.27)	0.90	8035.7	12730.00
7	25088.03	38.97	1.493	0.30(0.27)	0.91	9075.7	600.00
8	28725.02	55.26	1.249	0.30(0.28)	0.94	15066.5	40100.00
9	29901.53	63.11	1.179	0.30(0.29)	0.95	17894.5	11801.00

10	31933.89	73.90	1.106	0.30	(0.29)	0.96	22478.9	11530.00
11	32995.14	78.26	1.076	0.30	(0.29)	0.96	24793.4	11701.00
12	33898.77	81.75	1.053	0.30	(0.29)	0.97	26886.6	11910.00
13	36541.08	91.91	0.989	0.30	(0.29)	0.97	33580.7	10800.00
14	37229.81	96.15	0.970	0.30	(0.29)	0.97	36526.1	11130.00
15	37281.12	105.73	0.929	0.30	(0.29)	0.98	41567.3	12410.00
16	37010.39	114.00	0.893	0.30	(0.29)	0.98	45306.4	11201.00
17	36725.14	118.95	0.872	0.30	(0.29)	0.98	47038.1	12201.00
18	35860.07	125.98	0.855	0.30	(0.29)	0.98	48895.2	12231.00
19	35476.32	128.87	0.849	0.30	(0.29)	0.98	49568.5	12101.10
20	34729.53	133.74	0.839	0.30	(0.29)	0.98	50529.5	10400.00
21	33543.91	141.63	0.823	0.30	(0.29)	0.98	51824.6	12010.00
22	32475.15	147.55	0.811	0.30	(0.29)	0.98	52171.6	10210.00
23	32011.42	150.58	0.805	0.30	(0.29)	0.98	52288.8	12000.00
24	28858.71	175.56	0.754	0.30	(0.29)	0.98	52910.0	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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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S33- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV33.DAT
TIME/DATE OF STUDY: 09:53 06/14/2019

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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; 5.329
- 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; 1.455
- 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 13222.00 TO NODE 13222.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

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USER-SPECIFIED VALUES ARE AS FOLLOWS:

TC(MIN.) = 61.54 RAINFALL INTENSITY(INCH/HR) = 1.17
EFFECTIVE AREA(ACRES) = 3144.20
TOTAL AREA(ACRES) = 4924.40 PEAK FLOW RATE(CFS) = 2281.80
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.82
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.63
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.147
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 2301.95
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.42
AVERAGE FLOW DEPTH(FEET) = 3.63 TRAVEL TIME(MIN.) = 4.05
Tc(MIN.) = 65.59
SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 40.31
EFFECTIVE AREA(ACRES) = 3189.40 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 2590.38
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 3.88 FLOW VELOCITY(FEET/SEC.) = 10.83
 LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

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MAINLINE Tc(MIN.) = 65.59
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.147
 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) = 14.38
 EFFECTIVE AREA(ACRES) = 3205.90 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 2604.76

 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 65.59
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.147
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977
 SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 6.07
 EFFECTIVE AREA(ACRES) = 3213.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 4994.0 PEAK FLOW RATE(CFS) = 2610.83

 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 65.59
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.147
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 16.77
 EFFECTIVE AREA(ACRES) = 3235.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5016.0 PEAK FLOW RATE(CFS) = 2627.61

 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 65.59
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.147
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA(ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 11.44
 EFFECTIVE AREA(ACRES) = 3250.80 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5031.0 PEAK FLOW RATE(CFS) = 2639.04

 FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

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

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

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

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)] ** 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.947
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63 8.64
NATURAL FAIR COVER
"OPEN BRUSH" B 0.30 0.30 1.000 66 8.64
NATURAL FAIR COVER
"OPEN BRUSH" B 0.30 0.30 1.000 66 8.64
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 3.61
TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 3.61

FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 685.00 DOWNSTREAM (FEET) = 655.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 135.00 CHANNEL SLOPE = 0.2222
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.823
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 0.70 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 5.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.90
AVERAGE FLOW DEPTH (FEET) = 0.52 TRAVEL TIME (MIN.) = 0.33
Tc (MIN.) = 8.97
SUBAREA AREA (ACRES) = 1.30 SUBAREA RUNOFF (CFS) = 4.12
EFFECTIVE AREA (ACRES) = 2.40 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 2.4 PEAK FLOW RATE (CFS) = 7.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.58 FLOW VELOCITY (FEET/SEC.) = 7.42
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 655.00 DOWNSTREAM (FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.665
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.30 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 1.90 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 11.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.13
AVERAGE FLOW DEPTH (FEET) = 0.67 TRAVEL TIME (MIN.) = 0.42
Tc (MIN.) = 9.38
SUBAREA AREA (ACRES) = 2.30 SUBAREA RUNOFF (CFS) = 6.97
EFFECTIVE AREA (ACRES) = 4.70 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 4.7 PEAK FLOW RATE (CFS) = 14.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.74 FLOW VELOCITY (FEET/SEC.) = 8.60
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 630.00 DOWNSTREAM (FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.395
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 1.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.50 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 19.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.36

AVERAGE FLOW DEPTH(FEET) = 1.00 TRAVEL TIME(MIN.) = 0.84
Tc(MIN.) = 10.22
SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 10.03
EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 23.12

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.08 FLOW VELOCITY(FEET/SEC.) = 6.63
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.284

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.70 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 3.00 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.10 0.30 1.000 66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 31.72
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.87
AVERAGE FLOW DEPTH(FEET) = 1.24 TRAVEL TIME(MIN.) = 0.70
Tc(MIN.) = 10.92
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 17.19
EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 39.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.35 FLOW VELOCITY(FEET/SEC.) = 7.27
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.170
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 2.80 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.60 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.60 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 4.10 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 53.43
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.00
AVERAGE FLOW DEPTH(FEET) = 1.49 TRAVEL TIME(MIN.) = 0.72
Tc(MIN.) = 11.64
SUBAREA AREA(ACRES) = 10.80 SUBAREA RUNOFF(CFS) = 27.90
EFFECTIVE AREA(ACRES) = 25.50 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 25.5 PEAK FLOW RATE(CFS) = 65.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.62 FLOW VELOCITY(FEET/SEC.) = 8.36
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31106.00 = 1608.00 FEET.

FLOW PROCESS FROM NODE 31106.00 TO NODE 31107.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 560.00 DOWNSTREAM(FEET) = 530.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 619.00 CHANNEL SLOPE = 0.0485
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.956

SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 0.80 0.30 1.000 63
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B 1.90 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 1.50 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 8.20 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.70 0.30 1.000 66

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 83.93

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<<<<

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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS 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/ 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) = 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/ 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) = 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	2639.04	65.59	1.147	0.30 (0.25)	0.82	3250.8	13222.00

LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2043.56	21.04	2.144	0.30 (0.25)	0.84	1197.1	31100.00
2	2759.52	65.59	1.147	0.30 (0.25)	0.83	3405.3	13222.00

TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2759.52 Tc(MIN.) = 65.592
EFFECTIVE AREA(ACRES) = 3405.30 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5185.5
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.44
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.130
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 2763.04

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.66

AVERAGE FLOW DEPTH(FEET) = 5.44 TRAVEL TIME(MIN.) = 2.48

Tc(MIN.) = 68.07

SUBAREA AREA(ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 7.02

EFFECTIVE AREA(ACRES) = 3414.70 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 2759.52

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 5.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 5.43 FLOW VELOCITY(FEET/SEC.) = 7.66

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13302.00 = 7532.09 FEET.

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 68.07

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.130

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 RESIDENTIAL	B	1.10	0.30	0.100	56
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952

SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 21.36

EFFECTIVE AREA(ACRES) = 3442.80 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 2759.52

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 68.07

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.130

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.894
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 2.41
 EFFECTIVE AREA (ACRES) = 3445.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 2759.52
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 68.07
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.130
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL POOR COVER
 "BARREN" B 0.10 0.30 1.000 86
 NATURAL FAIR COVER
 "OPEN BRUSH" B 2.60 0.30 1.000 66
 AGRICULTURAL POOR COVER
 "ROW CROPS, CONTOURED" B 3.10 0.30 1.000 79
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 0.40 0.30 1.000 65
 NATURAL FAIR COVER
 "CHAPARRAL, BROADLEAF" B 0.20 0.30 1.000 63
 NATURAL FAIR COVER
 "OPEN BRUSH" B 13.80 0.30 1.000 66
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 15.10
 EFFECTIVE AREA (ACRES) = 3466.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 2759.52
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 68.07
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.130
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 AGRICULTURAL POOR COVER
 "ROW CROPS, CONTOURED" B 34.60 0.30 1.000 79
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 2.40 0.30 1.000 65

NATURAL FAIR COVER
 "OPEN BRUSH" B 22.60 0.30 1.000 66
 AGRICULTURAL POOR COVER
 "ROW CROPS, CONTOURED" B 11.60 0.30 1.000 79
 APARTMENTS B 0.40 0.30 0.200 56
 NATURAL FAIR COVER
 "CHAPARRAL, BROADLEAF" B 4.80 0.30 1.000 63
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.996
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 57.18
 EFFECTIVE AREA (ACRES) = 3542.50 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 2808.48

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 68.07
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.130
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "GRASS" B 1.60 0.30 1.000 69
 NATURAL FAIR COVER
 "OPEN BRUSH" B 46.40 0.30 1.000 66
 RESIDENTIAL
 "11+ DWELLINGS/ACRE" B 0.10 0.30 0.200 56
 AGRICULTURAL POOR COVER
 "ROW CROPS, CONTOURED" B 60.70 0.30 1.000 79
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 5.80 0.30 1.000 65
 SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.999
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 85.67
 EFFECTIVE AREA (ACRES) = 3657.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 2894.14

FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 5.00
 CHANNEL FLOW THRU SUBAREA (CFS) = 2894.14
 FLOW VELOCITY (FEET/SEC.) = 8.90 FLOW DEPTH (FEET) = 5.00
 TRAVEL TIME (MIN.) = 4.11 Tc (MIN.) = 72.18
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

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

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MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"            B         0.20     0.30     1.000    86
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         0.40     0.30     1.000    65
NATURAL POOR COVER
"BARREN"            B         0.80     0.30     1.000    86
COMMERCIAL          B         1.40     0.30     0.100    56
NATURAL FAIR COVER
"GRASS"             B         2.60     0.30     1.000    69
NATURAL FAIR COVER
"OPEN BRUSH"       B         2.20     0.30     1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60      SUBAREA RUNOFF(CFS) = 5.83
EFFECTIVE AREA(ACRES) = 3664.70  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5444.9      PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         3.10     0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         3.40     0.30     1.000    65
NATURAL POOR COVER
"BARREN"            B         0.50     0.30     1.000    86
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B         0.20     0.30     1.000    63
COMMERCIAL          B         3.60     0.30     0.100    56
NATURAL FAIR COVER
"GRASS"             B         4.00     0.30     1.000    69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80     SUBAREA RUNOFF(CFS) = 11.57
EFFECTIVE AREA(ACRES) = 3679.50  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5459.7      PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"       B         14.60    0.30     1.000    66
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         6.30     0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         3.70     0.30     1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60     SUBAREA RUNOFF(CFS) = 17.77
EFFECTIVE AREA(ACRES) = 3704.10  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3      PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 72.18
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.103
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"            B         0.50     0.30     1.000    86
COMMERCIAL          B         0.30     0.30     0.100    56
NATURAL FAIR COVER
"OPEN BRUSH"       B         0.20     0.30     1.000    66
RESIDENTIAL
".4 DWELLING/ACRE" B         0.80     0.30     0.900    56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         1.60     0.30     1.000    79
NATURAL POOR COVER
"BARREN"            B         31.90    0.30     1.000    86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30     SUBAREA RUNOFF(CFS) = 25.59
EFFECTIVE AREA(ACRES) = 3739.40  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6      PEAK FLOW RATE(CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 72.18
    
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* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.103
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.830
SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 8.07
EFFECTIVE AREA (ACRES) = 3749.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 72.18

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.103

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 8.64
EFFECTIVE AREA (ACRES) = 3761.50 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 5.79
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.089
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.850
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2899.32
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.44
AVERAGE FLOW DEPTH (FEET) = 5.79 TRAVEL TIME (MIN.) = 2.07
Tc (MIN.) = 74.25
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 10.35
EFFECTIVE AREA (ACRES) = 3775.30 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 5.78

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 5.78 FLOW VELOCITY (FEET/SEC.) = 7.44

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13304.00 = 10651.45 FEET.

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 74.25

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.089

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 22.80 SUBAREA RUNOFF (CFS) = 16.18
EFFECTIVE AREA (ACRES) = 3798.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5578.3 PEAK FLOW RATE (CFS) = 2894.14
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 74.25

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.089

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 2.42

EFFECTIVE AREA(ACRES) = 3801.50 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5581.7 PEAK FLOW RATE(CFS) = 2894.14

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 4.66

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.054

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) = 2903.44

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.74

AVERAGE FLOW DEPTH(FEET) = 4.66 TRAVEL TIME(MIN.) = 5.07

Tc(MIN.) = 79.33

SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 18.60

EFFECTIVE AREA(ACRES) = 3828.90 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 2894.14

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 4.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.65 FLOW VELOCITY(FEET/SEC.) = 9.73

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

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

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

MAINLINE Tc(MIN.) = 79.33

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.054

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 37.06

EFFECTIVE AREA(ACRES) = 3882.10 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5662.3 PEAK FLOW RATE(CFS) = 2894.14

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc(MIN.) = 79.33

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.054

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 19.78

EFFECTIVE AREA(ACRES) = 3909.70 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5689.9 PEAK FLOW RATE(CFS) = 2894.14
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 79.33
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.054
 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) = 17.65
 EFFECTIVE AREA(ACRES) = 3935.40 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5715.6 PEAK FLOW RATE(CFS) = 2894.14
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 79.33
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.054
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.00	0.30	0.100	56
AGRICULTURAL POOR COVER "FALLOW"	B	3.70	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	2.10	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	0.20	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807

SUBAREA AREA(ACRES) = 10.70 SUBAREA RUNOFF(CFS) = 7.82
 EFFECTIVE AREA(ACRES) = 3946.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5726.3 PEAK FLOW RATE(CFS) = 2894.14
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 79.33
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.054
 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	0.50	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	8.20	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 6.13
 EFFECTIVE AREA(ACRES) = 3954.80 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5735.0 PEAK FLOW RATE(CFS) = 2894.14
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1

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

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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	1086.75	13.53	0.30(0.13)	0.43	436.7	110.00
3	930.63	20.54	0.30(0.13)	0.43	504.3	100.00
4	870.49	23.19	0.30(0.13)	0.43	510.2	150.00
TOTAL AREA(ACRES) =		510.2				

 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 11

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

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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	2245.75	35.95	1.561	0.30(0.26)	0.88	1746.6	31100.00
2	2894.14	79.33	1.054	0.30(0.25)	0.84	3954.8	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	1087.20	13.49	2.876	0.30(0.13)	0.43	436.1 120.00
2	1086.75	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	2783.87	13.49	2.876	0.30(0.21)	0.70	1091.6	120.00
2	2784.22	13.53	2.870	0.30(0.21)	0.70	1094.0	110.00
3	2818.86	20.54	2.173	0.30(0.22)	0.73	1502.4	100.00
4	2827.11	23.19	2.016	0.30(0.22)	0.74	1636.9	150.00
5	2906.25	35.95	1.561	0.30(0.23)	0.78	2256.8	31100.00
6	3320.67	79.33	1.054	0.30(0.24)	0.80	4465.0	13222.00

TOTAL AREA (ACRES) = 6245.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 3320.67 Tc(MIN.) = 79.328
EFFECTIVE AREA(ACRES) = 4465.00 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.70
TOTAL AREA(ACRES) = 6245.2
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50
CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.65
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.010
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) = 3344.04
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.25
AVERAGE FLOW DEPTH(FEET) = 4.65 TRAVEL TIME(MIN.) = 6.53
Tc(MIN.) = 85.86
SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 46.75
EFFECTIVE AREA(ACRES) = 4533.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.63 FLOW VELOCITY(FEET/SEC.) = 11.23
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13306.00 = 18026.13 FEET.

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 85.86
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.010
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) = 33.52
EFFECTIVE AREA(ACRES) = 4580.10 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) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 85.86
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.010
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) = 38.76
 EFFECTIVE AREA (ACRES) = 4638.70 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) = 3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 85.86

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.010

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) = 6.49

EFFECTIVE AREA (ACRES) = 4648.40 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) = 3320.67

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 85.86

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.010

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) = 1.53					
EFFECTIVE AREA (ACRES) = 4650.70					
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) = 3320.67					

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 245.50 DOWNSTREAM (FEET) = 220.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 1543.21 CHANNEL SLOPE = 0.0165

GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

* ESTIMATED CHANNEL HEIGHT (FEET) = 4.57

CHANNEL FLOW THRU SUBAREA (CFS) = 3320.67

FLOW VELOCITY (FEET/SEC.) = 11.40 FLOW DEPTH (FEET) = 4.57

TRAVEL TIME (MIN.) = 2.26 Tc (MIN.) = 88.12

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13307.00 = 19569.34 FEET.

 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 88.12

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.995

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) = 4.94

EFFECTIVE AREA (ACRES) = 4658.40 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) = 3320.67

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 88.12

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.995

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) = 3.81
 EFFECTIVE AREA(ACRES) = 4664.50 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) = 3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 220.00 DOWNSTREAM(FEET) = 212.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 925.62 CHANNEL SLOPE = 0.0086
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 5.48
 CHANNEL FLOW THRU SUBAREA(CFS) = 3320.67
 FLOW VELOCITY(FEET/SEC.) = 9.13 FLOW DEPTH(FEET) = 5.48
 TRAVEL TIME(MIN.) = 1.69 Tc(MIN.) = 89.81
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.81
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983
 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) = 6.62
 EFFECTIVE AREA(ACRES) = 4674.00 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) = 3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

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MAINLINE Tc(MIN.) = 89.81
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983
 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) = 56.74
 EFFECTIVE AREA(ACRES) = 4749.60 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) = 3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.81
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983
 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) = 9.74
 EFFECTIVE AREA(ACRES) = 4765.20 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) = 3320.67
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.81
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983

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) = 58.05
EFFECTIVE AREA(ACRES) = 4845.60 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) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.81
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983
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) = 0.65
EFFECTIVE AREA(ACRES) = 4846.60 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) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.81
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983
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) = 1.29
EFFECTIVE AREA(ACRES) = 4848.70 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) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.81
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.983
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) = 7.20
EFFECTIVE AREA(ACRES) = 4860.30 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) = 3320.67
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 10

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

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

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

PEAK FLOWRATE TABLE FILE NAME: RI50EV29.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	18181.90	15.06	0.30 (0.27)	0.90	2822.0	50200.00
2	19306.78	18.89	0.30 (0.27)	0.90	3772.6	50400.00
3	22038.04	28.43	0.30 (0.27)	0.90	6088.7	50300.00

4	25088.03	38.97	0.30	(0.27)	0.91	9075.7	600.00
5	28725.02	55.26	0.30	(0.28)	0.94	15066.5	40100.00
6	29901.53	63.11	0.30	(0.29)	0.95	17894.5	11801.00
7	31933.89	73.90	0.30	(0.29)	0.96	22478.9	11530.00
8	32995.14	78.26	0.30	(0.29)	0.96	24793.4	11701.00
9	33898.77	81.75	0.30	(0.29)	0.97	26886.6	11910.00
10	36541.08	91.91	0.30	(0.29)	0.97	33580.7	10800.00
11	37229.81	96.15	0.30	(0.29)	0.97	36526.1	11130.00
12	37281.12	105.73	0.30	(0.29)	0.98	41567.3	12410.00
13	37010.39	114.00	0.30	(0.29)	0.98	45306.4	11201.00
14	36725.14	118.95	0.30	(0.29)	0.98	47038.1	12201.00
15	35860.07	125.98	0.30	(0.29)	0.98	48895.2	12231.00
16	34729.53	133.74	0.30	(0.29)	0.98	50529.5	10400.00
17	33543.91	141.63	0.30	(0.29)	0.98	51824.6	12010.00
18	32475.15	147.55	0.30	(0.29)	0.98	52171.6	10210.00
19	32011.42	150.58	0.30	(0.29)	0.98	52288.8	12000.00
20	28858.71	175.56	0.30	(0.29)	0.98	52910.0	10100.00

TOTAL AREA (ACRES) = 52910.0

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	18181.90	15.06	0.30 (0.27)	0.90	2822.0	50200.00
2	19306.78	18.89	0.30 (0.27)	0.90	3772.6	50400.00
3	22038.04	28.43	0.30 (0.27)	0.90	6088.7	50300.00
4	25088.03	38.97	0.30 (0.27)	0.91	9075.7	600.00
5	28725.02	55.26	0.30 (0.28)	0.94	15066.5	40100.00
6	29901.53	63.11	0.30 (0.29)	0.95	17894.5	11801.00
7	31933.89	73.90	0.30 (0.29)	0.96	22478.9	11530.00
8	32995.14	78.26	0.30 (0.29)	0.96	24793.4	11701.00
9	33898.77	81.75	0.30 (0.29)	0.97	26886.6	11910.00
10	36541.08	91.91	0.30 (0.29)	0.97	33580.7	10800.00
11	37229.81	96.15	0.30 (0.29)	0.97	36526.1	11130.00
12	37281.12	105.73	0.30 (0.29)	0.98	41567.3	12410.00
13	37010.39	114.00	0.30 (0.29)	0.98	45306.4	11201.00
14	36725.14	118.95	0.30 (0.29)	0.98	47038.1	12201.00
15	35860.07	125.98	0.30 (0.29)	0.98	48895.2	12231.00
16	34729.53	133.74	0.30 (0.29)	0.98	50529.5	10400.00
17	33543.91	141.63	0.30 (0.29)	0.98	51824.6	12010.00
18	32475.15	147.55	0.30 (0.29)	0.98	52171.6	10210.00
19	32011.42	150.58	0.30 (0.29)	0.98	52288.8	12000.00
20	28858.71	175.56	0.30 (0.29)	0.98	52910.0	10100.00

TOTAL AREA (ACRES) = 52910.0

FLOW PROCESS FROM NODE 12904.00 TO NODE 13308.00 IS CODE = 56

>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<<<
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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) = 17.44
CHANNEL FLOW THRU SUBAREA (CFS) = 37281.12
FLOW VELOCITY (FEET/SEC.) = 7.44 FLOW DEPTH (FEET) = 17.44
TRAVEL TIME (MIN.) = 3.11 Tc (MIN.) = 108.84
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<<<<<<
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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	18181.90	18.94	2.296	0.30 (0.27)	0.90	2822.0	50200.00
2	19306.78	22.69	2.046	0.30 (0.27)	0.90	3772.6	50400.00
3	22038.04	32.09	1.662	0.30 (0.27)	0.90	6088.7	50300.00
4	25088.03	42.48	1.415	0.30 (0.27)	0.91	9075.7	600.00
5	28725.02	58.63	1.200	0.30 (0.28)	0.94	15066.5	40100.00
6	29901.53	66.43	1.141	0.30 (0.29)	0.95	17894.5	11801.00
7	31933.89	77.16	1.069	0.30 (0.29)	0.96	22478.9	11530.00
8	32995.14	81.49	1.040	0.30 (0.29)	0.96	24793.4	11701.00
9	33898.77	84.95	1.016	0.30 (0.29)	0.97	26886.6	11910.00
10	36541.08	95.04	0.960	0.30 (0.29)	0.97	33580.7	10800.00
11	37229.81	99.26	0.942	0.30 (0.29)	0.97	36526.1	11130.00
12	37281.12	108.84	0.900	0.30 (0.29)	0.98	41567.3	12410.00
13	37010.39	117.12	0.864	0.30 (0.29)	0.98	45306.4	11201.00
14	36725.14	122.08	0.848	0.30 (0.29)	0.98	47038.1	12201.00
15	35860.07	129.13	0.833	0.30 (0.29)	0.98	48895.2	12231.00
16	34729.53	136.92	0.817	0.30 (0.29)	0.98	50529.5	10400.00
17	33543.91	144.84	0.801	0.30 (0.29)	0.98	51824.6	12010.00
18	32475.15	150.79	0.788	0.30 (0.29)	0.98	52171.6	10210.00
19	32011.42	153.84	0.782	0.30 (0.29)	0.98	52288.8	12000.00
20	28858.71	178.92	0.730	0.30 (0.29)	0.98	52910.0	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	2783.87	24.54	1.936	0.30 (0.21)	0.71	1486.9	120.00
2	2784.22	24.58	1.934	0.30 (0.21)	0.71	1489.3	110.00
3	2818.86	31.56	1.676	0.30 (0.22)	0.73	1897.7	100.00
4	2827.11	34.20	1.607	0.30 (0.22)	0.74	2032.2	150.00
5	2906.25	46.87	1.344	0.30 (0.23)	0.77	2652.1	31100.00
6	3320.67	89.81	0.983	0.30 (0.24)	0.79	4860.3	13222.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20779.35	18.94	2.296	0.30 (0.25)	0.84	3969.4	50200.00
2	22044.31	22.69	2.046	0.30 (0.25)	0.85	5147.3	50400.00
3	22629.45	24.54	1.936	0.30 (0.25)	0.85	5716.4	120.00
4	22640.00	24.58	1.934	0.30 (0.25)	0.85	5727.5	110.00
5	24703.01	31.56	1.676	0.30 (0.26)	0.86	7856.0	100.00

6	24858.55	32.09	1.662	0.30	(0.26)	0.86	8013.4	50300.00
7	25485.46	34.20	1.607	0.30	(0.26)	0.86	8728.4	150.00
8	27966.83	42.48	1.415	0.30	(0.26)	0.88	11512.7	600.00
9	28983.85	46.87	1.344	0.30	(0.27)	0.89	13357.8	31100.00
10	31744.77	58.63	1.200	0.30	(0.27)	0.91	18323.4	40100.00
11	32996.60	66.43	1.141	0.30	(0.28)	0.92	21552.7	11801.00
12	35132.48	77.16	1.069	0.30	(0.28)	0.93	26688.7	11530.00
13	36235.54	81.49	1.040	0.30	(0.28)	0.94	29225.9	11701.00
14	37172.54	84.95	1.016	0.30	(0.28)	0.94	31497.0	11910.00
15	38491.68	89.81	0.983	0.30	(0.28)	0.94	34970.1	13222.00
16	39758.68	95.04	0.960	0.30	(0.28)	0.95	38441.0	10800.00
17	40365.92	99.26	0.942	0.30	(0.29)	0.95	41386.4	11130.00
18	40232.36	108.84	0.900	0.30	(0.29)	0.96	46427.6	12410.00
19	39802.02	117.12	0.864	0.30	(0.29)	0.96	50166.7	11201.00
20	39441.98	122.08	0.848	0.30	(0.29)	0.96	51898.4	12201.00
21	38512.07	129.13	0.833	0.30	(0.29)	0.96	53755.5	12231.00
22	37309.82	136.92	0.817	0.30	(0.29)	0.96	55389.8	10400.00
23	36051.26	144.84	0.801	0.30	(0.29)	0.96	56684.9	12010.00
24	34927.75	150.79	0.788	0.30	(0.29)	0.96	57031.9	10210.00
25	34435.99	153.84	0.782	0.30	(0.29)	0.96	57149.1	12000.00
26	31052.51	178.92	0.730	0.30	(0.29)	0.96	57770.3	10100.00

TOTAL AREA (ACRES) = 59550.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 40365.92 Tc (MIN.) = 99.263
EFFECTIVE AREA (ACRES) = 41386.37 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA (ACRES) = 59550.5
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 59550.5 TC (MIN.) = 99.26
EFFECTIVE AREA (ACRES) = 41386.37 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.952
PEAK FLOW RATE (CFS) = 40365.92

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20779.35	18.94	2.296	0.30 (0.25)	0.84	3969.4	50200.00
2	22044.31	22.69	2.046	0.30 (0.25)	0.85	5147.3	50400.00
3	22629.45	24.54	1.936	0.30 (0.25)	0.85	5716.4	120.00
4	22640.00	24.58	1.934	0.30 (0.25)	0.85	5727.5	110.00
5	24703.01	31.56	1.676	0.30 (0.26)	0.86	7856.0	100.00
6	24858.55	32.09	1.662	0.30 (0.26)	0.86	8013.4	50300.00
7	25485.46	34.20	1.607	0.30 (0.26)	0.86	8728.4	150.00
8	27966.83	42.48	1.415	0.30 (0.26)	0.88	11512.7	600.00
9	28983.85	46.87	1.344	0.30 (0.27)	0.89	13357.8	31100.00
10	31744.77	58.63	1.200	0.30 (0.27)	0.91	18323.4	40100.00
11	32996.60	66.43	1.141	0.30 (0.28)	0.92	21552.7	11801.00
12	35132.48	77.16	1.069	0.30 (0.28)	0.93	26688.7	11530.00
13	36235.54	81.49	1.040	0.30 (0.28)	0.94	29225.9	11701.00
14	37172.54	84.95	1.016	0.30 (0.28)	0.94	31497.0	11910.00
15	38491.68	89.81	0.983	0.30 (0.28)	0.94	34970.1	13222.00
16	39758.68	95.04	0.960	0.30 (0.28)	0.95	38441.0	10800.00
17	40365.92	99.26	0.942	0.30 (0.29)	0.95	41386.4	11130.00
18	40232.36	108.84	0.900	0.30 (0.29)	0.96	46427.6	12410.00
19	39802.02	117.12	0.864	0.30 (0.29)	0.96	50166.7	11201.00

20	39441.98	122.08	0.848	0.30	(0.29)	0.96	51898.4	12201.00
21	38512.07	129.13	0.833	0.30	(0.29)	0.96	53755.5	12231.00
22	37309.82	136.92	0.817	0.30	(0.29)	0.96	55389.8	10400.00
23	36051.26	144.84	0.801	0.30	(0.29)	0.96	56684.9	12010.00
24	34927.75	150.79	0.788	0.30	(0.29)	0.96	57031.9	10210.00
25	34435.99	153.84	0.782	0.30	(0.29)	0.96	57149.1	12000.00
26	31052.51	178.92	0.730	0.30	(0.29)	0.96	57770.3	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 S34- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV34.DAT
TIME/DATE OF STUDY: 09:53 06/14/2019

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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; 5.305
- 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

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

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PEAK FLOWRATE TABLE FILE NAME: RI50EV33.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20779.35	18.94	0.30 (0.25)	0.84	3969.4	50200.00
2	22640.00	24.58	0.30 (0.25)	0.85	5727.5	110.00
3	25485.46	34.20	0.30 (0.26)	0.86	8728.4	150.00
4	27966.83	42.48	0.30 (0.26)	0.88	11512.7	600.00
5	28983.85	46.87	0.30 (0.27)	0.89	13357.8	31100.00
6	31744.77	58.63	0.30 (0.27)	0.91	18323.4	40100.00
7	32996.60	66.43	0.30 (0.28)	0.92	21552.7	11801.00
8	35132.48	77.16	0.30 (0.28)	0.93	26688.7	11530.00
9	37172.54	84.95	0.30 (0.28)	0.94	31497.0	11910.00
10	38491.68	89.81	0.30 (0.28)	0.94	34970.1	13222.00
11	39758.68	95.04	0.30 (0.28)	0.95	38441.0	10800.00
12	40365.92	99.26	0.30 (0.29)	0.95	41386.4	11130.00
13	40232.36	108.84	0.30 (0.29)	0.96	46427.6	12100.00
14	39802.02	117.12	0.30 (0.29)	0.96	50166.7	11201.00
15	39441.98	122.08	0.30 (0.29)	0.96	51898.4	12201.00
16	38512.07	129.13	0.30 (0.29)	0.96	53755.5	12231.00
17	37309.82	136.92	0.30 (0.29)	0.96	55389.8	10400.00
18	36051.26	144.84	0.30 (0.29)	0.96	56684.9	12010.00
19	34927.75	150.79	0.30 (0.29)	0.96	57031.9	10210.00
20	31052.51	178.92	0.30 (0.29)	0.96	57770.3	10100.00
TOTAL AREA(ACRES) =						57770.3

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	20779.35	18.94	0.30 (0.25)	0.84	3969.4	50200.00
2	22640.00	24.58	0.30 (0.25)	0.85	5727.5	110.00
3	25485.46	34.20	0.30 (0.26)	0.86	8728.4	150.00
4	27966.83	42.48	0.30 (0.26)	0.88	11512.7	600.00
5	28983.85	46.87	0.30 (0.27)	0.89	13357.8	31100.00
6	31744.77	58.63	0.30 (0.27)	0.91	18323.4	40100.00
7	32996.60	66.43	0.30 (0.28)	0.92	21552.7	11801.00
8	35132.48	77.16	0.30 (0.28)	0.93	26688.7	11530.00
9	37172.54	84.95	0.30 (0.28)	0.94	31497.0	11910.00
10	38491.68	89.81	0.30 (0.28)	0.94	34970.1	13222.00
11	39758.68	95.04	0.30 (0.28)	0.95	38441.0	10800.00
12	40365.92	99.26	0.30 (0.29)	0.95	41386.4	11130.00
13	40232.36	108.84	0.30 (0.29)	0.96	46427.6	12410.00

14	39802.02	117.12	0.30	(0.29)	0.96	50166.7	11201.00
15	39441.98	122.08	0.30	(0.29)	0.96	51898.4	12201.00
16	38512.07	129.13	0.30	(0.29)	0.96	53755.5	12231.00
17	37309.82	136.92	0.30	(0.29)	0.96	55389.8	10400.00
18	36051.26	144.84	0.30	(0.29)	0.96	56684.9	12010.00
19	34927.75	150.79	0.30	(0.29)	0.96	57031.9	10210.00
20	31052.51	178.92	0.30	(0.29)	0.96	57770.3	10100.00

TOTAL AREA (ACRES) = 57770.3

FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 215.00 DOWNSTREAM (FEET) = 209.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 623.02 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) = 8.89
CHANNEL FLOW THRU SUBAREA (CFS) = 40365.92
FLOW VELOCITY (FEET/SEC.) = 18.59 FLOW DEPTH (FEET) = 8.89
TRAVEL TIME (MIN.) = 0.56 Tc (MIN.) = 99.82
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: 0610505X.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	265.16	19.79	0.30 (0.30)	0.99	153.2	50500.00

TOTAL AREA (ACRES) = 153.2

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	20779.35	19.64	2.231	0.30 (0.25)	0.84	3969.4	50200.00
2	22640.00	25.26	1.896	0.30 (0.25)	0.85	5727.5	110.00
3	25485.46	34.85	1.587	0.30 (0.26)	0.86	8728.4	150.00
4	27966.83	43.11	1.402	0.30 (0.26)	0.88	11512.7	600.00
5	28983.85	47.49	1.331	0.30 (0.27)	0.89	13357.8	31100.00
6	31744.77	59.23	1.189	0.30 (0.27)	0.91	18323.4	40100.00
7	32996.60	67.03	1.134	0.30 (0.28)	0.92	21552.7	11801.00
8	35132.48	77.74	1.062	0.30 (0.28)	0.93	26688.7	11530.00
9	37172.54	85.52	1.009	0.30 (0.28)	0.94	31497.0	11910.00
10	38491.68	90.37	0.977	0.30 (0.28)	0.94	34970.1	13222.00
11	39758.68	95.60	0.955	0.30 (0.28)	0.95	38441.0	10800.00
12	40365.92	99.82	0.936	0.30 (0.29)	0.95	41386.4	11130.00

13	40232.36	109.40	0.895	0.30 (0.29)	0.96	46427.6	12410.00
14	39802.02	117.68	0.859	0.30 (0.29)	0.96	50166.7	11201.00
15	39441.98	122.64	0.844	0.30 (0.29)	0.96	51898.4	12201.00
16	38512.07	129.69	0.829	0.30 (0.29)	0.96	53755.5	12231.00
17	37309.82	137.49	0.813	0.30 (0.29)	0.96	55389.8	10400.00
18	36051.26	145.42	0.796	0.30 (0.29)	0.96	56684.9	12010.00
19	34927.75	151.38	0.784	0.30 (0.29)	0.96	57031.9	10210.00
20	31052.51	179.53	0.726	0.30 (0.29)	0.96	57770.3	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	265.16	19.79	2.218	0.30 (0.30)	0.99	153.2	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 6247.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21044.27	19.64	2.231	0.30 (0.25)	0.85	4121.4	50200.00
2	21093.24	19.79	2.218	0.30 (0.25)	0.85	4168.6	50500.00
3	22860.71	25.26	1.896	0.30 (0.26)	0.85	5880.7	110.00
4	25663.53	34.85	1.587	0.30 (0.26)	0.87	8881.6	150.00
5	28119.35	43.11	1.402	0.30 (0.26)	0.88	11665.9	600.00
6	29126.57	47.49	1.331	0.30 (0.27)	0.89	13510.9	31100.00
7	31868.00	59.23	1.189	0.30 (0.27)	0.91	18476.5	40100.00
8	33112.15	67.03	1.134	0.30 (0.28)	0.92	21705.9	11801.00
9	35238.09	77.74	1.062	0.30 (0.28)	0.93	26841.9	11530.00
10	37270.92	85.52	1.009	0.30 (0.28)	0.94	31650.2	11910.00
11	38585.68	90.37	0.977	0.30 (0.28)	0.94	35123.2	13222.00
12	39849.55	95.60	0.955	0.30 (0.28)	0.95	38594.2	10800.00
13	40454.27	99.82	0.936	0.30 (0.29)	0.95	41539.6	11130.00
14	40314.99	109.40	0.895	0.30 (0.29)	0.96	46580.8	12410.00
15	39879.71	117.68	0.859	0.30 (0.29)	0.96	50319.9	11201.00
16	39517.52	122.64	0.844	0.30 (0.29)	0.96	52051.6	12201.00
17	38585.60	129.69	0.829	0.30 (0.29)	0.96	53908.7	12231.00
18	37381.12	137.49	0.813	0.30 (0.29)	0.96	55543.0	10400.00
19	36120.31	145.42	0.796	0.30 (0.29)	0.96	56838.1	12010.00
20	34995.10	151.38	0.784	0.30 (0.29)	0.96	57185.1	10210.00
21	31111.83	179.53	0.726	0.30 (0.29)	0.96	57923.5	10100.00

TOTAL AREA (ACRES) = 57923.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 40454.27 Tc (MIN.) = 99.822
EFFECTIVE AREA (ACRES) = 41539.55 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 57923.5
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) = 10.67
 CHANNEL FLOW THRU SUBAREA(CFS) = 40454.27
 FLOW VELOCITY(FEET/SEC.) = 14.96 FLOW DEPTH(FEET) = 10.67
 TRAVEL TIME(MIN.) = 0.44 Tc(MIN.) = 100.26
 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: 0610506X.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	94.69	17.43	2.189	0.30 (0.30)	1.00	49.6	50600.00
TOTAL AREA (ACRES) =							49.6

 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	21044.27	20.19	2.189	0.30 (0.25)	0.85	4121.4	50200.00
2	21093.24	20.33	2.181	0.30 (0.25)	0.85	4168.6	50500.00
3	22860.71	25.79	1.876	0.30 (0.26)	0.85	5880.7	110.00
4	25663.53	35.36	1.574	0.30 (0.26)	0.87	8881.6	150.00
5	28119.35	43.60	1.394	0.30 (0.26)	0.88	11665.9	600.00
6	29126.57	47.98	1.323	0.30 (0.27)	0.89	13510.9	31100.00
7	31868.00	59.71	1.184	0.30 (0.27)	0.91	18476.5	40100.00
8	33112.15	67.50	1.130	0.30 (0.28)	0.92	21705.9	11801.00
9	35238.09	78.20	1.058	0.30 (0.28)	0.93	26841.9	11530.00
10	37270.92	85.97	1.006	0.30 (0.28)	0.94	31650.2	11910.00
11	38585.68	90.82	0.975	0.30 (0.28)	0.94	35123.2	13222.00
12	39849.55	96.04	0.953	0.30 (0.28)	0.95	38594.2	10800.00
13	40454.27	100.26	0.935	0.30 (0.29)	0.95	41539.6	11130.00
14	40314.99	109.84	0.893	0.30 (0.29)	0.96	46580.8	12410.00
15	39879.71	118.12	0.857	0.30 (0.29)	0.96	50319.9	11201.00
16	39517.52	123.09	0.843	0.30 (0.29)	0.96	52051.6	12201.00
17	38585.60	130.14	0.828	0.30 (0.29)	0.96	53908.7	12231.00
18	37381.12	137.94	0.812	0.30 (0.29)	0.96	55543.0	10400.00
19	36120.31	145.88	0.796	0.30 (0.29)	0.96	56838.1	12010.00
20	34995.10	151.84	0.783	0.30 (0.29)	0.96	57185.1	10210.00
21	31111.83	180.01	0.725	0.30 (0.29)	0.96	57923.5	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	94.69	17.43	2.420	0.30 (0.30)	1.00	49.6	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	20440.36	17.43	2.420	0.30 (0.26)	0.85	3608.6	50600.00
2	21128.63	20.19	2.189	0.30 (0.26)	0.85	4171.0	50200.00
3	21177.21	20.33	2.181	0.30 (0.26)	0.85	4218.2	50500.00
4	22931.07	25.79	1.876	0.30 (0.26)	0.85	5930.3	110.00
5	25720.40	35.36	1.574	0.30 (0.26)	0.87	8931.2	150.00
6	28168.18	43.60	1.394	0.30 (0.26)	0.88	11715.5	600.00
7	29172.23	47.98	1.323	0.30 (0.27)	0.89	13560.5	31100.00
8	31907.48	59.71	1.184	0.30 (0.27)	0.91	18526.1	40100.00
9	33149.24	67.50	1.130	0.30 (0.28)	0.92	21755.5	11801.00
10	35271.96	78.20	1.058	0.30 (0.28)	0.93	26891.4	11530.00
11	37302.45	85.97	1.006	0.30 (0.28)	0.94	31699.7	11910.00
12	38615.84	90.82	0.975	0.30 (0.28)	0.94	35172.8	13222.00
13	39878.71	96.04	0.953	0.30 (0.28)	0.95	38643.8	10800.00
14	40482.61	100.26	0.935	0.30 (0.29)	0.95	41589.1	11130.00
15	40341.47	109.84	0.893	0.30 (0.29)	0.96	46630.3	12410.00
16	39904.59	118.12	0.857	0.30 (0.29)	0.96	50369.5	11201.00
17	39541.75	123.09	0.843	0.30 (0.29)	0.96	52101.2	12201.00
18	38609.18	130.14	0.828	0.30 (0.29)	0.96	53958.3	12231.00
19	37403.98	137.94	0.812	0.30 (0.29)	0.96	55592.6	10400.00
20	36142.44	145.88	0.796	0.30 (0.29)	0.96	56887.7	12010.00
21	35016.68	151.84	0.783	0.30 (0.29)	0.96	57234.7	10210.00
22	31130.81	180.01	0.725	0.30 (0.29)	0.96	57973.1	10100.00
TOTAL AREA (ACRES) =							57973.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 40482.61 Tc(MIN.) = 100.262
 EFFECTIVE AREA(ACRES) = 41589.14 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 57973.1
 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

>>>>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) = 9.56
 CHANNEL FLOW THRU SUBAREA(CFS) = 40482.61
 FLOW VELOCITY(FEET/SEC.) = 17.10 FLOW DEPTH(FEET) = 9.56
 TRAVEL TIME(MIN.) = 1.56 Tc(MIN.) = 101.82
 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.) = 101.82
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.928
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER					
"GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, STRAIGHT ROW"	B	1.80	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) = 20.30 SUBAREA RUNOFF (CFS) = 11.47
EFFECTIVE AREA (ACRES) = 41609.45 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 57993.4 PEAK FLOW RATE (CFS) = 40482.61
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.) = 101.82
* 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	3.50	0.30	1.000	81
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	12.60	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) = 22.00 SUBAREA RUNOFF (CFS) = 12.43
EFFECTIVE AREA (ACRES) = 41631.45 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 58015.4 PEAK FLOW RATE (CFS) = 40482.61
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 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			

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 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	20440.36	19.39	2.252	0.30 (0.26)	0.85	3650.9	50600.00
2	21128.63	22.13	2.075	0.30 (0.26)	0.85	4213.3	50200.00
3	21177.21	22.27	2.066	0.30 (0.26)	0.85	4260.5	50500.00
4	22931.07	27.68	1.803	0.30 (0.26)	0.86	5972.6	110.00
5	25720.40	37.18	1.526	0.30 (0.26)	0.87	8973.5	150.00
6	28168.18	45.36	1.365	0.30 (0.26)	0.88	11757.8	600.00
7	29172.23	49.72	1.294	0.30 (0.27)	0.89	13602.8	31100.00
8	31907.48	61.40	1.172	0.30 (0.27)	0.91	18568.4	40100.00
9	33149.24	69.17	1.119	0.30 (0.28)	0.92	21797.8	11801.00
10	35271.96	79.84	1.047	0.30 (0.28)	0.93	26933.7	11530.00
11	37302.45	87.58	0.995	0.30 (0.28)	0.94	31742.0	11910.00
12	38615.84	92.41	0.969	0.30 (0.28)	0.94	35215.1	13222.00
13	39878.71	97.61	0.946	0.30 (0.28)	0.95	38686.1	10800.00
14	40482.61	101.82	0.928	0.30 (0.29)	0.95	41631.4	11130.00
15	40341.47	111.41	0.886	0.30 (0.29)	0.96	46672.6	12410.00
16	39904.59	119.69	0.850	0.30 (0.29)	0.96	50411.8	11201.00
17	39541.75	124.66	0.839	0.30 (0.29)	0.96	52143.5	12201.00
18	38609.18	131.73	0.825	0.30 (0.29)	0.96	54000.6	12231.00
19	37403.98	139.55	0.809	0.30 (0.29)	0.96	55634.9	10400.00
20	36142.44	147.50	0.792	0.30 (0.29)	0.96	56930.0	12010.00
21	35016.68	153.48	0.780	0.30 (0.29)	0.96	57277.0	10210.00
22	31130.81	181.71	0.723	0.30 (0.29)	0.96	58015.4	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 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	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 13406.00 = 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	17494.91	9.86	3.472	0.30(0.24)	0.80	2100.6	429.00
2	18485.66	11.37	3.204	0.30(0.24)	0.80	2421.4	425.00
3	18737.46	11.79	3.137	0.30(0.24)	0.80	2510.8	400.00
4	19369.97	13.23	2.909	0.30(0.24)	0.80	2818.6	300.00
5	21095.28	18.33	2.343	0.30(0.24)	0.80	3891.4	210.00
6	21325.95	19.39	2.252	0.30(0.24)	0.80	4105.0	50600.00
7	21566.14	20.37	2.178	0.30(0.24)	0.80	4319.0	410.00
8	21810.93	21.37	2.119	0.30(0.24)	0.80	4537.1	200.00
9	21962.82	21.98	2.083	0.30(0.24)	0.80	4670.6	230.00
10	21996.11	22.13	2.075	0.30(0.24)	0.80	4700.5	50200.00
11	22042.01	22.27	2.066	0.30(0.24)	0.80	4748.3	50500.00
12	22291.82	23.09	2.018	0.30(0.24)	0.81	5010.3	220.50
13	23684.79	27.68	1.803	0.30(0.25)	0.82	6463.8	110.00
14	26350.54	37.18	1.526	0.30(0.25)	0.84	9464.7	150.00
15	28726.61	45.36	1.365	0.30(0.26)	0.86	12249.0	600.00
16	29699.17	49.72	1.294	0.30(0.26)	0.87	14094.0	31100.00
17	32379.63	61.40	1.172	0.30(0.27)	0.90	19059.6	40100.00
18	33598.07	69.17	1.119	0.30(0.27)	0.91	22289.0	11801.00
19	35688.76	79.84	1.047	0.30(0.28)	0.92	27424.9	11530.00
20	37696.02	87.58	0.995	0.30(0.28)	0.93	32233.2	11910.00
21	38997.50	92.41	0.969	0.30(0.28)	0.94	35706.3	13222.00
22	40250.30	97.61	0.946	0.30(0.28)	0.94	39177.3	10800.00
23	40846.07	101.82	0.928	0.30(0.28)	0.95	42122.6	11130.00
24	40686.42	111.41	0.886	0.30(0.29)	0.95	47163.8	12410.00
25	40233.54	119.69	0.850	0.30(0.29)	0.95	50903.0	11201.00
26	39865.81	124.66	0.839	0.30(0.29)	0.95	52634.7	12201.00
27	38926.73	131.73	0.825	0.30(0.29)	0.96	54491.8	12231.00
28	37714.33	139.55	0.809	0.30(0.29)	0.96	56126.1	10400.00
29	36445.45	147.50	0.792	0.30(0.29)	0.96	57421.2	12010.00
30	35314.19	153.48	0.780	0.30(0.29)	0.96	57768.2	10210.00
31	31403.08	181.71	0.723	0.30(0.29)	0.96	58506.6	10100.00
TOTAL AREA (ACRES) =		58506.6					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 40846.07 Tc(MIN.) = 101.824
 EFFECTIVE AREA(ACRES) = 42122.64 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 58506.6
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

 FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 10.59

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.916
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 7.00 0.30 1.000 -
 USER-DEFINED - 3.30 0.30 1.000 -
 USER-DEFINED - 0.40 0.30 0.100 -
 USER-DEFINED - 1.40 0.30 1.000 -
 USER-DEFINED - 0.30 0.30 0.100 -
 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) = 40849.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.24
 AVERAGE FLOW DEPTH(FEET) = 10.59 TRAVEL TIME(MIN.) = 2.69
 Tc(MIN.) = 104.51
 SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 7.05
 EFFECTIVE AREA(ACRES) = 42135.04 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 58519.0 PEAK FLOW RATE(CFS) = 40846.07
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 10.59
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 10.59 FLOW VELOCITY(FEET/SEC.) = 15.24
 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 # 2 <<<<<
 =====

 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0610507X.DNA
 MEMORY BANK # 2 DEFINED AS FOLLOWS:
 STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
 NUMBER (CFS) (MIN.) (INCH/HR) (ACRES) NODE
 1 406.61 19.94 0.30(0.30) 0.99 236.8 50700.00
 TOTAL AREA(ACRES) = 236.8

 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	17494.91	13.42	2.878	0.30(0.24)	0.80	2113.0	429.00
2	18485.66	14.86	2.651	0.30(0.24)	0.80	2433.8	425.00
3	18737.46	15.27	2.606	0.30(0.24)	0.80	2523.2	400.00

4	19369.97	16.67	2.486	0.30 (0.24)	0.80	2831.0	300.00
5	21095.28	21.67	2.102	0.30 (0.24)	0.80	3903.8	210.00
6	21325.95	22.72	2.040	0.30 (0.24)	0.80	4117.4	50600.00
7	21566.14	23.69	1.983	0.30 (0.24)	0.80	4331.4	410.00
8	21810.93	24.67	1.925	0.30 (0.24)	0.80	4549.5	200.00
9	21962.82	25.28	1.895	0.30 (0.24)	0.80	4683.0	230.00
10	21996.11	25.42	1.890	0.30 (0.24)	0.80	4712.9	50200.00
11	22042.01	25.56	1.884	0.30 (0.24)	0.80	4760.7	50500.00
12	22291.82	26.37	1.853	0.30 (0.24)	0.81	5022.7	220.50
13	23684.79	30.89	1.691	0.30 (0.25)	0.82	6476.2	110.00
14	26350.54	40.28	1.447	0.30 (0.25)	0.84	9477.1	150.00
15	28726.61	48.38	1.316	0.30 (0.26)	0.86	12261.4	600.00
16	29699.17	52.71	1.260	0.30 (0.26)	0.87	14106.4	31100.00
17	32379.63	64.30	1.152	0.30 (0.27)	0.90	19072.0	40100.00
18	33598.07	72.03	1.100	0.30 (0.27)	0.91	22301.4	11801.00
19	35688.76	82.65	1.029	0.30 (0.28)	0.92	27437.3	11530.00
20	37696.02	90.34	0.978	0.30 (0.28)	0.93	32245.6	11910.00
21	38997.50	95.14	0.957	0.30 (0.28)	0.94	35718.7	13222.00
22	40250.30	100.31	0.934	0.30 (0.28)	0.94	39189.7	10800.00
23	40846.07	104.51	0.916	0.30 (0.28)	0.95	42135.0	11130.00
24	40686.42	114.10	0.875	0.30 (0.29)	0.95	47176.2	12410.00
25	40233.54	122.39	0.844	0.30 (0.29)	0.95	50915.4	11201.00
26	39865.81	127.37	0.834	0.30 (0.29)	0.95	52647.1	12201.00
27	38926.73	134.46	0.819	0.30 (0.29)	0.96	54504.2	12231.00
28	37714.33	142.30	0.803	0.30 (0.29)	0.96	56138.5	10400.00
29	36445.45	150.29	0.786	0.30 (0.29)	0.96	57433.6	12010.00
30	35314.19	156.30	0.774	0.30 (0.29)	0.96	57780.6	10210.00
31	31403.08	184.64	0.720	0.30 (0.29)	0.96	58519.0	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	406.61	19.94	2.205	0.30 (0.30)	0.99	236.8	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7903.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17865.26	13.42	2.878	0.30 (0.24)	0.81	2272.4	429.00
2	18859.53	14.86	2.651	0.30 (0.24)	0.81	2610.3	425.00
3	19114.21	15.27	2.606	0.30 (0.24)	0.81	2704.5	400.00
4	19759.90	16.67	2.486	0.30 (0.24)	0.81	3028.9	300.00
5	20904.92	19.94	2.205	0.30 (0.24)	0.81	3769.4	50700.00
6	21479.86	21.67	2.102	0.30 (0.24)	0.81	4140.6	210.00
7	21697.37	22.72	2.040	0.30 (0.24)	0.81	4354.2	50600.00
8	21925.46	23.69	1.983	0.30 (0.24)	0.81	4568.1	410.00
9	22157.91	24.67	1.925	0.30 (0.24)	0.81	4786.3	200.00
10	22303.41	25.28	1.895	0.30 (0.24)	0.81	4919.7	230.00
11	22335.54	25.42	1.890	0.30 (0.24)	0.81	4949.7	50200.00
12	22380.28	25.56	1.884	0.30 (0.24)	0.81	4997.5	50500.00
13	22623.50	26.37	1.853	0.30 (0.24)	0.81	5259.5	220.50
14	23981.78	30.89	1.691	0.30 (0.25)	0.83	6712.9	110.00
15	26595.67	40.28	1.447	0.30 (0.25)	0.85	9713.9	150.00
16	28943.76	48.38	1.316	0.30 (0.26)	0.86	12498.2	600.00
17	29904.43	52.71	1.260	0.30 (0.26)	0.88	14343.2	31100.00
18	32561.78	64.30	1.152	0.30 (0.27)	0.90	19308.8	40100.00
19	33769.11	72.03	1.100	0.30 (0.27)	0.91	22538.1	11801.00

20	35844.57	82.65	1.029	0.30 (0.28)	0.92	27674.1	11530.00
21	37840.96	90.34	0.978	0.30 (0.28)	0.93	32482.4	11910.00
22	39138.00	95.14	0.957	0.30 (0.28)	0.94	35955.5	13222.00
23	40386.02	100.31	0.934	0.30 (0.28)	0.94	39426.5	10800.00
24	40977.91	104.51	0.916	0.30 (0.28)	0.95	42371.8	11130.00
25	40809.40	114.10	0.875	0.30 (0.29)	0.95	47413.0	12410.00
26	40350.02	122.39	0.844	0.30 (0.29)	0.95	51152.1	11201.00
27	39980.10	127.37	0.834	0.30 (0.29)	0.95	52883.8	12201.00
28	39037.89	134.46	0.819	0.30 (0.29)	0.96	54741.0	12231.00
29	37822.04	142.30	0.803	0.30 (0.29)	0.96	56375.3	10400.00
30	36549.64	150.29	0.786	0.30 (0.29)	0.96	57670.4	12010.00
31	35415.73	156.30	0.774	0.30 (0.29)	0.96	58017.4	10210.00
32	31493.12	184.64	0.720	0.30 (0.29)	0.96	58755.8	10100.00

TOTAL AREA (ACRES) = 58755.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 40977.91 Tc (MIN.) = 104.512
EFFECTIVE AREA (ACRES) = 42371.83 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 58755.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 11.97
* 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
USER-DEFINED	-	0.40	0.30	1.000	-
USER-DEFINED	-	2.90	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) = 40978.82
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 13.18
AVERAGE FLOW DEPTH (FEET) = 11.97 TRAVEL TIME (MIN.) = 1.20
Tc (MIN.) = 105.72
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 1.81
EFFECTIVE AREA (ACRES) = 42375.13 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 58759.1 PEAK FLOW RATE (CFS) = 40977.91
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) = 11.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 11.97 FLOW VELOCITY (FEET/SEC.) = 13.18
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

 >>>>CLEAR MEMORY BANK # 3 <<<<<<
 =====

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: RI50EV36.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

 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	17865.26	15.00	2.629	0.30 (0.24)	0.81	2275.7	429.00
2	18859.53	16.41	2.508	0.30 (0.24)	0.81	2613.6	425.00
3	19114.21	16.81	2.474	0.30 (0.24)	0.81	2707.8	400.00
4	19759.90	18.20	2.355	0.30 (0.24)	0.81	3032.2	300.00
5	20904.92	21.44	2.115	0.30 (0.24)	0.81	3772.7	50700.00
6	21479.86	23.16	2.014	0.30 (0.24)	0.81	4143.9	210.00
7	21697.37	24.20	1.953	0.30 (0.24)	0.81	4357.5	50600.00
8	21925.46	25.16	1.900	0.30 (0.24)	0.81	4571.4	410.00
9	22157.91	26.14	1.862	0.30 (0.24)	0.81	4789.6	200.00
10	22303.41	26.75	1.839	0.30 (0.24)	0.81	4923.0	230.00
11	22335.54	26.89	1.834	0.30 (0.24)	0.81	4953.0	50200.00
12	22380.28	27.03	1.828	0.30 (0.24)	0.81	5000.8	50500.00
13	22623.50	27.83	1.797	0.30 (0.24)	0.81	5262.8	220.50
14	23981.78	32.32	1.653	0.30 (0.25)	0.83	6716.2	110.00
15	26595.67	41.66	1.425	0.30 (0.25)	0.85	9717.2	150.00
16	28943.76	49.72	1.294	0.30 (0.26)	0.86	12501.5	600.00
17	29904.43	54.04	1.246	0.30 (0.26)	0.88	14346.5	31100.00
18	32561.78	65.59	1.143	0.30 (0.27)	0.90	19312.1	40100.00
19	33769.11	73.31	1.091	0.30 (0.27)	0.91	22541.4	11801.00
20	35844.57	83.90	1.020	0.30 (0.28)	0.92	27677.4	11530.00
21	37840.96	91.57	0.972	0.30 (0.28)	0.93	32485.7	11910.00
22	39138.00	96.36	0.951	0.30 (0.28)	0.94	35958.8	13222.00
23	40386.02	101.53	0.929	0.30 (0.28)	0.94	39429.8	10800.00
24	40977.91	105.72	0.911	0.30 (0.28)	0.95	42375.1	11130.00

25	40809.40	115.31	0.869	0.30 (0.29)	0.95	47416.3	12410.00
26	40350.02	123.60	0.842	0.30 (0.29)	0.95	51155.4	11201.00
27	39980.10	128.58	0.831	0.30 (0.29)	0.95	52887.1	12201.00
28	39037.89	135.68	0.817	0.30 (0.29)	0.96	54744.3	12231.00
29	37822.04	143.54	0.800	0.30 (0.29)	0.96	56378.6	10400.00
30	36549.64	151.54	0.784	0.30 (0.29)	0.96	57673.7	12010.00
31	35415.73	157.56	0.771	0.30 (0.29)	0.96	58020.7	10210.00
32	31493.12	185.95	0.719	0.30 (0.29)	0.96	58759.1	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	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	19886.76	15.00	2.629	0.30 (0.25)	0.84	3073.7	429.00
2	20957.57	16.41	2.508	0.30 (0.25)	0.83	3486.6	425.00
3	21230.25	16.81	2.474	0.30 (0.25)	0.83	3601.9	400.00
4	21926.81	18.20	2.355	0.30 (0.25)	0.83	4000.1	300.00
5	23164.79	21.44	2.115	0.30 (0.25)	0.83	4913.1	50700.00
6	23787.13	23.16	2.014	0.30 (0.25)	0.83	5375.7	210.00
7	24023.75	24.20	1.953	0.30 (0.25)	0.83	5644.8	50600.00
8	24267.74	25.16	1.900	0.30 (0.25)	0.83	5909.8	410.00
9	24535.19	26.14	1.862	0.30 (0.25)	0.83	6180.1	200.00
10	24700.15	26.75	1.839	0.30 (0.25)	0.83	6345.7	230.00
11	24736.59	26.89	1.834	0.30 (0.25)	0.83	6383.1	50200.00
12	24785.54	27.03	1.828	0.30 (0.25)	0.83	6438.3	50500.00
13	25038.40	27.79	1.799	0.30 (0.25)	0.83	6728.3	110.00
14	25051.67	27.83	1.797	0.30 (0.25)	0.83	6743.7	220.50
15	25856.75	30.18	1.709	0.30 (0.25)	0.84	7673.3	100.00
16	26228.23	31.37	1.678	0.30 (0.25)	0.84	8134.3	100.00
17	26526.61	32.32	1.653	0.30 (0.25)	0.84	8499.5	110.00
18	27122.87	34.38	1.599	0.30 (0.25)	0.85	9281.2	130.00
19	29236.74	41.66	1.425	0.30 (0.26)	0.86	12032.1	150.00
20	30968.06	47.40	1.332	0.30 (0.26)	0.87	14338.2	20100.00
21	31610.66	49.72	1.294	0.30 (0.26)	0.88	15218.6	600.00
22	32271.55	52.90	1.258	0.30 (0.26)	0.88	16683.8	13600.00
23	32521.21	54.04	1.246	0.30 (0.27)	0.89	17202.6	31100.00
24	35138.20	65.59	1.143	0.30 (0.27)	0.91	22489.4	40100.00
25	36318.56	73.31	1.091	0.30 (0.27)	0.91	25933.3	11801.00
26	38357.03	83.90	1.020	0.30 (0.28)	0.92	31363.7	11530.00
27	39367.66	87.84	0.994	0.30 (0.28)	0.93	33940.3	13510.00
28	40279.30	91.57	0.972	0.30 (0.28)	0.93	36308.2	11910.00
29	41498.97	96.36	0.951	0.30 (0.28)	0.94	39815.8	13222.00
30	41583.12	96.73	0.950	0.30 (0.28)	0.94	40069.3	13500.00
31	42667.94	101.53	0.929	0.30 (0.28)	0.94	43289.5	10800.00
32	43195.96	105.72	0.911	0.30 (0.28)	0.95	46234.8	11130.00

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
33	42881.36	115.31	0.869	0.30 (0.28)	0.95	51276.0	12410.00
34	42324.28	123.60	0.842	0.30 (0.29)	0.95	55015.1	11201.00
35	41918.16	128.58	0.831	0.30 (0.29)	0.95	56746.8	12201.00
36	40924.40	135.68	0.817	0.30 (0.29)	0.95	58604.0	12231.00
37	39651.43	143.54	0.800	0.30 (0.29)	0.95	60238.3	10400.00
38	38320.90	151.54	0.784	0.30 (0.29)	0.96	61533.4	12010.00
39	37143.26	157.56	0.771	0.30 (0.29)	0.96	61880.3	10210.00
40	33035.40	185.95	0.719	0.30 (0.29)	0.96	62618.8	10100.00

TOTAL AREA (ACRES) = 62618.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43195.96 Tc (MIN.) = 105.717
EFFECTIVE AREA (ACRES) = 46234.81 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
TOTAL AREA (ACRES) = 62618.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

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

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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) = 9.00
CHANNEL FLOW THRU SUBAREA (CFS) = 43195.96
FLOW VELOCITY (FEET/SEC.) = 19.59 FLOW DEPTH (FEET) = 9.00
TRAVEL TIME (MIN.) = 0.14 Tc (MIN.) = 105.86
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506101C.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM 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	19886.76	15.19	2.613	0.30 (0.25)	0.84	3073.7	429.00
2	20957.57	16.60	2.492	0.30 (0.25)	0.83	3486.6	425.00
3	21230.25	16.99	2.458	0.30 (0.25)	0.83	3601.9	400.00
4	21926.81	18.38	2.339	0.30 (0.25)	0.83	4000.1	300.00
5	23164.79	21.62	2.105	0.30 (0.25)	0.83	4913.1	50700.00
6	23787.13	23.34	2.004	0.30 (0.25)	0.83	5375.7	210.00
7	24023.75	24.38	1.942	0.30 (0.25)	0.83	5644.8	50600.00
8	24267.74	25.34	1.893	0.30 (0.25)	0.83	5909.8	410.00
9	24535.19	26.32	1.855	0.30 (0.25)	0.83	6180.1	200.00
10	24700.15	26.92	1.832	0.30 (0.25)	0.83	6345.7	230.00
11	24736.59	27.06	1.827	0.30 (0.25)	0.83	6383.1	50200.00
12	24785.54	27.20	1.821	0.30 (0.25)	0.83	6438.3	50500.00
13	25038.40	27.96	1.792	0.30 (0.25)	0.83	6728.3	110.00
14	25051.67	28.00	1.791	0.30 (0.25)	0.83	6743.7	220.50
15	25856.75	30.35	1.705	0.30 (0.25)	0.84	7673.3	100.00
16	26228.23	31.54	1.674	0.30 (0.25)	0.84	8134.3	100.00
17	26526.61	32.49	1.649	0.30 (0.25)	0.84	8499.5	110.00
18	27122.87	34.55	1.595	0.30 (0.25)	0.85	9281.2	130.00
19	29236.74	41.83	1.422	0.30 (0.26)	0.86	12032.1	150.00
20	30968.06	47.56	1.329	0.30 (0.26)	0.87	14338.2	20100.00
21	31610.66	49.88	1.292	0.30 (0.26)	0.88	15218.6	600.00
22	32271.55	53.06	1.257	0.30 (0.26)	0.88	16683.8	13600.00
23	32521.21	54.20	1.244	0.30 (0.27)	0.89	17202.6	31100.00
24	35138.20	65.75	1.142	0.30 (0.27)	0.91	22489.4	40100.00
25	36318.56	73.47	1.090	0.30 (0.27)	0.91	25933.3	11801.00
26	38357.03	84.05	1.019	0.30 (0.28)	0.92	31363.7	11530.00
27	39367.66	87.99	0.993	0.30 (0.28)	0.93	33940.3	13510.00
28	40279.30	91.72	0.972	0.30 (0.28)	0.93	36308.2	11910.00
29	41498.97	96.51	0.951	0.30 (0.28)	0.94	39815.8	13222.00
30	41583.12	96.88	0.949	0.30 (0.28)	0.94	40069.3	13500.00
31	42667.94	101.67	0.928	0.30 (0.28)	0.94	43289.5	10800.00
32	43195.96	105.86	0.910	0.30 (0.28)	0.95	46234.8	11130.00
33	42881.36	115.45	0.869	0.30 (0.28)	0.95	51276.0	12410.00
34	42324.28	123.75	0.841	0.30 (0.29)	0.95	55015.1	11201.00
35	41918.16	128.73	0.831	0.30 (0.29)	0.95	56746.8	12201.00
36	40924.40	135.83	0.816	0.30 (0.29)	0.95	58604.0	12231.00
37	39651.43	143.69	0.800	0.30 (0.29)	0.95	60238.3	10400.00
38	38320.90	151.69	0.784	0.30 (0.29)	0.96	61533.4	12010.00
39	37143.26	157.71	0.771	0.30 (0.29)	0.96	61880.3	10210.00
40	33035.40	186.11	0.719	0.30 (0.29)	0.96	62618.8	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	20324.93	15.19	2.613	0.30 (0.25)	0.85	3312.6	429.00
2	21411.39	16.60	2.492	0.30 (0.25)	0.84	3747.6	425.00
3	21687.71	16.99	2.458	0.30 (0.25)	0.84	3869.1	400.00
4	22394.37	18.38	2.339	0.30 (0.25)	0.84	4289.1	300.00
5	23651.74	21.62	2.105	0.30 (0.25)	0.84	5253.1	50700.00

6	24283.43	23.34	2.004	0.30	(0.25)	0.84	5742.7	210.00
7	24523.62	24.38	1.942	0.30	(0.25)	0.84	6028.3	50600.00
8	24771.67	25.34	1.893	0.30	(0.25)	0.84	6308.3	410.00
9	25046.28	26.32	1.855	0.30	(0.25)	0.84	6594.0	200.00
10	25215.19	26.92	1.832	0.30	(0.25)	0.84	6769.0	230.00
11	25252.51	27.06	1.827	0.30	(0.25)	0.84	6808.7	50200.00
12	25302.31	27.20	1.821	0.30	(0.25)	0.84	6866.2	50500.00
13	25559.45	27.96	1.792	0.30	(0.25)	0.84	7168.1	110.00
14	25572.93	28.00	1.791	0.30	(0.25)	0.84	7184.1	220.50
15	26389.27	30.35	1.705	0.30	(0.25)	0.85	8150.6	100.00
16	26769.38	31.54	1.674	0.30	(0.25)	0.85	8630.3	100.00
17	27074.02	32.49	1.649	0.30	(0.25)	0.85	9010.5	110.00
18	27681.75	34.55	1.595	0.30	(0.26)	0.85	9824.5	130.00
19	28573.67	37.58	1.515	0.30	(0.26)	0.86	11017.4	10100.00
20	29764.01	41.83	1.422	0.30	(0.26)	0.87	12623.1	150.00
21	31451.86	47.56	1.329	0.30	(0.26)	0.88	14929.2	20100.00
22	32076.88	49.88	1.292	0.30	(0.26)	0.88	15809.6	600.00
23	32721.29	53.06	1.257	0.30	(0.27)	0.89	17274.8	13600.00
24	32965.15	54.20	1.244	0.30	(0.27)	0.89	17793.6	31100.00
25	35534.46	65.75	1.142	0.30	(0.27)	0.91	23080.4	40100.00
26	36690.52	73.47	1.090	0.30	(0.27)	0.92	26524.3	11801.00
27	38695.64	84.05	1.019	0.30	(0.28)	0.93	31954.7	11530.00
28	39693.89	87.99	0.993	0.30	(0.28)	0.93	34531.3	13510.00
29	40595.71	91.72	0.972	0.30	(0.28)	0.93	36899.2	11910.00
30	41805.68	96.51	0.951	0.30	(0.28)	0.94	40406.8	13222.00
31	41889.07	96.88	0.949	0.30	(0.28)	0.94	40660.3	13500.00
32	42964.18	101.67	0.928	0.30	(0.28)	0.94	43880.5	10800.00
33	43483.71	105.86	0.910	0.30	(0.28)	0.95	46825.8	11130.00
34	43149.66	115.45	0.869	0.30	(0.28)	0.95	51867.0	12410.00
35	42579.75	123.75	0.841	0.30	(0.29)	0.95	55606.1	11201.00
36	42168.81	128.73	0.831	0.30	(0.29)	0.95	57337.8	12201.00
37	41168.19	135.83	0.816	0.30	(0.29)	0.95	59195.0	12231.00
38	39887.63	143.69	0.800	0.30	(0.29)	0.96	60829.3	10400.00
39	38549.36	151.69	0.784	0.30	(0.29)	0.96	62124.4	12010.00
40	37365.90	157.71	0.771	0.30	(0.29)	0.96	62471.3	10210.00
41	33233.46	186.11	0.719	0.30	(0.29)	0.96	63209.8	10100.00

TOTAL AREA (ACRES) = 63209.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43483.71 Tc (MIN.) = 105.861
EFFECTIVE AREA (ACRES) = 46825.81 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63209.8
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 = 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) = 8.15
CHANNEL FLOW THRU SUBAREA (CFS) = 43483.71
FLOW VELOCITY (FEET/SEC.) = 22.15 FLOW DEPTH (FEET) = 8.15

TRAVEL TIME (MIN.) = 0.20 Tc (MIN.) = 106.06
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: 0610508X.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	219.66	20.77	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	20324.93	15.44	2.591	0.30 (0.25)	0.85	3312.6	429.00
2	21411.39	16.85	2.470	0.30 (0.25)	0.84	3747.6	425.00
3	21687.71	17.24	2.437	0.30 (0.25)	0.84	3869.1	400.00
4	22394.37	18.62	2.318	0.30 (0.25)	0.84	4289.1	300.00
5	23651.74	21.86	2.091	0.30 (0.25)	0.84	5253.1	50700.00
6	24283.43	23.58	1.990	0.30 (0.25)	0.84	5742.7	210.00
7	24523.62	24.62	1.928	0.30 (0.25)	0.84	6028.3	50600.00
8	24771.67	25.58	1.884	0.30 (0.25)	0.84	6308.3	410.00
9	25046.28	26.55	1.846	0.30 (0.25)	0.84	6594.0	200.00
10	25215.19	27.16	1.823	0.30 (0.25)	0.84	6769.0	230.00
11	25252.51	27.30	1.818	0.30 (0.25)	0.84	6808.7	50200.00
12	25302.31	27.44	1.812	0.30 (0.25)	0.84	6866.2	50500.00
13	25559.45	28.20	1.783	0.30 (0.25)	0.84	7168.1	110.00
14	25572.93	28.24	1.782	0.30 (0.25)	0.84	7184.1	220.50
15	26389.27	30.58	1.699	0.30 (0.25)	0.85	8150.6	100.00
16	26769.38	31.77	1.668	0.30 (0.25)	0.85	8630.3	100.00
17	27074.02	32.72	1.643	0.30 (0.25)	0.85	9010.5	110.00
18	27681.75	34.78	1.589	0.30 (0.26)	0.85	9824.5	130.00
19	28573.67	37.80	1.510	0.30 (0.26)	0.86	11017.4	10100.00
20	29764.01	42.05	1.419	0.30 (0.26)	0.87	12623.1	150.00
21	31451.86	47.78	1.326	0.30 (0.26)	0.88	14929.2	20100.00
22	32076.88	50.10	1.289	0.30 (0.26)	0.88	15809.6	600.00
23	32721.29	53.27	1.254	0.30 (0.27)	0.89	17274.8	13600.00
24	32965.15	54.41	1.242	0.30 (0.27)	0.89	17793.6	31100.00
25	35534.46	65.96	1.141	0.30 (0.27)	0.91	23080.4	40100.00
26	36690.52	73.68	1.089	0.30 (0.27)	0.92	26524.3	11801.00
27	38695.64	84.26	1.018	0.30 (0.28)	0.93	31954.7	11530.00
28	39693.89	88.19	0.991	0.30 (0.28)	0.93	34531.3	13510.00

29	40595.71	91.92	0.971	0.30 (0.28)	0.93	36899.2	11910.00
30	41805.68	96.70	0.950	0.30 (0.28)	0.94	40406.8	13222.00
31	41889.07	97.08	0.948	0.30 (0.28)	0.94	40660.3	13500.00
32	42964.18	101.87	0.928	0.30 (0.28)	0.94	43880.5	10800.00
33	43483.71	106.06	0.909	0.30 (0.28)	0.95	46825.8	11130.00
34	43149.66	115.65	0.868	0.30 (0.28)	0.95	51867.0	12410.00
35	42579.75	123.95	0.841	0.30 (0.29)	0.95	55606.1	11201.00
36	42168.81	128.93	0.831	0.30 (0.29)	0.95	57337.8	12201.00
37	41168.19	136.03	0.816	0.30 (0.29)	0.95	59195.0	12231.00
38	39887.63	143.89	0.800	0.30 (0.29)	0.96	60829.3	10400.00
39	38549.36	151.89	0.783	0.30 (0.29)	0.96	62124.4	12010.00
40	37365.90	157.92	0.771	0.30 (0.29)	0.96	62471.3	10210.00
41	33233.46	186.32	0.718	0.30 (0.29)	0.96	63209.8	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	219.66	20.77	2.155	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	20526.62	15.44	2.591	0.30 (0.26)	0.85	3410.3	429.00
2	21619.85	16.85	2.470	0.30 (0.25)	0.85	3854.1	425.00
3	21897.73	17.24	2.437	0.30 (0.25)	0.85	3978.1	400.00
4	22608.66	18.62	2.318	0.30 (0.25)	0.85	4406.9	300.00
5	23446.06	20.77	2.155	0.30 (0.25)	0.85	5058.3	50800.00
6	23863.79	21.86	2.091	0.30 (0.25)	0.85	5384.4	50700.00
7	24483.56	23.58	1.990	0.30 (0.25)	0.84	5874.0	210.00
8	24716.51	24.62	1.928	0.30 (0.25)	0.84	6159.5	50600.00
9	24959.29	25.58	1.884	0.30 (0.25)	0.84	6439.6	410.00
10	25229.46	26.55	1.846	0.30 (0.25)	0.84	6725.3	200.00
11	25395.63	27.16	1.823	0.30 (0.25)	0.84	6900.3	230.00
12	25432.31	27.30	1.818	0.30 (0.25)	0.84	6940.0	50200.00
13	25481.47	27.44	1.812	0.30 (0.25)	0.84	6997.4	50500.00
14	25735.17	28.20	1.783	0.30 (0.25)	0.85	7299.3	110.00
15	25748.47	28.24	1.782	0.30 (0.25)	0.85	7315.3	220.50
16	26555.01	30.58	1.699	0.30 (0.25)	0.85	8281.8	100.00
17	26931.45	31.77	1.668	0.30 (0.25)	0.85	8761.6	100.00
18	27233.13	32.72	1.643	0.30 (0.26)	0.85	9141.8	110.00
19	27834.50	34.78	1.589	0.30 (0.26)	0.86	9955.8	130.00
20	28717.04	37.80	1.510	0.30 (0.26)	0.86	11148.7	10100.00
21	29896.65	42.05	1.419	0.30 (0.26)	0.87	12754.4	150.00
22	31573.53	47.78	1.326	0.30 (0.26)	0.88	15060.5	20100.00
23	32194.17	50.10	1.289	0.30 (0.26)	0.88	15940.9	600.00
24	32834.50	53.27	1.254	0.30 (0.27)	0.89	17406.0	13600.00
25	33076.89	54.41	1.242	0.30 (0.27)	0.89	17924.8	31100.00
26	35634.26	65.96	1.141	0.30 (0.27)	0.91	23211.6	40100.00
27	36784.18	73.68	1.089	0.30 (0.27)	0.92	26655.6	11801.00
28	38780.88	84.26	1.018	0.30 (0.28)	0.93	32085.9	11530.00
29	39776.00	88.19	0.991	0.30 (0.28)	0.93	34662.5	13510.00
30	40675.39	91.92	0.971	0.30 (0.28)	0.93	37030.5	11910.00
31	41882.91	96.70	0.950	0.30 (0.28)	0.94	40538.1	13222.00
32	41966.11	97.08	0.948	0.30 (0.28)	0.94	40791.6	13500.00
33	43038.77	101.87	0.928	0.30 (0.28)	0.94	44011.7	10800.00
34	43556.16	106.06	0.909	0.30 (0.28)	0.95	46957.1	11130.00

35	43217.20	115.65	0.868	0.30 (0.28)	0.95	51998.3	12410.00
36	42644.09	123.95	0.841	0.30 (0.29)	0.95	55737.4	11201.00
37	42231.93	128.93	0.831	0.30 (0.29)	0.95	57469.1	12201.00
38	41229.58	136.03	0.816	0.30 (0.29)	0.95	59326.2	12231.00
39	39947.10	143.89	0.800	0.30 (0.29)	0.96	60960.5	10400.00
40	38606.87	151.89	0.783	0.30 (0.29)	0.96	62255.6	12010.00
41	37421.94	157.92	0.771	0.30 (0.29)	0.96	62602.6	10210.00
42	33283.32	186.32	0.718	0.30 (0.29)	0.96	63341.1	10100.00

TOTAL AREA (ACRES) = 63341.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43556.16 Tc (MIN.) = 106.057
EFFECTIVE AREA (ACRES) = 46957.08 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63341.1
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 63341.1 TC (MIN.) = 106.06
EFFECTIVE AREA (ACRES) = 46957.08 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.946
PEAK FLOW RATE (CFS) = 43556.16

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20526.62	15.44	2.591	0.30 (0.26)	0.85	3410.3	429.00
2	21619.85	16.85	2.470	0.30 (0.25)	0.85	3854.1	425.00
3	21897.73	17.24	2.437	0.30 (0.25)	0.85	3978.1	400.00
4	22608.66	18.62	2.318	0.30 (0.25)	0.85	4406.9	300.00
5	23446.06	20.77	2.155	0.30 (0.25)	0.85	5058.3	50800.00
6	23863.79	21.86	2.091	0.30 (0.25)	0.85	5384.4	50700.00
7	24483.56	23.58	1.990	0.30 (0.25)	0.84	5874.0	210.00
8	24716.51	24.62	1.928	0.30 (0.25)	0.84	6159.5	50600.00
9	24959.29	25.58	1.884	0.30 (0.25)	0.84	6439.6	410.00
10	25229.46	26.55	1.846	0.30 (0.25)	0.84	6725.3	200.00
11	25395.63	27.16	1.823	0.30 (0.25)	0.84	6900.3	230.00
12	25432.31	27.30	1.818	0.30 (0.25)	0.84	6940.0	50200.00
13	25481.47	27.44	1.812	0.30 (0.25)	0.84	6997.4	50500.00
14	25735.17	28.20	1.783	0.30 (0.25)	0.85	7299.3	110.00
15	25748.47	28.24	1.782	0.30 (0.25)	0.85	7315.3	220.50
16	26555.01	30.58	1.699	0.30 (0.25)	0.85	8281.8	100.00
17	26931.45	31.77	1.668	0.30 (0.25)	0.85	8761.6	100.00
18	27233.13	32.72	1.643	0.30 (0.26)	0.85	9141.8	110.00
19	27834.50	34.78	1.589	0.30 (0.26)	0.86	9955.8	130.00
20	28717.04	37.80	1.510	0.30 (0.26)	0.86	11148.7	10100.00
21	29896.65	42.05	1.419	0.30 (0.26)	0.87	12754.4	150.00
22	31573.53	47.78	1.326	0.30 (0.26)	0.88	15060.5	20100.00
23	32194.17	50.10	1.289	0.30 (0.26)	0.88	15940.9	600.00
24	32834.50	53.27	1.254	0.30 (0.27)	0.89	17406.0	13600.00
25	33076.89	54.41	1.242	0.30 (0.27)	0.89	17924.8	31100.00
26	35634.26	65.96	1.141	0.30 (0.27)	0.91	23211.6	40100.00
27	36784.18	73.68	1.089	0.30 (0.27)	0.92	26655.6	11801.00
28	38780.88	84.26	1.018	0.30 (0.28)	0.93	32085.9	11530.00
29	39776.00	88.19	0.991	0.30 (0.28)	0.93	34662.5	13510.00
30	40675.39	91.92	0.971	0.30 (0.28)	0.93	37030.5	11910.00
31	41882.91	96.70	0.950	0.30 (0.28)	0.94	40538.1	13222.00
32	41966.11	97.08	0.948	0.30 (0.28)	0.94	40791.6	13500.00

33	43038.77	101.87	0.928	0.30	(0.28)	0.94	44011.7	10800.00
34	43556.16	106.06	0.909	0.30	(0.28)	0.95	46957.1	11130.00
35	43217.20	115.65	0.868	0.30	(0.28)	0.95	51998.3	12410.00
36	42644.09	123.95	0.841	0.30	(0.29)	0.95	55737.4	11201.00
37	42231.93	128.93	0.831	0.30	(0.29)	0.95	57469.1	12201.00
38	41229.58	136.03	0.816	0.30	(0.29)	0.95	59326.2	12231.00
39	39947.10	143.89	0.800	0.30	(0.29)	0.96	60960.5	10400.00
40	38606.87	151.89	0.783	0.30	(0.29)	0.96	62255.6	12010.00
41	37421.94	157.92	0.771	0.30	(0.29)	0.96	62602.6	10210.00
42	33283.32	186.32	0.718	0.30	(0.29)	0.96	63341.1	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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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- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV APRIL 2019 ROKAMOTO *

FILE NAME: RI50EV36.DAT
TIME/DATE OF STUDY: 09:42 04/16/2019

=====

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; 5.255
- 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 (FT)	MANNING LIP (FT)	HIKE FACTOR (FT)	
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00	0.0313	0.167	0.0150

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

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

FLOW PROCESS FROM NODE 13600.00 TO NODE 13600.50 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 488.61
ELEVATION DATA: UPSTREAM(FEET) = 872.12 DOWNSTREAM(FEET) = 744.80

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.995
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.241
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.43
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.962
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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.

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 55.68
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.222
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      1.44    0.30    1.000    65
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      0.01    0.30    1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 1.20
EFFECTIVE AREA(ACRES) = 1543.71 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 1302.85

*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1302.85  55.68  1.222  0.30( 0.28) 0.95    1543.7  13510.00
  2      1248.68  64.08  1.147  0.30( 0.28) 0.95    1607.8  13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      144.04  20.65  2.152  0.30( 0.30) 1.00    86.4  13600.00
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc  Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1      1106.54  20.65  2.152  0.30( 0.29) 0.95    658.9  13600.00

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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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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.

 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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 (DECIMAL)	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 (DECIMAL)	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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER 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 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) = 0.30
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.

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):

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) = 0.30
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):

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) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 8.03 SUBAREA RUNOFF(CFS) = 6.20
EFFECTIVE AREA(ACRES) = 2057.10 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 2121.2 PEAK FLOW RATE(CFS) = 1614.50

FLOW PROCESS FROM NODE 13641.00 TO NODE 13642.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 436.89 DOWNSTREAM(FEET) = 394.80
CHANNEL LENGTH THRU SUBAREA(FEET) = 2814.16 CHANNEL SLOPE = 0.0150
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.13
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.125

SUBAREA LOSS RATE DATA(AMC II):

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) = 0.30
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.

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/ 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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/ 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 16.72 SUBAREA RUNOFF(CFS) = 12.41
EFFECTIVE AREA(ACRES) = 2508.50 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 2572.6 PEAK FLOW RATE(CFS) = 1889.37

FLOW PROCESS FROM NODE 13642.00 TO NODE 13643.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 394.80 DOWNSTREAM(FEET) = 342.39

CHANNEL LENGTH THRU SUBAREA(FEET) = 2913.57 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.23
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.094

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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.

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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 142.80 SUBAREA RUNOFF(CFS) = 102.11
EFFECTIVE AREA(ACRES) = 2796.31 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA(ACRES) = 2860.4 PEAK FLOW RATE(CFS) = 2026.64

FLOW PROCESS FROM NODE 13643.00 TO NODE 13643.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 71.81
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.094
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 42.54 0.30 1.000 -
USER-DEFINED - 16.96 0.30 1.000 -
USER-DEFINED - 80.60 0.30 1.000 -
USER-DEFINED - 1.56 0.30 1.000 -
USER-DEFINED - 2.00 0.30 1.000 -
USER-DEFINED - 3.11 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 146.77 SUBAREA RUNOFF(CFS) = 104.95
EFFECTIVE AREA(ACRES) = 2943.08 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 3007.2 PEAK FLOW RATE(CFS) = 2131.59

** PEAK FLOW RATE TABLE **

Table with 8 columns: STREAM NUMBER, Q (CFS), Tc (MIN.), Intensity (INCH/HR), Fp(Fm) (INCH/HR), Ap, Ae (ACRES), HEADWATER NODE. Rows 1-4.

NEW PEAK FLOW DATA ARE:

PEAK FLOW RATE(CFS) = 2201.63 Tc(MIN.) = 31.72
AREA-AVERAGED Fm(INCH/HR) = 0.29 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98 EFFECTIVE AREA(ACRES) = 1786.18

FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 342.39 DOWNSTREAM(FEET) = 300.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1591.23 CHANNEL SLOPE = 0.0266
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.10
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.609
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.89 0.30 1.000 -
USER-DEFINED - 23.73 0.30 1.000 -
USER-DEFINED - 0.27 0.30 1.000 -
USER-DEFINED - 19.87 0.30 1.000 -
USER-DEFINED - 6.40 0.30 1.000 -
USER-DEFINED - 3.14 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2233.62
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.88
AVERAGE FLOW DEPTH(FEET) = 4.10 TRAVEL TIME(MIN.) = 2.06

Tc(MIN.) = 33.78
SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 63.97
EFFECTIVE AREA(ACRES) = 1840.48 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3061.5 PEAK FLOW RATE(CFS) = 2201.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 4.06 FLOW VELOCITY(FEET/SEC.) = 12.84
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 32375.57 FEET.

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 33.78
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.609
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.67 0.30 1.000 -
USER-DEFINED - 9.52 0.30 1.000 -
USER-DEFINED - 0.71 0.30 1.000 -
USER-DEFINED - 0.22 0.30 1.000 -
USER-DEFINED - 39.42 0.30 1.000 -
USER-DEFINED - 0.62 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 51.16 SUBAREA RUNOFF(CFS) = 60.27
EFFECTIVE AREA(ACRES) = 1891.64 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3112.6 PEAK FLOW RATE(CFS) = 2239.80

FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 33.78
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.609
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 0.11 0.30 1.000 -
USER-DEFINED - 0.77 0.30 1.000 -
USER-DEFINED - 0.22 0.30 1.000 -
USER-DEFINED - 2.69 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 3.79 SUBAREA RUNOFF(CFS) = 4.46
EFFECTIVE AREA(ACRES) = 1895.43 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 3116.4 PEAK FLOW RATE(CFS) = 2244.27

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*****
FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12
-----
>>>>CLEAR MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1
-----
>>>>DEFINE MEMORY BANK # 1 <<<<<
=====
PEAK FLOWRATE TABLE FILE NAME: 2P50EVAA.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:
STREAM      Q      Tc      Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR)    (ACRES)    NODE
1           528.88   14.09   0.30( 0.11) 0.36     173.1   110.00
2           529.33   16.63   0.30( 0.11) 0.37     204.3   100.00
3           521.87   17.83   0.30( 0.11) 0.38     213.9   100.00
4           463.87   20.89   0.30( 0.12) 0.40     221.1   130.00
TOTAL AREA (ACRES) =      221.1
*****
FLOW PROCESS FROM NODE 13659.00 TO NODE 13660.00 IS CODE = 31
-----
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 338.00 DOWNSTREAM(FEET) = 300.00
FLOW LENGTH(FEET) = 881.07 MANNING'S N = 0.013
DEPTH OF FLOW IN 108.0 INCH PIPE IS 81.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 43.83
ESTIMATED PIPE DIAMETER(INCH) = 108.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2244.27
PIPE TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 34.11
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.
*****
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR) (INCH/HR)    (ACRES)    NODE
1           2244.27   34.11   1.600 0.30( 0.29) 0.98     1895.4   20100.00
2           2202.96   39.49   1.460 0.30( 0.29) 0.98     2081.1   13600.00
3           2171.20   74.23   1.078 0.30( 0.29) 0.97     3052.3   13510.00
4           2054.87   82.88   1.020 0.30( 0.29) 0.97     3116.4   13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR) (INCH/HR)    (ACRES)    NODE
1           528.88   14.09   2.758 0.30( 0.11) 0.36     173.1   110.00
2           529.33   16.63   2.477 0.30( 0.11) 0.37     204.3   100.00
3           521.87   17.83   2.374 0.30( 0.11) 0.38     213.9   100.00
4           463.87   20.89   2.138 0.30( 0.12) 0.40     221.1   130.00

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LONGEST FLOWPATH FROM NODE 130.00 TO NODE 13660.00 = 6327.50 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.) (INCH/HR) (INCH/HR)    (ACRES)    NODE
1           2276.62   14.09   2.758 0.30( 0.26) 0.87     955.9   110.00
2           2357.12   16.63   2.477 0.30( 0.26) 0.87     1128.4   100.00
3           2390.18   17.83   2.374 0.30( 0.26) 0.87     1204.9   100.00
4           2404.22   20.89   2.138 0.30( 0.27) 0.89     1381.9   130.00
5           2584.45   34.11   1.600 0.30( 0.28) 0.92     2116.5   20100.00
6           2510.99   39.49   1.460 0.30( 0.28) 0.92     2302.2   13600.00
7           2391.39   74.23   1.078 0.30( 0.28) 0.93     3273.4   13510.00
8           2261.67   82.88   1.020 0.30( 0.28) 0.93     3337.5   13500.00
TOTAL AREA (ACRES) =      3337.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2584.45 Tc(MIN.) = 34.110
EFFECTIVE AREA(ACRES) = 2116.53 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.87
TOTAL AREA(ACRES) = 3337.5
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13660.00 = 33256.64 FEET.

*****
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 34.11
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.600
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL      AREA      Fp      Ap      SCS
LAND USE                GROUP      (ACRES) (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"FALLOW"                B           1.11   0.30   1.000   86
AGRICULTURAL POOR COVER
"FALLOW"                B           0.44   0.30   1.000   86
NATURAL FAIR COVER
"GRASS"                  B           1.49   0.30   1.000   69
NATURAL FAIR COVER
"GRASS"                  B           1.70   0.30   1.000   69
NATURAL FAIR COVER
"OPEN BRUSH"            B           1.09   0.30   1.000   66
NATURAL FAIR COVER
"OPEN BRUSH"            B           18.57  0.30   1.000   66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.40 SUBAREA RUNOFF(CFS) = 28.55
EFFECTIVE AREA(ACRES) = 2140.93 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3361.9 PEAK FLOW RATE(CFS) = 2584.45
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

*****
FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 34.11

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* 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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.

 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 2.35 SUBAREA RUNOFF (CFS) = 2.67
 EFFECTIVE AREA (ACRES) = 2251.14 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA (ACRES) = 3472.1 PEAK FLOW RATE (CFS) = 2609.48
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12

>>>> CLEAR MEMORY BANK # 3 <<<<<

 FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 35.60
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.561
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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/ 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) = 0.60
 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/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS 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.

 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	-	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 PVIOUS 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<<<<

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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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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<<<<

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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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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<<<<

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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
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) = 26.41
 EFFECTIVE AREA (ACRES) = 2484.45 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA (ACRES) = 3705.4 PEAK FLOW RATE (CFS) = 2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 242.00 DOWNSTREAM(FEET) = 208.53
CHANNEL LENGTH THRU SUBAREA(FEET) = 2526.22 CHANNEL SLOPE = 0.0132
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.49
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387
SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
    LAND USE            GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -         8.49    0.30    1.000    -
USER-DEFINED            -        13.31    0.30    1.000    -
USER-DEFINED            -         0.87    0.30    1.000    -
USER-DEFINED            -        20.26    0.30    1.000    -
USER-DEFINED            -         1.21    0.30    1.000    -
USER-DEFINED            -         0.05    0.30    1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2722.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.67
AVERAGE FLOW DEPTH(FEET) = 5.49 TRAVEL TIME(MIN.) = 3.95
Tc(MIN.) = 43.73
SUBAREA AREA(ACRES) = 44.19 SUBAREA RUNOFF(CFS) = 43.22
EFFECTIVE AREA(ACRES) = 2543.42 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3764.4 PEAK FLOW RATE(CFS) = 2700.64
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.47

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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.

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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.) = 43.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387
SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
    LAND USE            GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED            -        12.56    0.30    1.000    -
USER-DEFINED            -         0.81    0.30    1.000    -
USER-DEFINED            -         0.01    0.30    1.000    -
USER-DEFINED            -         1.11    0.30    1.000    -
USER-DEFINED            -         0.59    0.30    1.000    -
USER-DEFINED            -         3.04    0.30    1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 18.12 SUBAREA RUNOFF(CFS) = 17.72
EFFECTIVE AREA(ACRES) = 2561.54 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3782.5 PEAK FLOW RATE(CFS) = 2700.64
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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.) = 43.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387
SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
    LAND USE            GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"8-10 DWELLINGS/ACRE"  B         0.10    0.30    0.400    56
PUBLIC PARK            B         1.30    0.30    0.850    56
RESIDENTIAL
"8-10 DWELLINGS/ACRE"  B         0.10    0.30    0.400    56
PUBLIC PARK            B         1.70    0.30    0.850    56
PUBLIC PARK            B         0.10    0.30    0.850    56
PUBLIC PARK            B         2.90    0.30    0.850    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.835
SUBAREA AREA(ACRES) = 6.20 SUBAREA RUNOFF(CFS) = 6.34
EFFECTIVE AREA(ACRES) = 2567.74 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3788.7 PEAK FLOW RATE(CFS) = 2700.64
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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.) = 43.73
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.387
SUBAREA LOSS RATE DATA(AMC II):
  DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
    LAND USE            GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL
"5-7 DWELLINGS/ACRE"  B         0.10    0.30    0.500    56
CONDOMINIUMS          B         0.10    0.30    0.350    56
PUBLIC PARK            B         6.90    0.30    0.850    56
PUBLIC PARK            B         0.40    0.30    0.850    56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.839
SUBAREA AREA(ACRES) = 7.50 SUBAREA RUNOFF(CFS) = 7.66
EFFECTIVE AREA(ACRES) = 2575.24 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA(ACRES) = 3796.2 PEAK FLOW RATE(CFS) = 2700.64
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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

>>>>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.

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

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 194.24 DOWNSTREAM(FEET) = 178.72
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1843.57 CHANNEL SLOPE = 0.0084
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 6.16
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.327
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 0.23 0.30 1.000 -
 USER-DEFINED - 1.52 0.30 1.000 -
 USER-DEFINED - 0.06 0.30 1.000 -
 USER-DEFINED - 0.13 0.30 1.000 -
 USER-DEFINED - 6.45 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2704.52
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.06
 AVERAGE FLOW DEPTH(FEET) = 6.16 TRAVEL TIME(MIN.) = 3.39
 Tc(MIN.) = 47.40
 SUBAREA AREA(ACRES) = 8.39 SUBAREA RUNOFF(CFS) = 7.76
 EFFECTIVE AREA(ACRES) = 2638.71 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
 TOTAL AREA(ACRES) = 3859.7 PEAK FLOW RATE(CFS) = 2700.64
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 6.15

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 6.15 FLOW VELOCITY(FEET/SEC.) = 9.06
 LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13410.00 = 41710.10 FEET.

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 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

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 S37- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV37.DAT
TIME/DATE OF STUDY: 09:53 06/14/2019

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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; 5.240
- 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.	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

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

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PEAK FLOWRATE TABLE FILE NAME: RI50EV34.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22608.66	18.62	0.30 (0.25)	0.85	4406.9	300.00
2	24483.56	23.58	0.30 (0.25)	0.84	5874.0	210.00
3	28717.04	37.80	0.30 (0.26)	0.86	11148.7	10100.00
4	29896.65	42.05	0.30 (0.26)	0.87	12754.4	150.00
5	32194.17	50.10	0.30 (0.26)	0.88	15940.9	600.00
6	33076.89	54.41	0.30 (0.27)	0.89	17924.8	31100.00
7	35634.26	65.96	0.30 (0.27)	0.91	23211.6	40100.00
8	36784.18	73.68	0.30 (0.27)	0.92	26655.6	11801.00
9	40675.39	91.92	0.30 (0.28)	0.93	37030.5	11910.00
10	41966.11	97.08	0.30 (0.28)	0.94	40791.6	13500.00
11	43038.77	101.87	0.30 (0.28)	0.94	44011.7	10800.00
12	43556.16	106.06	0.30 (0.28)	0.95	46957.1	11130.00
13	43217.20	115.65	0.30 (0.28)	0.95	51998.3	12410.00
14	42644.09	123.95	0.30 (0.29)	0.95	55737.4	11201.00
15	42231.93	128.93	0.30 (0.29)	0.95	57469.1	12201.00
16	41229.58	136.03	0.30 (0.29)	0.95	59326.2	12231.00
17	39947.10	143.89	0.30 (0.29)	0.96	60960.5	10400.00
18	38606.87	151.89	0.30 (0.29)	0.96	62255.6	12010.00
19	37421.94	157.92	0.30 (0.29)	0.96	62602.6	10210.00
20	33283.32	186.32	0.30 (0.29)	0.96	63341.1	10100.00
TOTAL AREA (ACRES) =						63341.1

FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0

>>>>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	22608.66	18.62	0.30 (0.25)	0.85	4406.9	300.00
2	24483.56	23.58	0.30 (0.25)	0.84	5874.0	210.00
3	28717.04	37.80	0.30 (0.26)	0.86	11148.7	10100.00
4	29896.65	42.05	0.30 (0.26)	0.87	12754.4	150.00
5	32194.17	50.10	0.30 (0.26)	0.88	15940.9	600.00
6	33076.89	54.41	0.30 (0.27)	0.89	17924.8	31100.00
7	35634.26	65.96	0.30 (0.27)	0.91	23211.6	40100.00
8	36784.18	73.68	0.30 (0.27)	0.92	26655.6	11801.00
9	40675.39	91.92	0.30 (0.28)	0.93	37030.5	11910.00
10	41966.11	97.08	0.30 (0.28)	0.94	40791.6	13500.00
11	43038.77	101.87	0.30 (0.28)	0.94	44011.7	10800.00
12	43556.16	106.06	0.30 (0.28)	0.95	46957.1	11130.00
13	43217.20	115.65	0.30 (0.28)	0.95	51998.3	12410.00

14 42644.09 123.95 0.30(0.29) 0.95 55737.4 11201.00
 15 42231.93 128.93 0.30(0.29) 0.95 57469.1 12201.00
 16 41229.58 136.03 0.30(0.29) 0.95 59326.2 12231.00
 17 39947.10 143.89 0.30(0.29) 0.96 60960.5 10400.00
 18 38606.87 151.89 0.30(0.29) 0.96 62255.6 12010.00
 19 37421.94 157.92 0.30(0.29) 0.96 62602.6 10210.00
 20 33283.32 186.32 0.30(0.29) 0.96 63341.1 10100.00
 TOTAL AREA(ACRES) = 63341.1

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) = 13.72
 CHANNEL FLOW THRU SUBAREA(CFS) = 43556.16
 FLOW VELOCITY(FEET/SEC.) = 11.82 FLOW DEPTH(FEET) = 13.72
 TRAVEL TIME(MIN.) = 2.67 Tc(MIN.) = 108.72
 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: 0506102C.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm)	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
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)	Ap	Ae (ACRES)	HEADWATER NODE
1	22608.66	21.91	2.076	0.30(0.25)	0.85	4406.9	300.00
2	24483.56	26.78	1.829	0.30(0.25)	0.84	5874.0	210.00
3	28717.04	40.84	1.432	0.30(0.26)	0.86	11148.7	10100.00

4	29896.65	45.05	1.364	0.30(0.26)	0.87	12754.4	150.00
5	32194.17	53.03	1.250	0.30(0.26)	0.88	15940.9	600.00
6	33076.89	57.32	1.202	0.30(0.27)	0.89	17924.8	31100.00
7	35634.26	68.80	1.113	0.30(0.27)	0.91	23211.6	40100.00
8	36784.18	76.49	1.061	0.30(0.27)	0.92	26655.6	11801.00
9	40675.39	94.65	0.950	0.30(0.28)	0.93	37030.5	11910.00
10	41966.11	99.78	0.928	0.30(0.28)	0.94	40791.6	13500.00
11	43038.77	104.54	0.907	0.30(0.28)	0.94	44011.7	10800.00
12	43556.16	108.72	0.889	0.30(0.28)	0.95	46957.1	11130.00
13	43217.20	118.32	0.847	0.30(0.28)	0.95	51998.3	12410.00
14	42644.09	126.63	0.826	0.30(0.29)	0.95	55737.4	11201.00
15	42231.93	131.62	0.816	0.30(0.29)	0.95	57469.1	12201.00
16	41229.58	138.74	0.801	0.30(0.29)	0.95	59326.2	12231.00
17	39947.10	146.63	0.785	0.30(0.29)	0.96	60960.5	10400.00
18	38606.87	154.66	0.768	0.30(0.29)	0.96	62255.6	12010.00
19	37421.94	160.71	0.755	0.30(0.29)	0.96	62602.6	10210.00
20	33283.32	189.22	0.705	0.30(0.29)	0.96	63341.1	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)	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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm)	Ap	Ae (ACRES)	HEADWATER NODE
1	20365.01	14.55	2.681	0.30(0.26)	0.85	3115.6	10230.00
2	22951.04	21.91	2.076	0.30(0.26)	0.85	4635.9	300.00
3	23792.60	24.11	1.948	0.30(0.26)	0.85	5312.2	10200.00
4	23942.84	24.51	1.925	0.30(0.26)	0.85	5432.5	10250.00
5	24799.75	26.78	1.829	0.30(0.25)	0.85	6118.4	210.00
6	25253.24	28.32	1.769	0.30(0.26)	0.85	6699.0	10220.00
7	28952.82	40.84	1.432	0.30(0.26)	0.86	11395.0	10100.00
8	30118.41	45.05	1.364	0.30(0.26)	0.87	13000.7	150.00
9	32392.45	53.03	1.250	0.30(0.26)	0.88	16187.2	600.00
10	33265.30	57.32	1.202	0.30(0.27)	0.89	18171.1	31100.00
11	35804.30	68.80	1.113	0.30(0.27)	0.91	23457.9	40100.00
12	36943.57	76.49	1.061	0.30(0.28)	0.92	26901.8	11801.00
13	40811.93	94.65	0.950	0.30(0.28)	0.93	37276.8	11910.00
14	42098.08	99.78	0.928	0.30(0.28)	0.94	41037.8	13500.00
15	43166.48	104.54	0.907	0.30(0.28)	0.94	44258.0	10800.00
16	43680.14	108.72	0.889	0.30(0.28)	0.95	47203.3	11130.00
17	43332.63	118.32	0.847	0.30(0.28)	0.95	52244.5	12410.00
18	42755.19	126.63	0.826	0.30(0.29)	0.95	55983.7	11201.00
19	42340.89	131.62	0.816	0.30(0.29)	0.95	57715.4	12201.00
20	41335.49	138.74	0.801	0.30(0.29)	0.95	59572.5	12231.00
21	40049.62	146.63	0.785	0.30(0.29)	0.96	61206.8	10400.00
22	38705.96	154.66	0.768	0.30(0.29)	0.96	62501.9	12010.00
23	37518.43	160.71	0.755	0.30(0.29)	0.96	62848.9	10210.00
24	33369.54	189.22	0.705	0.30(0.29)	0.96	63587.3	10100.00
TOTAL AREA(ACRES) =							63587.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 43680.14 Tc(MIN.) = 108.725
 EFFECTIVE AREA(ACRES) = 47203.34 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA(ACRES) = 63587.3
 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<<<<<

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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
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 14.09
 CHANNEL FLOW THRU SUBAREA(CFS) = 43680.14
 FLOW VELOCITY(FEET/SEC.) = 11.46 FLOW DEPTH(FEET) = 14.09
 TRAVEL TIME(MIN.) = 3.01 Tc(MIN.) = 111.73
 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 <<<<<

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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

>>>>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	20365.01	18.38	2.324	0.30(0.26)	0.85	3115.6	10230.00
2	22951.04	25.60	1.874	0.30(0.26)	0.85	4635.9	300.00
3	23792.60	27.76	1.791	0.30(0.26)	0.85	5312.2	10200.00
4	23942.84	28.14	1.776	0.30(0.26)	0.85	5432.5	10250.00
5	24799.75	30.37	1.695	0.30(0.25)	0.85	6118.4	210.00

6	25253.24	31.89	1.656	0.30(0.26)	0.85	6699.0	10220.00
7	28952.82	44.26	1.377	0.30(0.26)	0.86	11395.0	10100.00
8	30118.41	48.43	1.309	0.30(0.26)	0.87	13000.7	150.00
9	32392.45	56.33	1.213	0.30(0.26)	0.88	16187.2	600.00
10	33265.30	60.59	1.168	0.30(0.27)	0.89	18171.1	31100.00
11	35804.30	72.00	1.091	0.30(0.27)	0.91	23457.9	40100.00
12	36943.57	79.65	1.040	0.30(0.28)	0.92	26901.8	11801.00
13	40811.93	97.72	0.937	0.30(0.28)	0.93	37276.8	11910.00
14	42098.08	102.82	0.914	0.30(0.28)	0.94	41037.8	13500.00
15	43166.48	107.56	0.894	0.30(0.28)	0.94	44258.0	10800.00
16	43680.14	111.73	0.876	0.30(0.28)	0.95	47203.3	11130.00
17	43332.63	121.33	0.837	0.30(0.28)	0.95	52244.5	12410.00
18	42755.19	129.66	0.820	0.30(0.29)	0.95	55983.7	11201.00
19	42340.89	134.66	0.809	0.30(0.29)	0.95	57715.4	12201.00
20	41335.49	141.80	0.795	0.30(0.29)	0.95	59572.5	12231.00
21	40049.62	149.72	0.778	0.30(0.29)	0.96	61206.8	10400.00
22	38705.96	157.78	0.761	0.30(0.29)	0.96	62501.9	12010.00
23	37518.43	163.86	0.749	0.30(0.29)	0.96	62848.9	10210.00
24	33369.54	192.49	0.702	0.30(0.29)	0.96	63587.3	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	21008.07	18.17	2.342	0.30(0.25)	0.84	3479.7	10300.00
2	21068.32	18.38	2.324	0.30(0.25)	0.84	3519.1	10230.00
3	21282.07	18.97	2.274	0.30(0.25)	0.84	3653.7	10380.00
4	22122.22	21.35	2.109	0.30(0.25)	0.84	4180.8	10320.00
5	22860.59	23.48	1.985	0.30(0.25)	0.84	4641.2	10360.00
6	23591.09	25.60	1.874	0.30(0.25)	0.84	5094.3	300.00
7	23876.28	26.35	1.845	0.30(0.25)	0.84	5334.2	10340.00
8	24401.38	27.76	1.791	0.30(0.25)	0.84	5773.0	10200.00
9	24545.83	28.14	1.776	0.30(0.25)	0.84	5893.3	10250.00
10	25371.22	30.37	1.695	0.30(0.25)	0.84	6579.2	210.00
11	25809.34	31.89	1.656	0.30(0.25)	0.84	7159.8	10220.00
12	29400.18	44.26	1.377	0.30(0.26)	0.86	11855.8	10100.00
13	30539.47	48.43	1.309	0.30(0.26)	0.86	13461.5	150.00
14	32775.95	56.33	1.213	0.30(0.26)	0.88	16648.0	600.00
15	33631.23	60.59	1.168	0.30(0.27)	0.89	18631.9	31100.00
16	36140.32	72.00	1.091	0.30(0.27)	0.91	23918.7	40100.00
17	37259.50	79.65	1.040	0.30(0.27)	0.91	27362.6	11801.00
18	41087.67	97.72	0.937	0.30(0.28)	0.93	37737.6	11910.00
19	42365.21	102.82	0.914	0.30(0.28)	0.94	41498.6	13500.00
20	43425.59	107.56	0.894	0.30(0.28)	0.94	44718.8	10800.00
21	43932.21	111.73	0.876	0.30(0.28)	0.94	47664.1	11130.00
22	43569.66	121.33	0.837	0.30(0.28)	0.95	52705.3	12410.00
23	42985.45	129.66	0.820	0.30(0.29)	0.95	56444.5	11201.00
24	42567.10	134.66	0.809	0.30(0.29)	0.95	58176.2	12201.00

25 41555.90 141.80 0.795 0.30(0.29) 0.95 60033.3 12231.00
 26 40263.61 149.72 0.778 0.30(0.29) 0.95 61667.6 10400.00
 27 38913.39 157.78 0.761 0.30(0.29) 0.95 62962.7 12010.00
 28 37720.93 163.86 0.749 0.30(0.29) 0.95 63309.7 10210.00
 29 33553.76 192.49 0.702 0.30(0.29) 0.96 64048.1 10100.00
 TOTAL AREA (ACRES) = 64048.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 43932.21 Tc(MIN.) = 111.731
 EFFECTIVE AREA(ACRES) = 47664.14 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
 TOTAL AREA(ACRES) = 64048.1
 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

>>>>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) = 8.19
 CHANNEL FLOW THRU SUBAREA(CFS) = 43932.21
 FLOW VELOCITY(FEET/SEC.) = 40.41 FLOW DEPTH(FEET) = 8.19
 TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 111.88
 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

>>>>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

 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	21008.07	18.36	2.326	0.30(0.25)	0.84	3479.7	10300.00

2	21068.32	18.57	2.308	0.30(0.25)	0.84	3519.1	10230.00
3	21282.07	19.16	2.258	0.30(0.25)	0.84	3653.7	10380.00
4	22122.22	21.54	2.098	0.30(0.25)	0.84	4180.8	10320.00
5	22860.59	23.66	1.975	0.30(0.25)	0.84	4641.2	10360.00
6	23591.09	25.78	1.867	0.30(0.25)	0.84	5094.3	300.00
7	23876.28	26.54	1.838	0.30(0.25)	0.84	5334.2	10340.00
8	24401.38	27.94	1.784	0.30(0.25)	0.84	5773.0	10200.00
9	24545.83	28.33	1.769	0.30(0.25)	0.84	5893.3	10250.00
10	25371.22	30.55	1.691	0.30(0.25)	0.84	6579.2	210.00
11	25809.34	32.07	1.651	0.30(0.25)	0.84	7159.8	10220.00
12	29400.18	44.43	1.374	0.30(0.26)	0.86	11855.8	10100.00
13	30539.47	48.60	1.307	0.30(0.26)	0.86	13461.5	150.00
14	32775.95	56.50	1.211	0.30(0.26)	0.88	16648.0	600.00
15	33631.23	60.76	1.167	0.30(0.27)	0.89	18631.9	31100.00
16	36140.32	72.15	1.090	0.30(0.27)	0.91	23918.7	40100.00
17	37259.50	79.81	1.039	0.30(0.27)	0.91	27362.6	11801.00
18	41087.67	97.87	0.936	0.30(0.28)	0.93	37737.6	11910.00
19	42365.21	102.97	0.914	0.30(0.28)	0.94	41498.6	13500.00
20	43425.59	107.71	0.893	0.30(0.28)	0.94	44718.8	10800.00
21	43932.21	111.88	0.875	0.30(0.28)	0.94	47664.1	11130.00
22	43569.66	121.48	0.837	0.30(0.28)	0.95	52705.3	12410.00
23	42985.45	129.81	0.820	0.30(0.29)	0.95	56444.5	11201.00
24	42567.10	134.81	0.809	0.30(0.29)	0.95	58176.2	12201.00
25	41555.90	141.95	0.794	0.30(0.29)	0.95	60033.3	12231.00
26	40263.61	149.87	0.778	0.30(0.29)	0.95	61667.6	10400.00
27	38913.39	157.94	0.761	0.30(0.29)	0.95	62962.7	12010.00
28	37720.93	164.02	0.748	0.30(0.29)	0.95	63309.7	10210.00
29	33553.76	192.65	0.702	0.30(0.29)	0.96	64048.1	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	21078.44	18.36	2.326	0.30(0.25)	0.84	3521.4	10300.00
2	21138.89	18.57	2.308	0.30(0.25)	0.84	3561.2	10230.00
3	21353.13	19.16	2.258	0.30(0.25)	0.84	3697.1	10380.00
4	21485.41	19.53	2.227	0.30(0.25)	0.84	3780.8	10400.00
5	22188.91	21.54	2.098	0.30(0.25)	0.84	4225.1	10320.00
6	22922.85	23.66	1.975	0.30(0.25)	0.84	4685.5	10360.00
7	23649.50	25.78	1.867	0.30(0.25)	0.84	5138.6	300.00
8	23933.64	26.54	1.838	0.30(0.25)	0.84	5378.5	10340.00
9	24456.81	27.94	1.784	0.30(0.25)	0.84	5817.3	10200.00
10	24600.72	28.33	1.769	0.30(0.25)	0.84	5937.6	10250.00
11	25423.30	30.55	1.691	0.30(0.25)	0.84	6623.5	210.00
12	25860.00	32.07	1.651	0.30(0.25)	0.84	7204.1	10220.00
13	29440.89	44.43	1.374	0.30(0.26)	0.86	11900.1	10100.00
14	30577.77	48.60	1.307	0.30(0.26)	0.86	13505.8	150.00
15	32810.82	56.50	1.211	0.30(0.26)	0.88	16692.3	600.00
16	33664.52	60.76	1.167	0.30(0.27)	0.89	18676.2	31100.00
17	36170.85	72.15	1.090	0.30(0.27)	0.91	23963.0	40100.00
18	37288.18	79.81	1.039	0.30(0.27)	0.91	27406.9	11801.00
19	41112.66	97.87	0.936	0.30(0.28)	0.93	37781.9	11910.00

20	42389.41	102.97	0.914	0.30	(0.28)	0.94	41542.9	13500.00
21	43449.05	107.71	0.893	0.30	(0.28)	0.94	44763.1	10800.00
22	43955.03	111.88	0.875	0.30	(0.28)	0.94	47708.4	11130.00
23	43591.09	121.48	0.837	0.30	(0.28)	0.95	52749.6	12410.00
24	43006.27	129.81	0.820	0.30	(0.29)	0.95	56488.8	11201.00
25	42587.54	134.81	0.809	0.30	(0.29)	0.95	58220.5	12201.00
26	41575.81	141.95	0.794	0.30	(0.29)	0.95	60077.6	12231.00
27	40282.92	149.87	0.778	0.30	(0.29)	0.95	61711.9	10400.00
28	38932.10	157.94	0.761	0.30	(0.29)	0.95	63007.0	12010.00
29	37739.18	164.02	0.748	0.30	(0.29)	0.95	63354.0	10210.00
30	33570.34	192.65	0.702	0.30	(0.29)	0.96	64092.4	10100.00

TOTAL AREA (ACRES) = 64092.4

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 43955.03 Tc (MIN.) = 111.881
EFFECTIVE AREA (ACRES) = 47708.44 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64092.4
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) = 16.59
CHANNEL FLOW THRU SUBAREA (CFS) = 43955.03
FLOW VELOCITY (FEET/SEC.) = 15.93 FLOW DEPTH (FEET) = 16.59
TRAVEL TIME (MIN.) = 1.60 Tc (MIN.) = 113.49
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: 0506105J.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	385.37	14.62	0.30 (0.27)	0.90	207.5	10520.00
2	453.34	31.20	0.30 (0.28)	0.93	403.6	10500.00
TOTAL AREA (ACRES) =						403.6

FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21078.44	20.34	2.167	0.30 (0.25)	0.84	3521.4	10300.00
2	21138.89	20.55	2.155	0.30 (0.25)	0.84	3561.2	10230.00
3	21353.13	21.14	2.121	0.30 (0.25)	0.84	3697.1	10380.00
4	21485.41	21.51	2.100	0.30 (0.25)	0.84	3780.8	10400.00
5	22188.91	23.49	1.985	0.30 (0.25)	0.84	4225.1	10320.00
6	22922.85	25.60	1.874	0.30 (0.25)	0.84	4685.5	10360.00
7	23649.50	27.70	1.793	0.30 (0.25)	0.84	5138.6	300.00
8	23933.64	28.45	1.765	0.30 (0.25)	0.84	5378.5	10340.00
9	24456.81	29.84	1.711	0.30 (0.25)	0.84	5817.3	10200.00
10	24600.72	30.22	1.699	0.30 (0.25)	0.84	5937.6	10250.00
11	25423.30	32.43	1.642	0.30 (0.25)	0.84	6623.5	210.00
12	25860.00	33.94	1.603	0.30 (0.25)	0.84	7204.1	10220.00
13	29440.89	46.23	1.345	0.30 (0.26)	0.86	11900.1	10100.00
14	30577.77	50.38	1.280	0.30 (0.26)	0.86	13505.8	150.00
15	32810.82	58.24	1.192	0.30 (0.26)	0.88	16692.3	600.00
16	33664.52	62.49	1.155	0.30 (0.27)	0.89	18676.2	31100.00
17	36170.85	73.85	1.079	0.30 (0.27)	0.91	23963.0	40100.00
18	37288.18	81.49	1.027	0.30 (0.27)	0.91	27406.9	11801.00
19	41112.66	99.50	0.929	0.30 (0.28)	0.93	37781.9	11910.00
20	42389.41	104.59	0.907	0.30 (0.28)	0.94	41542.9	13500.00
21	43449.05	109.32	0.886	0.30 (0.28)	0.94	44763.1	10800.00
22	43955.03	113.49	0.868	0.30 (0.28)	0.94	47708.4	11130.00
23	43591.09	123.09	0.834	0.30 (0.28)	0.95	52749.6	12410.00
24	43006.27	131.42	0.816	0.30 (0.29)	0.95	56488.8	11201.00
25	42587.54	136.43	0.806	0.30 (0.29)	0.95	58220.5	12201.00
26	41575.81	143.58	0.791	0.30 (0.29)	0.95	60077.6	12231.00
27	40282.92	151.52	0.774	0.30 (0.29)	0.95	61711.9	10400.00
28	38932.10	159.60	0.757	0.30 (0.29)	0.95	63007.0	12010.00
29	37739.18	165.70	0.745	0.30 (0.29)	0.95	63354.0	10210.00
30	33570.34	194.39	0.700	0.30 (0.29)	0.96	64092.4	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	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	19514.88	14.62	2.670	0.30 (0.25)	0.85	2738.5	10520.00
2	21487.27	20.34	2.167	0.30 (0.25)	0.85	3796.6	10300.00
3	21548.57	20.55	2.155	0.30 (0.25)	0.85	3838.8	10230.00
4	21765.21	21.14	2.121	0.30 (0.25)	0.85	3981.7	10380.00
5	21899.01	21.51	2.100	0.30 (0.25)	0.85	4069.8	10400.00
6	22610.64	23.49	1.985	0.30 (0.25)	0.85	4537.5	10320.00
7	23353.21	25.60	1.874	0.30 (0.25)	0.85	5022.8	10360.00
8	24088.46	27.70	1.793	0.30 (0.25)	0.85	5500.7	300.00
9	24375.69	28.45	1.765	0.30 (0.25)	0.85	5749.5	10340.00
10	24904.55	29.84	1.711	0.30 (0.25)	0.85	6204.8	10200.00

11	25050.04	30.22	1.699	0.30	(0.25)	0.85	6329.6	10250.00
12	25420.68	31.20	1.674	0.30	(0.25)	0.85	6646.9	10500.00
13	25866.36	32.43	1.642	0.30	(0.25)	0.85	7027.1	210.00
14	26290.33	33.94	1.603	0.30	(0.25)	0.85	7607.7	10220.00
15	29787.45	46.23	1.345	0.30	(0.26)	0.86	12303.7	10100.00
16	30903.13	50.38	1.280	0.30	(0.26)	0.87	13909.4	150.00
17	33107.58	58.24	1.192	0.30	(0.26)	0.88	17095.9	600.00
18	33949.44	62.49	1.155	0.30	(0.27)	0.89	19079.8	31100.00
19	36430.92	73.85	1.079	0.30	(0.27)	0.91	24366.6	40100.00
20	37531.54	81.49	1.027	0.30	(0.27)	0.91	27810.5	11801.00
21	41324.04	99.50	0.929	0.30	(0.28)	0.93	38185.5	11910.00
22	42593.62	104.59	0.907	0.30	(0.28)	0.94	41946.5	13500.00
23	43646.61	109.32	0.886	0.30	(0.28)	0.94	45166.7	10800.00
24	44146.73	113.49	0.868	0.30	(0.28)	0.94	48112.0	11130.00
25	43771.53	123.09	0.834	0.30	(0.28)	0.95	53153.2	12410.00
26	43181.07	131.42	0.816	0.30	(0.29)	0.95	56892.4	11201.00
27	42758.96	136.43	0.806	0.30	(0.29)	0.95	58624.1	12201.00
28	41742.39	143.58	0.791	0.30	(0.29)	0.95	60481.2	12231.00
29	40444.13	151.52	0.774	0.30	(0.29)	0.95	62115.5	10400.00
30	39087.84	159.60	0.757	0.30	(0.29)	0.95	63410.6	12010.00
31	37890.79	165.70	0.745	0.30	(0.29)	0.95	63757.6	10210.00
32	33707.32	194.39	0.700	0.30	(0.29)	0.96	64496.0	10100.00

TOTAL AREA (ACRES) = 64496.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 44146.73 Tc (MIN.) = 113.485
EFFECTIVE AREA (ACRES) = 48112.04 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64496.0
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) = 13.14
CHANNEL FLOW THRU SUBAREA (CFS) = 44146.73
FLOW VELOCITY (FEET/SEC.) = 22.02 FLOW DEPTH (FEET) = 13.14
TRAVEL TIME (MIN.) = 0.16 Tc (MIN.) = 113.64
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 113.64
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.868
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL

"1 DWELLING/ACRE" B 48.80 0.30 0.800 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.800
SUBAREA AREA (ACRES) = 48.80 SUBAREA RUNOFF (CFS) = 27.56
EFFECTIVE AREA (ACRES) = 48160.84 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64544.8 PEAK FLOW RATE (CFS) = 44146.73
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506106C.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	63.85	17.52	0.30 (0.20)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =			36.9			

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19514.88	14.82	2.639	0.30 (0.25)	0.85	2787.3	10520.00
2	21487.27	20.54	2.156	0.30 (0.25)	0.85	3845.4	10300.00
3	21548.57	20.75	2.144	0.30 (0.25)	0.85	3887.6	10230.00
4	21765.21	21.33	2.110	0.30 (0.25)	0.85	4030.5	10380.00
5	21899.01	21.70	2.088	0.30 (0.25)	0.85	4118.6	10400.00
6	22610.64	23.68	1.973	0.30 (0.25)	0.85	4586.3	10320.00
7	23353.21	25.79	1.867	0.30 (0.25)	0.85	5071.6	10360.00
8	24088.46	27.88	1.786	0.30 (0.25)	0.85	5549.5	300.00
9	24375.69	28.63	1.757	0.30 (0.25)	0.85	5798.3	10340.00
10	24904.55	30.02	1.704	0.30 (0.25)	0.85	6253.6	10200.00
11	25050.04	30.41	1.694	0.30 (0.25)	0.85	6378.4	10250.00
12	25420.68	31.39	1.669	0.30 (0.25)	0.85	6695.7	10500.00
13	25866.36	32.61	1.637	0.30 (0.25)	0.85	7075.9	210.00
14	26290.33	34.12	1.598	0.30 (0.25)	0.85	7656.5	10220.00
15	29787.45	46.41	1.342	0.30 (0.26)	0.86	12352.5	10100.00
16	30903.13	50.55	1.278	0.30 (0.26)	0.87	13958.2	150.00
17	33107.58	58.41	1.190	0.30 (0.26)	0.88	17144.7	600.00
18	33949.44	62.66	1.154	0.30 (0.27)	0.89	19128.6	31100.00
19	36430.92	74.02	1.078	0.30 (0.27)	0.91	24415.4	40100.00
20	37531.54	81.66	1.026	0.30 (0.27)	0.91	27859.3	11801.00
21	41324.04	99.66	0.928	0.30 (0.28)	0.93	38234.3	11910.00
22	42593.62	104.75	0.906	0.30 (0.28)	0.94	41995.3	13500.00

23 43646.61 109.48 0.886 0.30(0.28) 0.94 45215.5 10800.00
 24 44146.73 113.64 0.868 0.30(0.28) 0.94 48160.8 11130.00
 25 43771.53 123.25 0.833 0.30(0.28) 0.95 53202.0 12410.00
 26 43181.07 131.58 0.816 0.30(0.29) 0.95 56941.2 11201.00
 27 42758.96 136.58 0.805 0.30(0.29) 0.95 58672.9 12201.00
 28 41742.39 143.74 0.791 0.30(0.29) 0.95 60530.0 12231.00
 29 40444.13 151.68 0.774 0.30(0.29) 0.95 62164.3 10400.00
 30 39087.84 159.76 0.757 0.30(0.29) 0.95 63459.4 12010.00
 31 37890.79 165.86 0.744 0.30(0.29) 0.95 63806.4 10210.00
 32 33707.32 194.56 0.700 0.30(0.29) 0.96 64544.8 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	19574.84	14.82	2.639	0.30(0.25)	0.84	2818.5	10520.00
2	20510.46	17.52	2.397	0.30(0.25)	0.84	3324.0	10600.00
3	21544.10	20.54	2.156	0.30(0.25)	0.85	3882.3	10300.00
4	21605.05	20.75	2.144	0.30(0.25)	0.85	3924.5	10230.00
5	21820.71	21.33	2.110	0.30(0.25)	0.85	4067.4	10380.00
6	21953.88	21.70	2.088	0.30(0.25)	0.85	4155.5	10400.00
7	22662.17	23.68	1.973	0.30(0.25)	0.85	4623.2	10320.00
8	23401.64	25.79	1.867	0.30(0.25)	0.85	5108.5	10360.00
9	24134.55	27.88	1.786	0.30(0.25)	0.85	5586.4	300.00
10	24420.94	28.63	1.757	0.30(0.25)	0.85	5835.2	10340.00
11	24948.26	30.02	1.704	0.30(0.25)	0.85	6290.5	10200.00
12	25093.45	30.41	1.694	0.30(0.25)	0.85	6415.3	10250.00
13	25463.35	31.39	1.669	0.30(0.25)	0.85	6732.6	10500.00
14	25908.12	32.61	1.637	0.30(0.25)	0.85	7112.8	210.00
15	26330.95	34.12	1.598	0.30(0.25)	0.85	7693.4	10220.00
16	29820.62	46.41	1.342	0.30(0.26)	0.86	12389.4	10100.00
17	30934.44	50.55	1.278	0.30(0.26)	0.87	13995.1	150.00
18	33136.33	58.41	1.190	0.30(0.26)	0.88	17181.6	600.00
19	33977.15	62.66	1.154	0.30(0.27)	0.89	19165.5	31100.00
20	36456.40	74.02	1.078	0.30(0.27)	0.91	24452.3	40100.00
21	37555.53	81.66	1.026	0.30(0.27)	0.91	27896.2	11801.00
22	41345.18	99.66	0.928	0.30(0.28)	0.93	38271.2	11910.00
23	42614.12	104.75	0.906	0.30(0.28)	0.94	42032.2	13500.00
24	43666.52	109.48	0.886	0.30(0.28)	0.94	45252.4	10800.00
25	44166.11	113.64	0.868	0.30(0.28)	0.94	48197.7	11130.00
26	43789.91	123.25	0.833	0.30(0.28)	0.95	53238.9	12410.00
27	43198.95	131.58	0.816	0.30(0.29)	0.95	56978.1	11201.00
28	42776.54	136.58	0.805	0.30(0.29)	0.95	58709.8	12201.00
29	41759.53	143.74	0.791	0.30(0.29)	0.95	60566.9	12231.00
30	40460.79	151.68	0.774	0.30(0.29)	0.95	62201.2	10400.00
31	39104.00	159.76	0.757	0.30(0.29)	0.95	63496.3	12010.00
32	37906.59	165.86	0.744	0.30(0.29)	0.95	63843.3	10210.00
33	33721.81	194.56	0.700	0.30(0.29)	0.95	64581.7	10100.00

TOTAL AREA (ACRES) = 64581.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 44166.11 Tc (MIN.) = 113.642

EFFECTIVE AREA (ACRES) = 48197.74 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 64581.7
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 64581.7 TC (MIN.) = 113.64
 EFFECTIVE AREA (ACRES) = 48197.74 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.943
 PEAK FLOW RATE (CFS) = 44166.11

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19574.84	14.82	2.639	0.30(0.25)	0.84	2818.5	10520.00
2	20510.46	17.52	2.397	0.30(0.25)	0.84	3324.0	10600.00
3	21544.10	20.54	2.156	0.30(0.25)	0.85	3882.3	10300.00
4	21605.05	20.75	2.144	0.30(0.25)	0.85	3924.5	10230.00
5	21820.71	21.33	2.110	0.30(0.25)	0.85	4067.4	10380.00
6	21953.88	21.70	2.088	0.30(0.25)	0.85	4155.5	10400.00
7	22662.17	23.68	1.973	0.30(0.25)	0.85	4623.2	10320.00
8	23401.64	25.79	1.867	0.30(0.25)	0.85	5108.5	10360.00
9	24134.55	27.88	1.786	0.30(0.25)	0.85	5586.4	300.00
10	24420.94	28.63	1.757	0.30(0.25)	0.85	5835.2	10340.00
11	24948.26	30.02	1.704	0.30(0.25)	0.85	6290.5	10200.00
12	25093.45	30.41	1.694	0.30(0.25)	0.85	6415.3	10250.00
13	25463.35	31.39	1.669	0.30(0.25)	0.85	6732.6	10500.00
14	25908.12	32.61	1.637	0.30(0.25)	0.85	7112.8	210.00
15	26330.95	34.12	1.598	0.30(0.25)	0.85	7693.4	10220.00
16	29820.62	46.41	1.342	0.30(0.26)	0.86	12389.4	10100.00
17	30934.44	50.55	1.278	0.30(0.26)	0.87	13995.1	150.00
18	33136.33	58.41	1.190	0.30(0.26)	0.88	17181.6	600.00
19	33977.15	62.66	1.154	0.30(0.27)	0.89	19165.5	31100.00
20	36456.40	74.02	1.078	0.30(0.27)	0.91	24452.3	40100.00
21	37555.53	81.66	1.026	0.30(0.27)	0.91	27896.2	11801.00
22	41345.18	99.66	0.928	0.30(0.28)	0.93	38271.2	11910.00
23	42614.12	104.75	0.906	0.30(0.28)	0.94	42032.2	13500.00
24	43666.52	109.48	0.886	0.30(0.28)	0.94	45252.4	10800.00
25	44166.11	113.64	0.868	0.30(0.28)	0.94	48197.7	11130.00
26	43789.91	123.25	0.833	0.30(0.28)	0.95	53238.9	12410.00
27	43198.95	131.58	0.816	0.30(0.29)	0.95	56978.1	11201.00
28	42776.54	136.58	0.805	0.30(0.29)	0.95	58709.8	12201.00
29	41759.53	143.74	0.791	0.30(0.29)	0.95	60566.9	12231.00
30	40460.79	151.68	0.774	0.30(0.29)	0.95	62201.2	10400.00
31	39104.00	159.76	0.757	0.30(0.29)	0.95	63496.3	12010.00
32	37906.59	165.86	0.744	0.30(0.29)	0.95	63843.3	10210.00
33	33721.81	194.56	0.700	0.30(0.29)	0.95	64581.7	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S38- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV38.DAT
TIME/DATE OF STUDY: 09:54 06/14/2019

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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

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: RI50EV37.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20510.46	17.52	0.30 (0.25)	0.84	3324.0	10600.00
2	24420.94	28.63	0.30 (0.25)	0.85	5835.2	10340.00
3	26330.95	34.12	0.30 (0.25)	0.85	7693.4	10220.00
4	30934.44	50.55	0.30 (0.26)	0.87	13995.1	150.00
5	33136.33	58.41	0.30 (0.26)	0.88	17181.6	600.00
6	33977.15	62.66	0.30 (0.27)	0.89	19165.5	31100.00
7	36456.40	74.02	0.30 (0.27)	0.91	24452.3	40100.00
8	37555.53	81.66	0.30 (0.27)	0.91	27896.2	11801.00
9	41345.18	99.66	0.30 (0.28)	0.93	38271.2	11910.00
10	42614.12	104.75	0.30 (0.28)	0.94	42032.2	13500.00
11	43666.52	109.48	0.30 (0.28)	0.94	45252.4	10800.00
12	44166.11	113.64	0.30 (0.28)	0.94	48197.7	11130.00
13	43789.91	123.25	0.30 (0.28)	0.95	53238.9	12410.00
14	43198.95	131.58	0.30 (0.29)	0.95	56978.1	11201.00
15	42776.54	136.58	0.30 (0.29)	0.95	58709.8	12201.00
16	41759.53	143.74	0.30 (0.29)	0.95	60566.9	12231.00
17	40460.79	151.68	0.30 (0.29)	0.95	62201.2	10400.00
18	39104.00	159.76	0.30 (0.29)	0.95	63496.3	12010.00
19	37906.59	165.86	0.30 (0.29)	0.95	63843.3	10210.00
20	33721.81	194.56	0.30 (0.29)	0.95	64581.7	10100.00
TOTAL AREA (ACRES) =						64581.7

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	20510.46	17.52	0.30 (0.25)	0.84	3324.0	10600.00
2	24420.94	28.63	0.30 (0.25)	0.85	5835.2	10340.00
3	26330.95	34.12	0.30 (0.25)	0.85	7693.4	10220.00
4	30934.44	50.55	0.30 (0.26)	0.87	13995.1	150.00
5	33136.33	58.41	0.30 (0.26)	0.88	17181.6	600.00
6	33977.15	62.66	0.30 (0.27)	0.89	19165.5	31100.00
7	36456.40	74.02	0.30 (0.27)	0.91	24452.3	40100.00
8	37555.53	81.66	0.30 (0.27)	0.91	27896.2	11801.00
9	41345.18	99.66	0.30 (0.28)	0.93	38271.2	11910.00
10	42614.12	104.75	0.30 (0.28)	0.94	42032.2	13500.00
11	43666.52	109.48	0.30 (0.28)	0.94	45252.4	10800.00
12	44166.11	113.64	0.30 (0.28)	0.94	48197.7	11130.00
13	43789.91	123.25	0.30 (0.28)	0.95	53238.9	12410.00

14 43198.95 131.58 0.30(0.29) 0.95 56978.1 11201.00
 15 42776.54 136.58 0.30(0.29) 0.95 58709.8 12201.00
 16 41759.53 143.74 0.30(0.29) 0.95 60566.9 12231.00
 17 40460.79 151.68 0.30(0.29) 0.95 62201.2 10400.00
 18 39104.00 159.76 0.30(0.29) 0.95 63496.3 12010.00
 19 37906.59 165.86 0.30(0.29) 0.95 63843.3 10210.00
 20 33721.81 194.56 0.30(0.29) 0.95 64581.7 10100.00
 TOTAL AREA(ACRES) = 64581.7

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) = 17.46

* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.861

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) = 44174.12

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.90

AVERAGE FLOW DEPTH(FEET) = 17.46 TRAVEL TIME(MIN.) = 1.04

Tc(MIN.) = 114.68

SUBAREA AREA(ACRES) = 31.44 SUBAREA RUNOFF(CFS) = 16.02

EFFECTIVE AREA(ACRES) = 48229.18 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 64613.2 PEAK FLOW RATE(CFS) = 44166.11

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 17.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 17.46 FLOW VELOCITY(FEET/SEC.) = 14.90

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.) = 114.68

RAINFALL INTENSITY(INCH/HR) = 0.86

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 48229.18

TOTAL STREAM AREA(ACRES) = 64613.15

PEAK FLOW RATE(CFS) AT CONFLUENCE = 44166.11

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	56	12.29

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS 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/ 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) = 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.

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FLOW PROCESS FROM NODE 13811.50 TO NODE 13812.00 IS CODE = 56
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>>>>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.

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FLOW PROCESS FROM NODE 13812.00 TO NODE 13813.00 IS CODE = 56
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>>>>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

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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) = 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

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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.

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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 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.

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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<<<<
=====
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

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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.) = 20.95
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

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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	20510.46	18.81	2.284	0.30(0.25)	0.85	3355.4	10600.00
1	24420.94	29.86	1.708	0.30(0.25)	0.85	5866.6	10340.00
1	26330.95	35.32	1.565	0.30(0.25)	0.85	7724.9	10220.00
1	30934.44	51.70	1.263	0.30(0.26)	0.87	14026.5	150.00
1	33136.33	59.54	1.175	0.30(0.26)	0.88	17213.0	600.00
1	33977.15	63.77	1.145	0.30(0.27)	0.89	19196.9	31100.00
1	36456.40	75.11	1.068	0.30(0.27)	0.91	24483.7	40100.00
1	37555.53	82.74	1.017	0.30(0.27)	0.91	27927.7	11801.00
1	41345.18	100.72	0.922	0.30(0.28)	0.93	38302.6	11910.00
1	42614.12	105.79	0.900	0.30(0.28)	0.94	42063.7	13500.00
1	43666.52	110.52	0.879	0.30(0.28)	0.94	45283.8	10800.00
1	44166.11	114.68	0.861	0.30(0.28)	0.94	48229.2	11130.00
1	43789.91	124.29	0.829	0.30(0.28)	0.95	53270.4	12410.00
1	43198.95	132.62	0.812	0.30(0.29)	0.95	57009.5	11201.00
1	42776.54	137.63	0.801	0.30(0.29)	0.95	58741.2	12201.00
1	41759.53	144.79	0.786	0.30(0.29)	0.95	60598.3	12231.00
1	40460.79	152.74	0.770	0.30(0.29)	0.95	62232.6	10400.00
1	39104.00	160.84	0.753	0.30(0.29)	0.95	63527.7	12010.00
1	37906.59	166.94	0.740	0.30(0.29)	0.95	63874.7	10210.00
1	33721.81	195.67	0.696	0.30(0.29)	0.95	64613.2	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	20761.14	18.81	2.284	0.30(0.25)	0.84	3490.4	10600.00
2	21526.34	20.95	2.129	0.30(0.25)	0.84	3992.3	13810.00
3	24622.21	29.86	1.708	0.30(0.25)	0.85	6016.9	10340.00
4	26512.85	35.32	1.565	0.30(0.25)	0.85	7875.2	10220.00
5	31075.48	51.70	1.263	0.30(0.26)	0.86	14176.8	150.00
6	33265.50	59.54	1.175	0.30(0.26)	0.88	17363.3	600.00
7	34102.18	63.77	1.145	0.30(0.27)	0.89	19347.2	31100.00
8	36571.10	75.11	1.068	0.30(0.27)	0.91	24634.0	40100.00
9	37663.28	82.74	1.017	0.30(0.27)	0.91	28078.0	11801.00
10	41440.03	100.72	0.922	0.30(0.28)	0.93	38452.9	11910.00
11	42706.01	105.79	0.900	0.30(0.28)	0.93	42214.0	13500.00
12	43755.63	110.52	0.879	0.30(0.28)	0.94	45434.1	10800.00
13	44252.78	114.68	0.861	0.30(0.28)	0.94	48379.5	11130.00
14	43872.26	124.29	0.829	0.30(0.28)	0.95	53420.7	12410.00
15	43278.95	132.62	0.812	0.30(0.28)	0.95	57159.8	11201.00
16	42855.12	137.63	0.801	0.30(0.29)	0.95	58891.5	12201.00
17	41836.10	144.79	0.786	0.30(0.29)	0.95	60748.6	12231.00
18	40535.12	152.74	0.770	0.30(0.29)	0.95	62382.9	10400.00
19	39176.05	160.84	0.753	0.30(0.29)	0.95	63678.0	12010.00
20	37976.92	166.94	0.740	0.30(0.29)	0.95	64025.0	10210.00
21	33786.21	195.67	0.696	0.30(0.29)	0.95	64763.4	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 44252.78 Tc(MIN.) = 114.68
EFFECTIVE AREA(ACRES) = 48379.47 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64763.4
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) = 17.57
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.855

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) = 44262.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.80
AVERAGE FLOW DEPTH(FEET) = 17.57 TRAVEL TIME(MIN.) = 1.42
Tc(MIN.) = 116.10

SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 18.49
EFFECTIVE AREA(ACRES) = 48411.07 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64795.0 PEAK FLOW RATE(CFS) = 44252.78
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 17.57

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 17.57 FLOW VELOCITY(FEET/SEC.) = 14.80
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.) = 116.10
RAINFALL INTENSITY(INCH/HR) = 0.85
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48411.07
TOTAL STREAM AREA(ACRES) = 64795.04
PEAK FLOW RATE(CFS) AT CONFLUENCE = 44252.78

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
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.784
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" - 5.06 0.30 1.000 56 13.86
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 11.31
TOTAL AREA (ACRES) = 5.06 PEAK FLOW RATE (CFS) = 11.31

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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) = 0.69
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.443
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.57 0.30 1.000 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 42.87
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.82
AVERAGE FLOW DEPTH (FEET) = 0.65 TRAVEL TIME (MIN.) = 3.08
Tc (MIN.) = 16.94
SUBAREA AREA (ACRES) = 32.57 SUBAREA RUNOFF (CFS) = 62.82
EFFECTIVE AREA (ACRES) = 37.63 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 37.6 PEAK FLOW RATE (CFS) = 72.58
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.88

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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.

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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) = 1.03
* 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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

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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.

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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) = 1.32
* 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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

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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<<<<<

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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) = 1.90
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.861

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) = 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<<<<<

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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) = 3.09

* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.734

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) = 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/ 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) = 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	20761.14	20.58	2.151	0.30 (0.25)	0.84	3522.0	10600.00
1	21526.34	22.70	2.028	0.30 (0.25)	0.84	4023.9	13810.00
1	24622.21	31.54	1.663	0.30 (0.25)	0.84	6048.5	10340.00
1	26512.85	36.97	1.523	0.30 (0.25)	0.85	7906.8	10220.00
1	31075.48	53.27	1.245	0.30 (0.26)	0.86	14208.4	150.00
1	33265.50	61.08	1.163	0.30 (0.26)	0.88	17394.9	600.00
1	34102.18	65.30	1.134	0.30 (0.27)	0.89	19378.8	31100.00
1	36571.10	76.61	1.058	0.30 (0.27)	0.90	24665.6	40100.00
1	37663.28	84.23	1.007	0.30 (0.27)	0.91	28109.6	11801.00
1	41440.03	102.17	0.915	0.30 (0.28)	0.93	38484.5	11910.00
1	42706.01	107.23	0.893	0.30 (0.28)	0.93	42245.6	13500.00
1	43755.63	111.94	0.873	0.30 (0.28)	0.94	45465.7	10800.00
1	44252.78	116.10	0.855	0.30 (0.28)	0.94	48411.1	11130.00
1	43872.26	125.71	0.826	0.30 (0.28)	0.95	53452.3	12410.00

1	43278.95	134.05	0.809	0.30 (0.28)	0.95	57191.4	11201.00
1	42855.12	139.06	0.798	0.30 (0.29)	0.95	58923.1	12201.00
1	41836.10	146.24	0.783	0.30 (0.29)	0.95	60780.2	12231.00
1	40535.12	154.19	0.767	0.30 (0.29)	0.95	62414.5	10400.00
1	39176.05	162.31	0.750	0.30 (0.29)	0.95	63709.6	12010.00
1	37976.92	168.43	0.737	0.30 (0.29)	0.95	64056.6	10210.00
1	33786.21	197.21	0.695	0.30 (0.29)	0.95	64795.0	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	21320.86	20.58	2.151	0.30 (0.26)	0.85	3856.2	10600.00
2	22103.08	22.70	2.028	0.30 (0.26)	0.85	4392.6	13810.00
3	25255.33	31.54	1.663	0.30 (0.26)	0.85	6560.9	10340.00
4	26417.06	34.81	1.578	0.30 (0.26)	0.85	7733.7	13830.00
5	27140.07	36.97	1.523	0.30 (0.26)	0.85	8472.3	10220.00
6	31561.65	53.27	1.245	0.30 (0.26)	0.87	14773.9	150.00
7	33709.60	61.08	1.163	0.30 (0.26)	0.88	17960.4	600.00
8	34531.80	65.30	1.134	0.30 (0.27)	0.89	19944.3	31100.00
9	36961.98	76.61	1.058	0.30 (0.27)	0.91	25231.1	40100.00
10	38028.05	84.23	1.007	0.30 (0.27)	0.91	28675.1	11801.00
11	41758.18	102.17	0.915	0.30 (0.28)	0.93	39050.0	11910.00
12	43013.00	107.23	0.893	0.30 (0.28)	0.93	42811.1	13500.00
13	44052.22	111.94	0.873	0.30 (0.28)	0.94	46031.2	10800.00
14	44540.20	116.10	0.855	0.30 (0.28)	0.94	48976.6	11130.00
15	44145.02	125.71	0.826	0.30 (0.28)	0.95	54017.8	12410.00
16	43542.87	134.05	0.809	0.30 (0.28)	0.95	57756.9	11201.00
17	43113.73	139.06	0.798	0.30 (0.29)	0.95	59488.6	12201.00
18	42087.10	146.24	0.783	0.30 (0.29)	0.95	61345.7	12231.00
19	40777.69	154.19	0.767	0.30 (0.29)	0.95	62980.0	10400.00
20	39410.02	162.31	0.750	0.30 (0.29)	0.95	64275.1	12010.00
21	38204.40	168.43	0.737	0.30 (0.29)	0.95	64622.1	10210.00
22	33992.12	197.21	0.695	0.30 (0.29)	0.95	65360.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 44540.20 Tc (MIN.) = 116.10
 EFFECTIVE AREA (ACRES) = 48976.57 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65360.5
 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) = 16.03
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 0.852
 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) = 44541.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.92
 AVERAGE FLOW DEPTH(FEET) = 16.03 TRAVEL TIME(MIN.) = 0.64
 Tc(MIN.) = 116.74
 SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 3.33
 EFFECTIVE AREA(ACRES) = 48983.18 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65367.2 PEAK FLOW RATE(CFS) = 44540.20
 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) = 16.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 16.03 FLOW VELOCITY(FEET/SEC.) = 16.92
 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.) = 116.74
 RAINFALL INTENSITY(INCH/HR) = 0.85
 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.94
 EFFECTIVE STREAM AREA(ACRES) = 48983.18
 TOTAL STREAM AREA(ACRES) = 65367.15
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 44540.20

 FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH(FEET) = 617.57
 ELEVATION DATA: UPSTREAM(FEET) = 646.95 DOWNSTREAM(FEET) = 490.10

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.137
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 3.051
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF" - 4.95 0.30 1.000 56 12.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA RUNOFF(CFS) = 12.25

TOTAL AREA(ACRES) = 4.95 PEAK FLOW RATE(CFS) = 12.25

 FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 490.10 DOWNSTREAM(FEET) = 440.98
 CHANNEL LENGTH THRU SUBAREA(FEET) = 351.14 CHANNEL SLOPE = 0.1399
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.36
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.846
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 4.02 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.86
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.43
 AVERAGE FLOW DEPTH(FEET) = 0.36 TRAVEL TIME(MIN.) = 1.32
 Tc(MIN.) = 13.46

SUBAREA AREA(ACRES) = 4.02 SUBAREA RUNOFF(CFS) = 9.21
 EFFECTIVE AREA(ACRES) = 8.97 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 20.55
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.40 FLOW VELOCITY(FEET/SEC.) = 4.74
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

 FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 440.98 DOWNSTREAM(FEET) = 395.76
 CHANNEL LENGTH THRU SUBAREA(FEET) = 512.91 CHANNEL SLOPE = 0.0882
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.56
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.578
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 7.17 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 27.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.55
 AVERAGE FLOW DEPTH(FEET) = 0.55 TRAVEL TIME(MIN.) = 1.88
 Tc(MIN.) = 15.34

SUBAREA AREA (ACRES) = 7.17 SUBAREA RUNOFF (CFS) = 14.70
EFFECTIVE AREA (ACRES) = 16.14 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 16.1 PEAK FLOW RATE (CFS) = 33.10
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.61 FLOW VELOCITY (FEET/SEC.) = 4.86
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 395.76 DOWNSTREAM (FEET) = 354.94
CHANNEL LENGTH THRU SUBAREA (FEET) = 443.69 CHANNEL SLOPE = 0.0920
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.67
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 2.459

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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

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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 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.

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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.) = 24.58
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 1.919
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 43.41 0.30 0.707 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707
SUBAREA AREA(ACRES) = 43.41 SUBAREA RUNOFF(CFS) = 66.69
EFFECTIVE AREA(ACRES) = 123.22 AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 123.2 PEAK FLOW RATE(CFS) = 184.26

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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.) = 24.58
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

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** CONFLUENCE DATA **

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STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21320.86	21.37	2.105	0.30 (0.26)	0.85	3862.8	10600.00
1	22103.08	23.49	1.982	0.30 (0.26)	0.85	4399.2	13810.00
1	25255.33	32.30	1.643	0.30 (0.26)	0.85	6567.5	10340.00
1	26417.06	35.56	1.559	0.30 (0.26)	0.85	7740.3	13830.00
1	27140.07	37.71	1.503	0.30 (0.26)	0.85	8478.9	10220.00
1	31561.65	53.98	1.237	0.30 (0.26)	0.87	14780.5	150.00
1	33709.60	61.77	1.158	0.30 (0.26)	0.88	17967.0	600.00

1	34531.80	66.00	1.130	0.30 (0.27)	0.89	19950.9	31100.00
1	36961.98	77.29	1.054	0.30 (0.27)	0.91	25237.7	40100.00
1	38028.05	84.90	1.002	0.30 (0.27)	0.91	28681.7	11801.00
1	41758.18	102.82	0.912	0.30 (0.28)	0.93	39056.6	11910.00
1	43013.00	107.88	0.891	0.30 (0.28)	0.93	42817.7	13500.00
1	44052.22	112.59	0.870	0.30 (0.28)	0.94	46037.8	10800.00
1	44540.20	116.74	0.852	0.30 (0.28)	0.94	48983.2	11130.00
1	44145.02	126.36	0.825	0.30 (0.28)	0.95	54024.4	12410.00
1	43542.87	134.70	0.807	0.30 (0.28)	0.95	57763.5	11201.00
1	43113.73	139.71	0.797	0.30 (0.29)	0.95	59495.2	12201.00
1	42087.10	146.89	0.782	0.30 (0.29)	0.95	61352.3	12231.00
1	40777.69	154.86	0.765	0.30 (0.29)	0.95	62986.6	10400.00
1	39410.02	162.97	0.748	0.30 (0.29)	0.95	64281.7	12010.00
1	38204.40	169.10	0.736	0.30 (0.29)	0.95	64628.7	10210.00
1	33992.12	197.90	0.694	0.30 (0.29)	0.95	65367.2	10100.00
2	184.26	24.58	1.919	0.30 (0.26)	0.86	123.2	13850.00

```

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

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** PEAK FLOW RATE TABLE **

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STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21498.95	21.37	2.105	0.30 (0.26)	0.85	3970.0	10600.00
2	22285.84	23.49	1.982	0.30 (0.26)	0.85	4517.0	13810.00
3	22678.94	24.58	1.919	0.30 (0.26)	0.85	4791.8	13850.00
4	25409.02	32.30	1.643	0.30 (0.26)	0.85	6690.7	10340.00
5	26561.39	35.56	1.559	0.30 (0.26)	0.85	7863.5	13830.00
6	27278.22	37.71	1.503	0.30 (0.26)	0.85	8602.1	10220.00
7	31670.32	53.98	1.237	0.30 (0.26)	0.87	14903.7	150.00
8	33809.46	61.77	1.158	0.30 (0.26)	0.88	18090.2	600.00
9	34628.51	66.00	1.130	0.30 (0.27)	0.89	20074.2	31100.00
10	37050.25	77.29	1.054	0.30 (0.27)	0.91	25361.0	40100.00
11	38110.64	84.90	1.002	0.30 (0.27)	0.91	28804.9	11801.00
12	41830.80	102.82	0.912	0.30 (0.28)	0.93	39179.8	11910.00
13	43083.19	107.88	0.891	0.30 (0.28)	0.93	42940.9	13500.00
14	44120.15	112.59	0.870	0.30 (0.28)	0.94	46161.1	10800.00
15	44606.14	116.74	0.852	0.30 (0.28)	0.94	49106.4	11130.00
16	44207.92	126.36	0.825	0.30 (0.28)	0.95	54147.6	12410.00
17	43603.84	134.70	0.807	0.30 (0.28)	0.95	57886.7	11201.00
18	43173.55	139.71	0.797	0.30 (0.29)	0.95	59618.4	12201.00
19	42145.26	146.89	0.782	0.30 (0.29)	0.95	61475.6	12231.00
20	40834.00	154.86	0.765	0.30 (0.29)	0.95	63109.9	10400.00
21	39464.46	162.97	0.748	0.30 (0.29)	0.95	64405.0	12010.00
22	38257.43	169.10	0.736	0.30 (0.29)	0.95	64751.9	10210.00
23	34040.52	197.90	0.694	0.30 (0.29)	0.95	65490.4	10100.00

```

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44606.14 Tc(MIN.) = 116.74
EFFECTIVE AREA(ACRES) = 49106.40 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65490.4
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<<<<

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>>>>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) = 11.66
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.850
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) = 44607.35
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 26.08
AVERAGE FLOW DEPTH(FEET) = 11.66 TRAVEL TIME(MIN.) = 0.39
Tc(MIN.) = 117.13
SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 2.42
EFFECTIVE AREA(ACRES) = 49111.29 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65495.3 PEAK FLOW RATE(CFS) = 44606.14
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) = 11.66

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.66 FLOW VELOCITY(FEET/SEC.) = 26.08
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.) = 117.13
RAINFALL INTENSITY(INCH/HR) = 0.85
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 49111.29
TOTAL STREAM AREA(ACRES) = 65495.26
PEAK FLOW RATE(CFS) AT CONFLUENCE = 44606.14

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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<<

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=====
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

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* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.547
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS   Tc
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"GRASS"              -       7.32     0.30     1.000    56   15.70
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 14.81
TOTAL AREA(ACRES) = 7.32 PEAK FLOW RATE(CFS) = 14.81

```

FLOW PROCESS FROM NODE 13871.00 TO NODE 13872.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 436.47 DOWNSTREAM(FEET) = 337.62
CHANNEL LENGTH THRU SUBAREA(FEET) = 827.95 CHANNEL SLOPE = 0.1194
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.51
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.311
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
LAND USE            GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
USER-DEFINED        -       13.01    0.30     1.000    -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 26.60
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.93
AVERAGE FLOW DEPTH(FEET) = 0.49 TRAVEL TIME(MIN.) = 2.80
Tc(MIN.) = 18.50
SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 23.54
EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 36.79
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.59

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.59 FLOW VELOCITY(FEET/SEC.) = 5.55
LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88
CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.94
* 50 YEAR RAINFALL INTENSITY(INCH/HR) = 2.099
SUBAREA LOSS RATE DATA(AMC II):

```

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 32.99 0.30 0.923 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.923
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 63.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.88
 AVERAGE FLOW DEPTH (FEET) = 0.92 TRAVEL TIME (MIN.) = 2.98
 Tc (MIN.) = 21.48
 SUBAREA AREA (ACRES) = 32.99 SUBAREA RUNOFF (CFS) = 54.09
 EFFECTIVE AREA (ACRES) = 53.32 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA (ACRES) = 53.3 PEAK FLOW RATE (CFS) = 87.00
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.10

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.10 FLOW VELOCITY (FEET/SEC.) = 6.51
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

 FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 253.88 DOWNSTREAM (FEET) = 160.73
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1518.60 CHANNEL SLOPE = 0.0613
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.09
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.925
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 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 PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 175.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.90
 AVERAGE FLOW DEPTH (FEET) = 2.87 TRAVEL TIME (MIN.) = 2.49
 Tc (MIN.) = 26.96
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 102.15
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 218.91
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 3.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 3.21 FLOW VELOCITY (FEET/SEC.) = 4.14
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013
 DEPTH OF FLOW IN 51.0 INCH PIPE IS 40.1 INCHES
 PIPE-FLOW VELOCITY (FEET/SEC.) = 18.30
 ESTIMATED PIPE DIAMETER (INCH) = 51.00 NUMBER OF PIPES = 1
 PIPE-FLOW (CFS) = 218.91
 PIPE TRAVEL TIME (MIN.) = 1.69 Tc (MIN.) = 28.65
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81

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

=====

MAINLINE Tc (MIN.) = 28.65
 * 50 YEAR RAINFALL INTENSITY (INCH/HR) = 1.755
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS AREA FRACTION, Ap = 0.743
 SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 48.11
 EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
 TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 257.80

 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 28.65
 RAINFALL INTENSITY(INCH/HR) = 1.75
 AREA-AVERAGED Fm(INCH/HR) = 0.27
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.90
 EFFECTIVE STREAM AREA(ACRES) = 192.83
 TOTAL STREAM AREA(ACRES) = 192.83
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 257.80

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21498.95	21.86	2.076	0.30(0.26)	0.85	3974.9	10600.00
1	22285.84	23.97	1.955	0.30(0.26)	0.85	4521.9	13810.00
1	22678.94	25.06	1.893	0.30(0.26)	0.85	4796.7	13850.00
1	25409.02	32.76	1.631	0.30(0.26)	0.85	6695.6	10340.00
1	26561.39	36.02	1.547	0.30(0.26)	0.85	7868.4	13830.00
1	27278.22	38.16	1.492	0.30(0.26)	0.85	8607.0	10220.00
1	31670.32	54.41	1.233	0.30(0.26)	0.87	14908.6	150.00
1	33809.46	62.20	1.155	0.30(0.26)	0.88	18095.1	600.00
1	34628.51	66.42	1.127	0.30(0.27)	0.89	20079.1	31100.00
1	37050.25	77.70	1.051	0.30(0.27)	0.91	25365.8	40100.00
1	38110.64	85.31	1.000	0.30(0.27)	0.91	28809.8	11801.00
1	41830.80	103.22	0.911	0.30(0.28)	0.93	39184.7	11910.00
1	43083.19	108.27	0.889	0.30(0.28)	0.93	42945.8	13500.00
1	44120.15	112.98	0.868	0.30(0.28)	0.94	46166.0	10800.00
1	44606.14	117.13	0.850	0.30(0.28)	0.94	49111.3	11130.00
1	44207.92	126.75	0.824	0.30(0.28)	0.95	54152.5	12410.00
1	43603.84	135.09	0.807	0.30(0.28)	0.95	57891.6	11201.00
1	43173.55	140.11	0.796	0.30(0.29)	0.95	59623.3	12201.00
1	42145.26	147.29	0.781	0.30(0.29)	0.95	61480.5	12231.00
1	40834.00	155.26	0.765	0.30(0.29)	0.95	63114.8	10400.00
1	39464.46	163.38	0.748	0.30(0.29)	0.95	64409.9	12010.00
1	38257.43	169.51	0.735	0.30(0.29)	0.95	64756.8	10210.00
1	34040.52	198.33	0.694	0.30(0.29)	0.95	65495.3	10100.00
2	257.80	28.65	1.755	0.30(0.27)	0.90	192.8	13870.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21738.24	21.86	2.076	0.30(0.26)	0.85	4122.0	10600.00

2	22530.51	23.97	1.955	0.30(0.26)	0.85	4683.2	13810.00
3	22925.36	25.06	1.893	0.30(0.26)	0.85	4965.4	13850.00
4	24210.31	28.65	1.755	0.30(0.26)	0.85	5875.4	13870.00
5	25645.44	32.76	1.631	0.30(0.26)	0.86	6888.4	10340.00
6	26783.18	36.02	1.547	0.30(0.26)	0.86	8061.2	13830.00
7	27490.36	38.16	1.492	0.30(0.26)	0.85	8799.8	10220.00
8	31837.51	54.41	1.233	0.30(0.26)	0.87	15101.4	150.00
9	33963.23	62.20	1.155	0.30(0.26)	0.88	18287.9	600.00
10	34777.35	66.42	1.127	0.30(0.27)	0.89	20271.9	31100.00
11	37185.90	77.70	1.051	0.30(0.27)	0.91	25558.7	40100.00
12	38237.39	85.31	1.000	0.30(0.27)	0.91	29002.6	11801.00
13	41942.14	103.22	0.911	0.30(0.28)	0.93	39377.6	11910.00
14	43190.72	108.27	0.889	0.30(0.28)	0.93	43138.6	13500.00
15	44224.14	112.98	0.868	0.30(0.28)	0.94	46358.8	10800.00
16	44707.00	117.13	0.850	0.30(0.28)	0.94	49304.1	11130.00
17	44304.19	126.75	0.824	0.30(0.28)	0.95	54345.3	12410.00
18	43697.10	135.09	0.807	0.30(0.28)	0.95	58084.4	11201.00
19	43265.00	140.11	0.796	0.30(0.29)	0.95	59816.1	12201.00
20	42234.11	147.29	0.781	0.30(0.29)	0.95	61673.3	12231.00
21	40919.97	155.26	0.765	0.30(0.29)	0.95	63307.6	10400.00
22	39547.49	163.38	0.748	0.30(0.29)	0.95	64602.7	12010.00
23	38338.24	169.51	0.735	0.30(0.29)	0.95	64949.6	10210.00
24	34114.17	198.33	0.694	0.30(0.29)	0.95	65688.1	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 44707.00 Tc(MIN.) = 117.13
 EFFECTIVE AREA(ACRES) = 49304.12 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65688.1
 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) = 25.46
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.841
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	117.69	0.30	0.724	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.724
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 44740.02
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.71
 AVERAGE FLOW DEPTH(FEET) = 25.46 TRAVEL TIME(MIN.) = 2.28
 Tc(MIN.) = 119.41
 SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 66.03
 EFFECTIVE AREA(ACRES) = 49421.81 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65805.8 PEAK FLOW RATE(CFS) = 44707.00
 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) = 25.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 25.45 FLOW VELOCITY (FEET/SEC.) = 8.71
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.) = 119.41
RAINFALL INTENSITY (INCH/HR) = 0.84
AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA (ACRES) = 49421.81
TOTAL STREAM AREA (ACRES) = 65805.78
PEAK FLOW RATE (CFS) AT CONFLUENCE = 44707.00

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/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	Tc (MIN.)
PUBLIC PARK	-	3.03	0.30	0.960	56	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

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.

FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 392.64 DOWNSTREAM (FEET) = 324.46
CHANNEL LENGTH THRU SUBAREA (FEET) = 662.40 CHANNEL SLOPE = 0.1029
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.64
* 50 YEAR RAINFALL INTENSITY (INCH/HR) = 3.473

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 54.93
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.95
AVERAGE FLOW DEPTH (FEET) = 0.62 TRAVEL TIME (MIN.) = 1.39
Tc (MIN.) = 9.75
SUBAREA AREA (ACRES) = 12.50 SUBAREA RUNOFF (CFS) = 35.70
EFFECTIVE AREA (ACRES) = 23.65 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA (ACRES) = 23.6 PEAK FLOW RATE (CFS) = 67.61
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 0.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.70 FLOW VELOCITY (FEET/SEC.) = 8.51
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

FLOW PROCESS FROM NODE 13892.00 TO NODE 13893.00 IS CODE = 56

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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) = 0.87
* 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 87.84
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.75
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 1.87
Tc(MIN.) = 11.62
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 40.43
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 100.75
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93

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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<<<<
=====
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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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

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"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/ 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) = 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

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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.) = 15.46
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

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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	21738.24	24.63	1.916	0.30(0.25)	0.85	4239.7	10600.00
1	22530.51	26.71	1.829	0.30(0.26)	0.85	4800.9	13810.00
1	22925.36	27.79	1.788	0.30(0.26)	0.85	5083.1	13850.00
1	24210.31	31.34	1.668	0.30(0.26)	0.85	5993.1	13870.00
1	25645.44	35.41	1.563	0.30(0.26)	0.85	7006.1	10340.00
1	26783.18	38.63	1.479	0.30(0.26)	0.85	8178.9	13830.00
1	27490.36	40.76	1.432	0.30(0.26)	0.85	8917.5	10220.00
1	31837.51	56.91	1.205	0.30(0.26)	0.87	15219.1	150.00
1	33963.23	64.65	1.139	0.30(0.26)	0.88	18405.6	600.00
1	34777.35	68.85	1.110	0.30(0.27)	0.89	20389.6	31100.00
1	37185.90	80.09	1.035	0.30(0.27)	0.91	25676.4	40100.00
1	38237.39	87.69	0.984	0.30(0.27)	0.91	29120.3	11801.00
1	41942.14	105.54	0.901	0.30(0.28)	0.93	39495.2	11910.00
1	43190.72	110.57	0.879	0.30(0.28)	0.93	43256.3	13500.00
1	44224.14	115.27	0.859	0.30(0.28)	0.94	46476.5	10800.00
1	44707.00	119.41	0.841	0.30(0.28)	0.94	49421.8	11130.00
1	44304.19	129.04	0.819	0.30(0.28)	0.95	54463.0	12410.00
1	43697.10	137.39	0.802	0.30(0.28)	0.95	58202.1	11201.00
1	43265.00	142.41	0.791	0.30(0.28)	0.95	59933.8	12201.00
1	42234.11	149.60	0.776	0.30(0.29)	0.95	61791.0	12231.00
1	40919.97	157.59	0.760	0.30(0.29)	0.95	63425.3	10400.00
1	39547.49	165.73	0.743	0.30(0.29)	0.95	64720.4	12010.00
1	38338.24	171.88	0.730	0.30(0.29)	0.95	65067.3	10210.00
1	34114.17	200.78	0.691	0.30(0.29)	0.95	65805.8	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	19160.82	15.46	2.568	0.30(0.26)	0.85	2740.6	13889.00
2	21855.39	24.63	1.916	0.30(0.26)	0.85	4319.3	10600.00
3	22641.43	26.71	1.829	0.30(0.26)	0.85	4880.5	13810.00
4	23033.30	27.79	1.788	0.30(0.26)	0.85	5162.7	13850.00
5	24309.69	31.34	1.668	0.30(0.26)	0.85	6072.7	13870.00
6	25737.27	35.41	1.563	0.30(0.26)	0.85	7085.7	10340.00
7	26869.03	38.63	1.479	0.30(0.26)	0.85	8258.6	13830.00
8	27572.79	40.76	1.432	0.30(0.26)	0.85	8997.1	10220.00
9	31903.67	56.91	1.205	0.30(0.26)	0.87	15298.8	150.00
10	34024.67	64.65	1.139	0.30(0.26)	0.88	18485.3	600.00
11	34836.76	68.85	1.110	0.30(0.27)	0.89	20469.2	31100.00
12	37239.89	80.09	1.035	0.30(0.27)	0.91	25756.0	40100.00
13	38287.72	87.69	0.984	0.30(0.27)	0.91	29199.9	11801.00
14	41986.52	105.54	0.901	0.30(0.28)	0.93	39574.9	11910.00
15	43233.54	110.57	0.879	0.30(0.28)	0.93	43335.9	13500.00
16	44265.50	115.27	0.859	0.30(0.28)	0.94	46556.1	10800.00
17	44747.08	119.41	0.841	0.30(0.28)	0.94	49501.4	11130.00
18	44342.73	129.04	0.819	0.30(0.28)	0.95	54542.6	12410.00
19	43734.39	137.39	0.802	0.30(0.28)	0.95	58281.7	11201.00
20	43301.54	142.41	0.791	0.30(0.28)	0.95	60013.4	12201.00
21	42269.58	149.60	0.776	0.30(0.29)	0.95	61870.6	12231.00
22	40954.25	157.59	0.760	0.30(0.29)	0.95	63504.9	10400.00
23	39580.55	165.73	0.743	0.30(0.29)	0.95	64800.0	12010.00
24	38370.39	171.88	0.730	0.30(0.29)	0.95	65147.0	10210.00

25 34143.52 200.78 0.691 0.30(0.29) 0.95 65885.4 10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 44747.08 Tc(MIN.) = 119.41
EFFECTIVE AREA(ACRES) = 49501.43 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65885.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 65885.4 TC(MIN.) = 119.41
EFFECTIVE AREA(ACRES) = 49501.43 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.942
PEAK FLOW RATE(CFS) = 44747.08

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19160.82	15.46	2.568	0.30(0.26)	0.85	2740.6	13889.00
2	21855.39	24.63	1.916	0.30(0.26)	0.85	4319.3	10600.00
3	22641.43	26.71	1.829	0.30(0.26)	0.85	4880.5	13810.00
4	23033.30	27.79	1.788	0.30(0.26)	0.85	5162.7	13850.00
5	24309.69	31.34	1.668	0.30(0.26)	0.85	6072.7	13870.00
6	25737.27	35.41	1.563	0.30(0.26)	0.85	7085.7	10340.00
7	26869.03	38.63	1.479	0.30(0.26)	0.85	8258.6	13830.00
8	27572.79	40.76	1.432	0.30(0.26)	0.85	8997.1	10220.00
9	31903.67	56.91	1.205	0.30(0.26)	0.87	15298.8	150.00
10	34024.67	64.65	1.139	0.30(0.26)	0.88	18485.3	600.00
11	34836.76	68.85	1.110	0.30(0.27)	0.89	20469.2	31100.00
12	37239.89	80.09	1.035	0.30(0.27)	0.91	25756.0	40100.00
13	38287.72	87.69	0.984	0.30(0.27)	0.91	29199.9	11801.00
14	41986.52	105.54	0.901	0.30(0.28)	0.93	39574.9	11910.00
15	43233.54	110.57	0.879	0.30(0.28)	0.93	43335.9	13500.00
16	44265.50	115.27	0.859	0.30(0.28)	0.94	46556.1	10800.00
17	44747.08	119.41	0.841	0.30(0.28)	0.94	49501.4	11130.00
18	44342.73	129.04	0.819	0.30(0.28)	0.95	54542.6	12410.00
19	43734.39	137.39	0.802	0.30(0.28)	0.95	58281.7	11201.00
20	43301.54	142.41	0.791	0.30(0.28)	0.95	60013.4	12201.00
21	42269.58	149.60	0.776	0.30(0.29)	0.95	61870.6	12231.00
22	40954.25	157.59	0.760	0.30(0.29)	0.95	63504.9	10400.00
23	39580.55	165.73	0.743	0.30(0.29)	0.95	64800.0	12010.00
24	38370.39	171.88	0.730	0.30(0.29)	0.95	65147.0	10210.00
25	34143.52	200.78	0.691	0.30(0.29)	0.95	65885.4	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S39- COMPLEX - PHASE CONDITION NO PA5 *
* 50-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI50EV39.DAT
TIME/DATE OF STUDY: 09:54 06/14/2019

=====

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)	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

>>>>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	56	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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.649

SUBAREA AREA(ACRES) = 43.53 SUBAREA RUNOFF(CFS) = 88.82

EFFECTIVE AREA(ACRES) = 101.14 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 101.1 PEAK FLOW RATE(CFS) = 201.06

FLOW PROCESS FROM NODE 13904.00 TO NODE 13920.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: RI50EV38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19160.82	15.46	0.30 (0.26)	0.85	2740.6	13889.00
2	25737.27	35.41	0.30 (0.26)	0.85	7085.7	10340.00
3	27572.79	40.76	0.30 (0.26)	0.85	8997.1	10220.00
4	31903.67	56.91	0.30 (0.26)	0.87	15298.8	150.00
5	34024.67	64.65	0.30 (0.26)	0.88	18485.3	600.00
6	34836.76	68.85	0.30 (0.27)	0.89	20469.2	31100.00
7	37239.89	80.09	0.30 (0.27)	0.91	25756.0	40100.00
8	38287.72	87.69	0.30 (0.27)	0.91	29199.9	11801.00
9	41986.52	105.54	0.30 (0.28)	0.93	39574.9	11910.00
10	43233.54	110.57	0.30 (0.28)	0.93	43335.9	13500.00
11	44265.50	115.27	0.30 (0.28)	0.94	46556.1	10800.00
12	44747.08	119.41	0.30 (0.28)	0.94	49501.4	11130.00
13	44342.73	129.04	0.30 (0.28)	0.95	54542.6	12410.00
14	43734.39	137.39	0.30 (0.28)	0.95	58281.7	11201.00
15	43301.54	142.41	0.30 (0.28)	0.95	60013.4	12201.00
16	42269.58	149.60	0.30 (0.29)	0.95	61870.6	12231.00
17	40954.25	157.59	0.30 (0.29)	0.95	63504.9	10400.00
18	39580.55	165.73	0.30 (0.29)	0.95	64800.0	12010.00
19	38370.39	171.88	0.30 (0.29)	0.95	65147.0	10210.00
20	34143.52	200.78	0.30 (0.29)	0.95	65885.4	10100.00
TOTAL AREA (ACRES) =						65885.4

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

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

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19160.82	15.46	0.30 (0.26)	0.85	2740.6	13889.00
2	25737.27	35.41	0.30 (0.26)	0.85	7085.7	10340.00
3	27572.79	40.76	0.30 (0.26)	0.85	8997.1	10220.00
4	31903.67	56.91	0.30 (0.26)	0.87	15298.8	150.00
5	34024.67	64.65	0.30 (0.26)	0.88	18485.3	600.00
6	34836.76	68.85	0.30 (0.27)	0.89	20469.2	31100.00
7	37239.89	80.09	0.30 (0.27)	0.91	25756.0	40100.00
8	38287.72	87.69	0.30 (0.27)	0.91	29199.9	11801.00
9	41986.52	105.54	0.30 (0.28)	0.93	39574.9	11910.00
10	43233.54	110.57	0.30 (0.28)	0.93	43335.9	13500.00
11	44265.50	115.27	0.30 (0.28)	0.94	46556.1	10800.00
12	44747.08	119.41	0.30 (0.28)	0.94	49501.4	11130.00
13	44342.73	129.04	0.30 (0.28)	0.95	54542.6	12410.00
14	43734.39	137.39	0.30 (0.28)	0.95	58281.7	11201.00
15	43301.54	142.41	0.30 (0.28)	0.95	60013.4	12201.00
16	42269.58	149.60	0.30 (0.29)	0.95	61870.6	12231.00
17	40954.25	157.59	0.30 (0.29)	0.95	63504.9	10400.00
18	39580.55	165.73	0.30 (0.29)	0.95	64800.0	12010.00
19	38370.39	171.88	0.30 (0.29)	0.95	65147.0	10210.00
20	34143.52	200.78	0.30 (0.29)	0.95	65885.4	10100.00
TOTAL AREA (ACRES) =						65885.4

FLOW PROCESS FROM NODE 13910.00 TO NODE 13920.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 119.70 DOWNSTREAM(FEET) = 118.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1376.26 CHANNEL SLOPE = 0.0012
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 22.40
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.834
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 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) = 44776.19
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.55
 AVERAGE FLOW DEPTH(FEET) = 22.40 TRAVEL TIME(MIN.) = 2.17
 Tc(MIN.) = 121.59
 SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 58.22
 EFFECTIVE AREA(ACRES) = 49597.52 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65981.5 PEAK FLOW RATE(CFS) = 44747.08
 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) = 22.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 22.39 FLOW VELOCITY(FEET/SEC.) = 10.54

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	19160.82	18.21	2.335	0.30 (0.25)	0.84	2836.7	13889.00
2	25737.27	37.94	1.497	0.30 (0.25)	0.85	7181.8	10340.00
3	27572.79	43.25	1.391	0.30 (0.26)	0.85	9093.2	10220.00
4	31903.67	59.29	1.177	0.30 (0.26)	0.87	15394.8	150.00
5	34024.67	66.99	1.122	0.30 (0.26)	0.88	18581.3	600.00
6	34836.76	71.18	1.094	0.30 (0.27)	0.89	20565.3	31100.00
7	37239.89	82.38	1.019	0.30 (0.27)	0.90	25852.1	40100.00
8	38287.72	89.95	0.968	0.30 (0.27)	0.91	29296.0	11801.00
9	41986.52	107.75	0.890	0.30 (0.28)	0.93	39671.0	11910.00
10	43233.54	112.77	0.869	0.30 (0.28)	0.93	43432.0	13500.00
11	44265.50	117.45	0.848	0.30 (0.28)	0.94	46652.2	10800.00
12	44747.08	121.59	0.834	0.30 (0.28)	0.94	49597.5	11130.00
13	44342.73	131.22	0.814	0.30 (0.28)	0.95	54638.7	12410.00
14	43734.39	139.57	0.796	0.30 (0.28)	0.95	58377.8	11201.00
15	43301.54	144.60	0.786	0.30 (0.28)	0.95	60109.5	12201.00
16	42269.58	151.81	0.771	0.30 (0.29)	0.95	61966.7	12231.00

17 40954.25 159.82 0.754 0.30(0.29) 0.95 63601.0 10400.00
 18 39580.55 167.98 0.737 0.30(0.29) 0.95 64896.1 12010.00
 19 38370.39 174.15 0.724 0.30(0.29) 0.95 65243.1 10210.00
 20 34143.52 203.12 0.688 0.30(0.29) 0.95 65981.5 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	18850.87	16.71	2.462	0.30(0.25)	0.84	2703.5	13900.00
2	19350.33	18.21	2.335	0.30(0.25)	0.84	2937.8	13889.00
3	25850.52	37.94	1.497	0.30(0.25)	0.85	7283.0	10340.00
4	27676.41	43.25	1.391	0.30(0.26)	0.85	9194.4	10220.00
5	31987.77	59.29	1.177	0.30(0.26)	0.87	15496.0	150.00
6	34103.77	66.99	1.122	0.30(0.26)	0.88	18682.5	600.00
7	34913.31	71.18	1.094	0.30(0.27)	0.89	20666.4	31100.00
8	37309.61	82.38	1.019	0.30(0.27)	0.90	25953.2	40100.00
9	38352.82	89.95	0.968	0.30(0.27)	0.91	29397.2	11801.00
10	42044.54	107.75	0.890	0.30(0.28)	0.93	39772.1	11910.00
11	43289.56	112.77	0.869	0.30(0.28)	0.93	43533.2	13500.00
12	44319.66	117.45	0.848	0.30(0.28)	0.94	46753.3	10800.00
13	44799.93	121.59	0.834	0.30(0.28)	0.94	49698.7	11130.00
14	44393.76	131.22	0.814	0.30(0.28)	0.95	54739.9	12410.00
15	43783.83	139.57	0.796	0.30(0.28)	0.95	58479.0	11201.00
16	43350.03	144.60	0.786	0.30(0.28)	0.95	60210.7	12201.00
17	42316.70	151.81	0.771	0.30(0.28)	0.95	62067.8	12231.00
18	40999.85	159.82	0.754	0.30(0.29)	0.95	63702.1	10400.00
19	39624.61	167.98	0.737	0.30(0.29)	0.95	64997.2	12010.00
20	38413.27	174.15	0.724	0.30(0.29)	0.95	65344.2	10210.00
21	34183.07	203.12	0.688	0.30(0.29)	0.95	66082.6	10100.00

TOTAL AREA (ACRES) = 66082.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 44799.93 Tc(MIN.) = 121.588
 EFFECTIVE AREA(ACRES) = 49698.66 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66082.6
 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

>>>>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) = 13.88
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.833
 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) = 44838.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 20.79
 AVERAGE FLOW DEPTH(FEET) = 13.87 TRAVEL TIME(MIN.) = 0.27
 Tc(MIN.) = 121.86
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 76.85
 EFFECTIVE AREA(ACRES) = 49832.96 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66216.9 PEAK FLOW RATE(CFS) = 44799.93
 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) = 13.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 13.87 FLOW VELOCITY(FEET/SEC.) = 20.78
 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) = 12.82
 * 50 YEAR RAINFALL INTENSITY(INCH/HR) = 0.831
 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) = 44826.54
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 23.13
 AVERAGE FLOW DEPTH(FEET) = 12.81 TRAVEL TIME(MIN.) = 1.01
 Tc(MIN.) = 122.86
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 53.21
 EFFECTIVE AREA(ACRES) = 49929.23 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66313.2 PEAK FLOW RATE(CFS) = 44799.93
 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) = 12.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 12.81 FLOW VELOCITY(FEET/SEC.) = 23.12
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 66313.2 TC (MIN.) = 122.86
 EFFECTIVE AREA (ACRES) = 49929.23 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.940
 PEAK FLOW RATE (CFS) = 44799.93

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18850.87	18.36	2.323	0.30 (0.25)	0.83	2934.1	13900.00
2	19350.33	19.85	2.197	0.30 (0.25)	0.83	3168.4	13889.00
3	25850.52	39.44	1.458	0.30 (0.25)	0.84	7513.5	10340.00
4	27676.41	44.72	1.368	0.30 (0.25)	0.85	9424.9	10220.00
5	31987.77	60.70	1.164	0.30 (0.26)	0.86	15726.6	150.00
6	34103.77	68.38	1.113	0.30 (0.26)	0.87	18913.1	600.00
7	34913.31	72.55	1.085	0.30 (0.26)	0.88	20897.0	31100.00
8	37309.61	83.73	1.010	0.30 (0.27)	0.90	26183.8	40100.00
9	38352.82	91.29	0.962	0.30 (0.27)	0.91	29627.7	11801.00
10	42044.54	109.05	0.885	0.30 (0.28)	0.93	40002.7	11910.00
11	43289.56	114.06	0.863	0.30 (0.28)	0.93	43763.7	13500.00
12	44319.66	118.73	0.843	0.30 (0.28)	0.94	46983.9	10800.00
13	44799.93	122.86	0.831	0.30 (0.28)	0.94	49929.2	11130.00
14	44393.76	132.49	0.811	0.30 (0.28)	0.94	54970.4	12410.00
15	43783.83	140.86	0.794	0.30 (0.28)	0.95	58709.5	11201.00
16	43350.03	145.89	0.783	0.30 (0.28)	0.95	60441.2	12201.00
17	42316.70	153.11	0.768	0.30 (0.28)	0.95	62298.4	12231.00
18	40999.85	161.13	0.751	0.30 (0.28)	0.95	63932.7	10400.00
19	39624.61	169.30	0.734	0.30 (0.29)	0.95	65227.8	12010.00
20	38413.27	175.48	0.721	0.30 (0.29)	0.95	65574.8	10210.00
21	34183.07	204.50	0.686	0.30 (0.29)	0.95	66313.2	10100.00

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 END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S33 - COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JANUARY 2019 ROKAMOTO *

FILE NAME: RI25EV19.DAT
TIME/DATE OF STUDY: 09:37 06/14/2019

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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; 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 (FT)	LIP HIKE (FT)	MANING 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/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	63.15	0.30	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 233.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 10.18
 AVERAGE FLOW DEPTH (FEET) = 1.71 TRAVEL TIME (MIN.) = 3.16
 Tc (MIN.) = 26.57
 SUBAREA AREA (ACRES) = 63.15 SUBAREA RUNOFF (CFS) = 79.96
 EFFECTIVE AREA (ACRES) = 199.78 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
 TOTAL AREA (ACRES) = 199.8 PEAK FLOW RATE (CFS) = 255.05
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.80
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.80 FLOW VELOCITY (FEET/SEC.) = 10.45
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11905.00 = 6635.54 FEET.

 FLOW PROCESS FROM NODE 11905.00 TO NODE 11906.00 IS CODE = 56

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

 ELEVATION DATA: UPSTREAM (FEET) = 1957.34 DOWNSTREAM (FEET) = 1244.16
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2498.96 CHANNEL SLOPE = 0.2854
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.57
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.584
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	84.87	0.30	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 304.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.96
 AVERAGE FLOW DEPTH (FEET) = 1.55 TRAVEL TIME (MIN.) = 2.78
 Tc (MIN.) = 29.35
 SUBAREA AREA (ACRES) = 84.87 SUBAREA RUNOFF (CFS) = 98.06
 EFFECTIVE AREA (ACRES) = 284.65 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 284.6 PEAK FLOW RATE (CFS) = 330.98
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.63
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.63 FLOW VELOCITY (FEET/SEC.) = 15.34
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11906.00 = 9134.50 FEET.

FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 56

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

 ELEVATION DATA: UPSTREAM (FEET) = 1244.16 DOWNSTREAM (FEET) = 873.95
 CHANNEL LENGTH THRU SUBAREA (FEET) = 3370.75 CHANNEL SLOPE = 0.1098
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 2.49
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.474
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	199.43	0.30	1.000	-

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 436.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 11.89
 AVERAGE FLOW DEPTH (FEET) = 2.46 TRAVEL TIME (MIN.) = 4.72
 Tc (MIN.) = 34.07
 SUBAREA AREA (ACRES) = 199.43 SUBAREA RUNOFF (CFS) = 210.79
 EFFECTIVE AREA (ACRES) = 484.08 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 484.1 PEAK FLOW RATE (CFS) = 513.75
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 2.68
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 2.68 FLOW VELOCITY (FEET/SEC.) = 12.48
 LONGEST FLOWPATH FROM NODE 11900.00 TO NODE 11920.00 = 12505.25 FEET.

 FLOW PROCESS FROM NODE 11906.00 TO NODE 11920.00 IS CODE = 1

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

 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION (MIN.) = 34.07
 RAINFALL INTENSITY (INCH/HR) = 1.47
 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 484.08
 TOTAL STREAM AREA (ACRES) = 484.08
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 513.75

 FLOW PROCESS FROM NODE 11910.00 TO NODE 11911.00 IS CODE = 21

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

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

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 12.185
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.913
 SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.52 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 237.72

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.60

AVERAGE FLOW DEPTH(FEET) = 1.56 TRAVEL TIME(MIN.) = 2.42

Tc(MIN.) = 25.02

SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 104.24

EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 275.07

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 12.11

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.27
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.630

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 70.48 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 317.28

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.74

AVERAGE FLOW DEPTH(FEET) = 2.25 TRAVEL TIME(MIN.) = 3.27

Tc(MIN.) = 28.29

SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 84.40

EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 332.54
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.31 FLOW VELOCITY(FEET/SEC.) = 9.85

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.29
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.543

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 232.20 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 462.46

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.02

AVERAGE FLOW DEPTH(FEET) = 2.27 TRAVEL TIME(MIN.) = 2.31

Tc(MIN.) = 30.60

SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 259.78

EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 570.46

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.54 FLOW VELOCITY(FEET/SEC.) = 14.91

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 3.25
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.471

SUBAREA LOSS RATE DATA(AMC II):

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

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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) =      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.

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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<<<<
=====
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

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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	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.

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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) = 5.66
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.428
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) = 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

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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.

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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) = 5.78
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.373
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) = 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

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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) = 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<<<<<

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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<<<<<

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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<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 494.12 DOWNSTREAM(FEET) = 458.40
CHANNEL LENGTH THRU SUBAREA(FEET) = 1922.70 CHANNEL SLOPE = 0.0186
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.15
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.160
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp      Ap      SCS
LAND USE           GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -       97.46    0.30    1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2002.19
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.35
AVERAGE FLOW DEPTH(FEET) = 8.14 TRAVEL TIME(MIN.) = 3.43
Tc(MIN.) = 53.53
SUBAREA AREA(ACRES) = 97.46 SUBAREA RUNOFF(CFS) = 75.40
EFFECTIVE AREA(ACRES) = 2515.50 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 2518.3 PEAK FLOW RATE(CFS) = 1964.49
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 8.07

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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.

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FLOW PROCESS FROM NODE 11926.00 TO NODE 11927.00 IS CODE = 56
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>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 458.40 DOWNSTREAM(FEET) = 399.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2170.13 CHANNEL SLOPE = 0.0274
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.42
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.118
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp      Ap      SCS
LAND USE           GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED       -       53.83    0.30    1.000   -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1984.31
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.78
AVERAGE FLOW DEPTH(FEET) = 7.41 TRAVEL TIME(MIN.) = 3.35
Tc(MIN.) = 56.89
SUBAREA AREA(ACRES) = 53.83 SUBAREA RUNOFF(CFS) = 39.65
EFFECTIVE AREA(ACRES) = 2569.33 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 2572.1 PEAK FLOW RATE(CFS) = 1964.49
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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

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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.

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*****
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 <<<<
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*****
FLOW PROCESS FROM NODE 11927.00 TO NODE 11927.00 IS CODE = 15.1
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>>>>DEFINE MEMORY BANK # 1 <<<<
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PEAK FLOWRATE TABLE FILE NAME: P401XX25.DNA

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MEMORY BANK # 1 DEFINED AS FOLLOWS:

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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				

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*****
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<<<<
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** MAIN STREAM CONFLUENCE DATA **

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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.					

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** MEMORY BANK # 1 CONFLUENCE DATA **

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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.					

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** PEAK FLOW RATE TABLE **

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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					

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 2412.36 Tc(MIN.) = 56.889

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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/ 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) = 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/ 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) = 0.36
 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/ 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) = 1.43
 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.

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

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

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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

 FLOW PROCESS FROM NODE 11928.00 TO NODE 11929.00 IS CODE = 56

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

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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.

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

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

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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

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

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

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

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

PEAK FLOWRATE TABLE FILE NAME: S18X25.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16891.05	38.90	0.30 (0.30)	1.00	7699.7	11831.00
2	17269.04	41.07	0.30 (0.30)	1.00	8149.8	11801.00
3	19484.28	52.56	0.30 (0.30)	1.00	11111.4	11530.00
4	20384.42	59.71	0.30 (0.30)	1.00	13605.9	11000.00
5	22298.73	70.25	0.30 (0.30)	1.00	18738.3	11330.00
6	22627.08	72.15	0.30 (0.30)	1.00	19721.6	11350.00
7	22975.81	75.44	0.30 (0.30)	1.00	21433.1	11300.00
8	23115.65	77.03	0.30 (0.30)	1.00	22200.3	11130.00
9	22643.41	86.92	0.30 (0.30)	1.00	25590.3	11620.00
10	22485.53	89.04	0.30 (0.30)	1.00	26262.8	11600.00
11	22019.00	94.91	0.30 (0.30)	1.00	27853.1	11111.00
12	21832.20	97.18	0.30 (0.30)	1.00	28360.1	10500.00
13	21473.90	101.65	0.30 (0.30)	1.00	29218.6	10710.00
14	21235.80	103.95	0.30 (0.30)	1.00	29569.4	10410.00
15	20918.29	108.69	0.30 (0.30)	1.00	30244.3	10700.00
16	20477.99	115.41	0.30 (0.30)	1.00	31136.9	10400.00
17	20244.15	118.03	0.30 (0.30)	1.00	31425.5	10200.00
18	19628.83	124.41	0.30 (0.30)	1.00	32019.9	10300.00
19	19047.00	129.43	0.30 (0.30)	1.00	32209.8	10210.00
20	16600.03	158.26	0.30 (0.30)	1.00	32916.6	10100.00
TOTAL AREA (ACRES) =						32916.6

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: s25x25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	0.30 (0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.30 (0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.30 (0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.30 (0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.30 (0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.30 (0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.30 (0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.30 (0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.30 (0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.30 (0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.30 (0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.30 (0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.30 (0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =						13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	0.30 (0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.30 (0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.30 (0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.30 (0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.30 (0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.30 (0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.30 (0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.30 (0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.30 (0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.30 (0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.30 (0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.30 (0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.30 (0.29)	0.98	13237.1	12000.00
TOTAL AREA (ACRES) =			13237.1			

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	5840.09	69.19	1.029	0.30 (0.30)	0.99	6331.6	12500.00
2	6596.78	83.06	0.951	0.30 (0.30)	0.99	8310.4	12300.00
3	6685.50	84.54	0.943	0.30 (0.30)	0.98	8607.7	12330.00
4	6818.17	87.39	0.927	0.30 (0.30)	0.98	9133.8	12410.00
5	6967.16	91.70	0.906	0.30 (0.29)	0.98	9855.5	12400.00
6	7051.85	96.73	0.888	0.30 (0.29)	0.98	10551.8	12211.00
7	7157.86	100.97	0.872	0.30 (0.29)	0.98	11151.2	12201.00
8	7157.25	105.22	0.857	0.30 (0.29)	0.98	11623.9	12111.00
9	7110.02	108.20	0.846	0.30 (0.29)	0.98	11957.2	12231.00
10	7048.35	111.16	0.835	0.30 (0.29)	0.98	12251.1	12101.10
11	7025.02	112.24	0.831	0.30 (0.29)	0.98	12348.3	12261.00
12	6564.46	124.38	0.794	0.30 (0.29)	0.98	13114.4	12010.00
13	6112.24	133.26	0.774	0.30 (0.29)	0.98	13237.1	12000.00
LONGEST FLOWPATH FROM NODE 12000.00 TO NODE 12527.00 = 77156.98 FEET.							

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16891.05	38.90	1.379	0.30 (0.30)	1.00	7699.7	11831.00
2	17269.04	41.07	1.340	0.30 (0.30)	1.00	8149.8	11801.00
3	19484.28	52.56	1.172	0.30 (0.30)	1.00	11111.4	11530.00
4	20384.42	59.71	1.084	0.30 (0.30)	1.00	13605.9	11000.00
5	22298.73	70.25	1.023	0.30 (0.30)	1.00	18738.3	11330.00
6	22627.08	72.15	1.012	0.30 (0.30)	1.00	19721.6	11350.00
7	22975.81	75.44	0.994	0.30 (0.30)	1.00	21433.1	11300.00
8	23115.65	77.03	0.985	0.30 (0.30)	1.00	22200.3	11130.00
9	22643.41	86.92	0.929	0.30 (0.30)	1.00	25590.3	11620.00
10	22485.53	89.04	0.917	0.30 (0.30)	1.00	26262.8	11600.00
11	22019.00	94.91	0.894	0.30 (0.30)	1.00	27853.1	11111.00
12	21832.20	97.18	0.886	0.30 (0.30)	1.00	28360.1	10500.00
13	21473.90	101.65	0.870	0.30 (0.30)	1.00	29218.6	10710.00

14	21235.80	103.95	0.861	0.30 (0.30)	1.00	29569.4	10410.00
15	20918.29	108.69	0.844	0.30 (0.30)	1.00	30244.3	10700.00
16	20477.99	115.41	0.820	0.30 (0.30)	1.00	31136.9	10400.00
17	20244.15	118.03	0.810	0.30 (0.30)	1.00	31425.5	10200.00
18	19628.83	124.41	0.793	0.30 (0.30)	1.00	32019.9	10300.00
19	19047.00	129.43	0.783	0.30 (0.30)	1.00	32209.8	10210.00
20	16600.03	158.26	0.720	0.30 (0.30)	1.00	32916.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	21744.22	38.90	1.379	0.30 (0.30)	0.99	11259.4	11831.00
2	22212.18	41.07	1.340	0.30 (0.30)	0.99	11908.7	11801.00
3	24786.46	52.56	1.172	0.30 (0.30)	0.99	15920.9	11530.00
4	25802.98	59.71	1.084	0.30 (0.30)	0.99	19070.2	11000.00
5	27946.32	69.19	1.029	0.30 (0.30)	0.99	24553.8	12500.00
6	28196.63	70.25	1.023	0.30 (0.30)	0.99	25221.1	11330.00
7	28628.91	72.15	1.012	0.30 (0.30)	0.99	26476.2	11350.00
8	29156.91	75.44	0.994	0.30 (0.30)	0.99	28656.5	11300.00
9	29383.42	77.03	0.985	0.30 (0.30)	0.99	29650.4	11130.00
10	29424.60	83.06	0.951	0.30 (0.30)	0.99	32577.0	12300.00
11	29442.55	84.54	0.943	0.30 (0.30)	0.99	33382.3	12330.00
12	29439.82	86.92	0.929	0.30 (0.30)	0.99	34637.9	11620.00
13	29426.78	87.39	0.927	0.30 (0.30)	0.99	34872.4	12410.00
14	29360.88	89.04	0.917	0.30 (0.30)	0.99	35673.5	11600.00
15	29241.66	91.70	0.906	0.30 (0.30)	0.99	36837.6	12400.00
16	29040.22	94.91	0.894	0.30 (0.30)	0.99	38153.0	11111.00
17	28921.00	96.73	0.888	0.30 (0.30)	0.99	38811.6	12211.00
18	28895.27	97.18	0.886	0.30 (0.30)	0.99	38975.3	10500.00
19	28686.30	100.97	0.872	0.30 (0.30)	0.99	40239.2	12201.00
20	28631.67	101.65	0.870	0.30 (0.30)	0.99	40445.6	10710.00
21	28393.24	103.95	0.861	0.30 (0.30)	0.99	41052.8	10410.00
22	28308.43	105.22	0.857	0.30 (0.30)	0.99	41373.2	12111.00
23	28060.91	108.20	0.846	0.30 (0.30)	0.99	42132.2	12231.00
24	28018.20	108.69	0.844	0.30 (0.30)	0.99	42249.7	10700.00
25	27804.43	111.16	0.835	0.30 (0.30)	0.99	42824.2	12101.10
26	27710.28	112.24	0.831	0.30 (0.30)	0.99	43065.0	12261.00
27	27382.95	115.41	0.820	0.30 (0.30)	0.99	43684.9	10400.00
28	27049.59	118.03	0.810	0.30 (0.30)	0.99	44139.1	10200.00
29	26196.32	124.38	0.794	0.30 (0.30)	0.99	45131.3	12010.00
30	26191.70	124.41	0.793	0.30 (0.30)	0.99	45134.7	10300.00
31	25354.30	129.43	0.783	0.30 (0.30)	0.99	45393.9	10210.00
32	24834.19	133.26	0.774	0.30 (0.30)	0.99	45540.7	12000.00
33	22023.28	158.26	0.720	0.30 (0.30)	0.99	46153.7	10100.00

TOTAL AREA (ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 29442.55 Tc (MIN.) = 84.542
EFFECTIVE AREA (ACRES) = 33382.26 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA (ACRES) = 46153.7
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

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

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

>>>>TRAVELTIME THRU SUBAREA<<<<

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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) = 8.43

* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.939

SUBAREA LOSS RATE DATA (AMC II):

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

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.987
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 29446.71
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.43
AVERAGE FLOW DEPTH (FEET) = 8.43 TRAVEL TIME (MIN.) = 0.61
Tc (MIN.) = 85.16
SUBAREA AREA (ACRES) = 14.37 SUBAREA RUNOFF (CFS) = 8.32
EFFECTIVE AREA (ACRES) = 33396.63 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA (ACRES) = 46168.0 PEAK FLOW RATE (CFS) = 29442.55

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT (FEET) = 8.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 8.43 FLOW VELOCITY (FEET/SEC.) = 14.43

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

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

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

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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	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)
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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 S26 - COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV26.DAT
TIME/DATE OF STUDY: 09:38 06/14/2019

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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

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

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

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PEAK FLOWRATE TABLE FILE NAME: RI25EV19.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

>>>>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	22780.82	33.44	0.30 (0.30)	0.99	11553.3	40100.00
2	24557.65	41.75	0.30 (0.30)	0.99	14327.9	11801.00
3	27169.61	53.21	0.30 (0.30)	0.99	18858.4	11530.00
4	28643.17	62.26	0.30 (0.30)	0.99	23515.2	11910.00
5	30853.30	72.77	0.30 (0.30)	0.99	29818.2	11350.00
6	31522.31	77.64	0.30 (0.30)	0.99	32992.4	11130.00
7	31457.60	83.67	0.30 (0.30)	0.99	35919.0	12300.00
8	31404.98	87.54	0.30 (0.30)	0.99	37979.9	11620.00
9	31137.25	92.31	0.30 (0.30)	0.99	40179.6	12400.00
10	30899.19	95.53	0.30 (0.30)	0.99	41495.0	11111.00
11	30476.18	101.59	0.30 (0.30)	0.99	43581.2	12201.00
12	30149.10	104.58	0.30 (0.30)	0.99	44394.9	10410.00
13	29768.36	108.83	0.30 (0.30)	0.99	45474.2	12231.00

14	29478.12	111.79	0.30	(0.30)	0.99	46166.3	12101.10
15	29008.24	116.04	0.30	(0.30)	0.99	47026.9	10400.00
16	28644.99	118.66	0.30	(0.30)	0.99	47481.1	10200.00
17	27742.38	125.02	0.30	(0.30)	0.99	48473.4	12010.00
18	26866.01	130.08	0.30	(0.30)	0.99	48735.9	10210.00
19	26319.85	133.91	0.30	(0.30)	0.99	48882.8	12000.00
20	23338.91	158.94	0.30	(0.30)	0.99	49495.7	10100.00

TOTAL AREA (ACRES) = 49495.7

FLOW PROCESS FROM NODE 11929.00 TO NODE 12601.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 341.63 DOWNSTREAM (FEET) = 325.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1467.93 CHANNEL SLOPE = 0.0113
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT (FEET) = 7.37

* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.971

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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.

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.

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 = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 80.69
RAINFALL INTENSITY(INCH/HR) = 0.96
AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 33054.92
TOTAL STREAM AREA(ACRES) = 49558.19
PEAK FLOW RATE(CFS) AT CONFLUENCE = 31551.73

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

=====

USER-SPECIFIED VALUES ARE AS FOLLOWS:

TC(MIN.) = 9.55 RAINFALL INTENSITY(INCH/HR) = 3.40
EFFECTIVE AREA(ACRES) = 95.50
TOTAL AREA(ACRES) = 171.00 PEAK FLOW RATE(CFS) = 176.40
AREA-AVERAGED Fm(INCH/HR) = 0.17 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.58
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.55
RAINFALL INTENSITY(INCH/HR) = 3.40
AREA-AVERAGED Fm(INCH/HR) = 0.17
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.58
EFFECTIVE STREAM AREA(ACRES) = 95.50
TOTAL STREAM AREA(ACRES) = 171.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 176.40

** CONFLUENCE DATA **

STREAM 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
1	22831.32	36.84	1.417	0.30(0.30)	0.99	11615.8	40100.00
1	24601.62	45.06	1.277	0.30(0.30)	0.99	14390.4	11801.00
1	27206.56	56.41	1.122	0.30(0.30)	0.99	18920.9	11530.00
1	28676.34	65.40	1.047	0.30(0.30)	0.99	23577.7	11910.00
1	30883.91	75.84	0.988	0.30(0.30)	0.99	29880.7	11350.00
1	31551.73	80.69	0.961	0.30(0.30)	0.99	33054.9	11130.00
1	31485.55	86.72	0.927	0.30(0.30)	0.99	35981.5	12300.00
1	31431.99	90.59	0.907	0.30(0.30)	0.99	38042.4	11620.00
1	31163.41	95.37	0.889	0.30(0.30)	0.99	40242.1	12400.00
1	30924.84	98.59	0.878	0.30(0.30)	0.99	41557.5	11111.00
1	30500.87	104.67	0.856	0.30(0.30)	0.99	43643.7	12201.00
1	30173.31	107.67	0.845	0.30(0.30)	0.99	44457.4	10410.00
1	29791.90	111.93	0.829	0.30(0.30)	0.99	45536.7	12231.00
1	29501.19	114.90	0.819	0.30(0.30)	0.99	46228.8	12101.10
1	29030.64	119.17	0.803	0.30(0.30)	0.99	47089.4	10400.00
1	28666.97	121.81	0.796	0.30(0.30)	0.99	47543.6	10200.00
1	27763.76	128.20	0.782	0.30(0.30)	0.99	48535.9	12010.00

1	26886.92	133.29	0.771	0.30	(0.30)	0.99	48798.4	10210.00
1	26340.39	137.15	0.763	0.30	(0.30)	0.99	48945.3	12000.00
1	23357.08	162.31	0.708	0.30	(0.30)	0.99	49558.2	10100.00
2	176.40	9.55	3.401	0.30	(0.17)	0.58	95.5	12603.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16574.88	9.55	3.401	0.30(0.29)	0.98	2943.7	12603.00
2	19260.19	18.79	2.140	0.30(0.30)	0.99	5699.1	600.00
3	22899.27	36.84	1.417	0.30(0.30)	0.99	11711.3	40100.00
4	24661.89	45.06	1.277	0.30(0.30)	0.99	14485.9	11801.00
5	27258.37	56.41	1.122	0.30(0.30)	0.99	19016.4	11530.00
6	28724.05	65.40	1.047	0.30(0.30)	0.99	23673.2	11910.00
7	30928.42	75.84	0.988	0.30(0.30)	0.99	29976.2	11350.00
8	31594.76	80.69	0.961	0.30(0.30)	0.99	33150.4	11130.00
9	31526.73	86.72	0.927	0.30(0.30)	0.99	36077.0	12300.00
10	31472.05	90.59	0.907	0.30(0.30)	0.99	38137.9	11620.00
11	31202.52	95.37	0.889	0.30(0.30)	0.99	40337.6	12400.00
12	30963.31	98.59	0.878	0.30(0.30)	0.99	41653.0	11111.00
13	30538.13	104.67	0.856	0.30(0.30)	0.99	43739.2	12201.00
14	30209.99	107.67	0.845	0.30(0.30)	0.99	44552.9	10410.00
15	29827.73	111.93	0.829	0.30(0.30)	0.99	45632.2	12231.00
16	29536.43	114.90	0.819	0.30(0.30)	0.99	46324.3	12101.10
17	29065.03	119.17	0.803	0.30(0.30)	0.99	47184.9	10400.00
18	28700.98	121.81	0.796	0.30(0.30)	0.99	47639.1	10200.00
19	27797.01	128.20	0.782	0.30(0.30)	0.99	48631.4	12010.00
20	26919.56	133.29	0.771	0.30(0.30)	0.99	48893.9	10210.00
21	26372.58	137.15	0.763	0.30(0.30)	0.99	49040.8	12000.00
22	23386.29	162.31	0.708	0.30(0.30)	0.99	49653.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 31594.76 Tc(MIN.) = 80.69
EFFECTIVE AREA(ACRES) = 33150.42 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.) = 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) = 33193.82					
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) = 31594.76					
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
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) = 33194.72					
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) = 31594.76					
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
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) = 33206.92					
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) = 31594.76
 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 "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) = 33217.72 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) = 31594.76
 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 "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) = 33221.82 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) = 31594.76

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) = 8.63
 CHANNEL FLOW THRU SUBAREA (CFS) = 31594.76
 FLOW VELOCITY (FEET/SEC.) = 15.05 FLOW DEPTH (FEET) = 8.63
 TRAVEL TIME (MIN.) = 0.51 Tc (MIN.) = 81.20
 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.) = 81.20
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.958
 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) = 0.95
 EFFECTIVE AREA (ACRES) = 33223.42 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) = 31594.76
 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) = 9.49
 CHANNEL FLOW THRU SUBAREA (CFS) = 31594.76
 FLOW VELOCITY (FEET/SEC.) = 13.46 FLOW DEPTH (FEET) = 9.49
 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<<<<
=====
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
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) = 33234.02  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) = 31594.76
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

*****
FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 81.73
* 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) = 33238.82  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) = 31594.76
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<<<<

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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
GIVEN CHANNEL BASE(FEET) = 200.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000  MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.93
CHANNEL FLOW THRU SUBAREA(CFS) = 31594.76
FLOW VELOCITY(FEET/SEC.) = 16.62  FLOW DEPTH(FEET) = 7.93
TRAVEL TIME(MIN.) = 2.17  Tc(MIN.) = 83.89
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 = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 83.89
RAINFALL INTENSITY(INCH/HR) = 0.94
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 33238.82
TOTAL STREAM AREA(ACRES) = 49817.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 31594.76

*****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 7
-----
>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<
=====
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 17.15  RAINFALL INTENSITY(INCH/HR) = 2.28
EFFECTIVE AREA(ACRES) = 457.40
TOTAL AREA(ACRES) = 553.80      PEAK FLOW RATE(CFS) = 720.30
AREA-AVERAGED Fm(INCH/HR) = 0.26  AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
      CONFLUENCE ANALYSES.

*****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 17.15
RAINFALL INTENSITY(INCH/HR) = 2.28
AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 457.40
TOTAL STREAM AREA(ACRES) = 553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 720.30

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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	16574.88	13.54	2.695	0.30 (0.29)	0.98	3032.1	12603.00
1	19260.19	22.58	1.900	0.30 (0.30)	0.99	5787.5	600.00
1	22899.27	40.41	1.348	0.30 (0.30)	0.99	11799.7	40100.00
1	24661.89	48.55	1.223	0.30 (0.30)	0.99	14574.3	11801.00
1	27258.37	59.77	1.080	0.30 (0.30)	0.99	19104.8	11530.00
1	28724.05	68.71	1.028	0.30 (0.30)	0.99	23761.6	11910.00
1	30928.42	79.07	0.970	0.30 (0.30)	0.99	30064.6	11350.00
1	31594.76	83.89	0.943	0.30 (0.30)	0.99	33238.8	11130.00
1	31526.73	89.93	0.909	0.30 (0.30)	0.99	36165.4	12300.00
1	31472.05	93.79	0.895	0.30 (0.30)	0.99	38226.3	11620.00
1	31202.52	98.59	0.878	0.30 (0.30)	0.99	40426.0	12400.00
1	30963.31	101.82	0.866	0.30 (0.30)	0.99	41741.4	11111.00
1	30538.13	107.91	0.844	0.30 (0.30)	0.99	43827.6	12201.00
1	30209.99	110.92	0.833	0.30 (0.30)	0.99	44641.3	10410.00
1	29827.73	115.20	0.817	0.30 (0.30)	0.99	45720.6	12231.00
1	29536.43	118.18	0.807	0.30 (0.30)	0.99	46412.7	12101.10
1	29065.03	122.46	0.795	0.30 (0.30)	0.99	47273.3	10400.00
1	28700.98	125.12	0.789	0.30 (0.30)	0.99	47727.5	10200.00
1	27797.01	131.54	0.775	0.30 (0.30)	0.99	48719.8	12010.00
1	26919.56	136.67	0.764	0.30 (0.30)	0.99	48982.3	10210.00
1	26372.58	140.55	0.755	0.30 (0.30)	0.99	49129.2	12000.00
1	23386.29	165.86	0.701	0.30 (0.30)	0.99	49742.1	10100.00
2	720.30	17.15	2.282	0.30 (0.26)	0.85	457.4	12606.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17259.37	13.54	2.695	0.30 (0.29)	0.97	3393.2	12603.00
2	18368.05	17.15	2.282	0.30 (0.29)	0.97	4590.3	12606.00
3	19844.81	22.58	1.900	0.30 (0.29)	0.98	6244.9	600.00
4	23287.61	40.41	1.348	0.30 (0.30)	0.98	12257.1	40100.00
5	25006.00	48.55	1.223	0.30 (0.30)	0.99	15031.7	11801.00
6	27551.49	59.77	1.080	0.30 (0.30)	0.99	19562.2	11530.00
7	28998.84	68.71	1.028	0.30 (0.30)	0.99	24219.0	11910.00
8	31182.61	79.07	0.970	0.30 (0.30)	0.99	30522.0	11350.00
9	31839.34	83.89	0.943	0.30 (0.30)	0.99	33696.2	11130.00
10	31759.30	89.93	0.909	0.30 (0.30)	0.99	36622.8	12300.00
11	31699.57	93.79	0.895	0.30 (0.30)	0.99	38683.7	11620.00
12	31423.85	98.59	0.878	0.30 (0.30)	0.99	40883.4	12400.00
13	31180.48	101.82	0.866	0.30 (0.30)	0.99	42198.8	11111.00
14	30747.43	107.91	0.844	0.30 (0.30)	0.99	44285.0	12201.00
15	30415.40	110.92	0.833	0.30 (0.30)	0.99	45098.7	10410.00
16	30027.62	115.20	0.817	0.30 (0.30)	0.99	46178.0	12231.00
17	29732.46	118.18	0.807	0.30 (0.30)	0.99	46870.1	12101.10
18	29256.81	122.46	0.795	0.30 (0.30)	0.99	47730.7	10400.00
19	28890.73	125.12	0.789	0.30 (0.30)	0.99	48184.9	10200.00
20	27981.81	131.54	0.775	0.30 (0.30)	0.99	49177.2	12010.00
21	27100.41	136.67	0.764	0.30 (0.30)	0.99	49439.7	10210.00
22	26550.44	140.55	0.755	0.30 (0.30)	0.99	49586.6	12000.00
23	23544.67	165.86	0.701	0.30 (0.30)	0.99	50199.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 31839.34 Tc (MIN.) = 83.89
EFFECTIVE AREA (ACRES) = 33696.22 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<<<<<

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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) = 33712.22 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) = 31839.34
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

=====

MAINLINE Tc (MIN.) = 83.89
* 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) = 33728.82 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) = 31839.34
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc(MIN.) = 83.89

* 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
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NATURAL FAIR COVER

"OPEN BRUSH"	B	1.80	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

SUBAREA AREA(ACRES) = 1.80 SUBAREA RUNOFF(CFS) = 1.04

EFFECTIVE AREA(ACRES) = 33730.62 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) = 31839.34

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 83.89

EFFECTIVE AREA(ACRES) = 33730.62 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991

PEAK FLOW RATE(CFS) = 31839.34

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17259.37	13.54	2.695	0.30(0.29)	0.97	3427.6	12603.00
2	18368.05	17.15	2.282	0.30(0.29)	0.97	4624.7	12606.00
3	19844.81	22.58	1.900	0.30(0.29)	0.98	6279.3	600.00
4	23287.61	40.41	1.348	0.30(0.30)	0.98	12291.5	40100.00
5	25006.00	48.55	1.223	0.30(0.30)	0.99	15066.1	11801.00
6	27551.49	59.77	1.080	0.30(0.30)	0.99	19596.6	11530.00
7	28998.84	68.71	1.028	0.30(0.30)	0.99	24253.4	11910.00
8	31182.61	79.07	0.970	0.30(0.30)	0.99	30556.4	11350.00
9	31839.34	83.89	0.943	0.30(0.30)	0.99	33730.6	11130.00
10	31759.30	89.93	0.909	0.30(0.30)	0.99	36657.2	12300.00
11	31699.57	93.79	0.895	0.30(0.30)	0.99	38718.1	11620.00
12	31423.85	98.59	0.878	0.30(0.30)	0.99	40917.8	12400.00
13	31180.48	101.82	0.866	0.30(0.30)	0.99	42233.2	11111.00
14	30747.43	107.91	0.844	0.30(0.30)	0.99	44319.4	12201.00
15	30415.40	110.92	0.833	0.30(0.30)	0.99	45133.1	10410.00
16	30027.62	115.20	0.817	0.30(0.30)	0.99	46212.4	12231.00
17	29732.46	118.18	0.807	0.30(0.30)	0.99	46904.5	12101.10
18	29256.81	122.46	0.795	0.30(0.30)	0.99	47765.1	10400.00
19	28890.73	125.12	0.789	0.30(0.30)	0.99	48219.3	10200.00
20	27981.81	131.54	0.775	0.30(0.30)	0.99	49211.6	12010.00
21	27100.41	136.67	0.764	0.30(0.30)	0.99	49474.1	10210.00
22	26550.44	140.55	0.755	0.30(0.30)	0.99	49621.0	12000.00
23	23544.67	165.86	0.701	0.30(0.30)	0.99	50233.9	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
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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S27- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV27.DAT
TIME/DATE OF STUDY: 09:39 06/14/2019

=====

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; 4.933
- 2) 10.00; 3.214
- 3) 15.00; 2.451
- 4) 20.00; 2.024
- 5) 25.00; 1.763
- 6) 30.00; 1.547
- 7) 40.00; 1.347
- 8) 50.00; 1.194
- 9) 60.00; 1.070
- 10) 90.00; 0.902
- 11) 120.00; 0.792
- 12) 180.00; 0.662
- 13) 360.00; 0.490
- 14) 1200.00; 0.216

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: RI25EV26.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17259.37	13.54	0.30 (0.29)	0.97	3427.6	12603.00
2	18368.05	17.15	0.30 (0.29)	0.97	4624.7	12606.00
3	19844.81	22.58	0.30 (0.29)	0.98	6279.3	600.00
4	23287.61	40.41	0.30 (0.30)	0.98	12291.5	40100.00
5	25006.00	48.55	0.30 (0.30)	0.99	15066.1	11801.00
6	27551.49	59.77	0.30 (0.30)	0.99	19596.6	11530.00
7	28998.84	68.71	0.30 (0.30)	0.99	24253.4	11910.00
8	31182.61	79.07	0.30 (0.30)	0.99	30556.4	11350.00
9	31839.34	83.89	0.30 (0.30)	0.99	33730.6	11130.00
10	31759.30	89.93	0.30 (0.30)	0.99	36657.2	12300.00
11	31699.57	93.79	0.30 (0.30)	0.99	38718.1	11620.00
12	31423.85	98.59	0.30 (0.30)	0.99	40917.8	12400.00
13	30747.43	107.91	0.30 (0.30)	0.99	44319.4	12201.00
14	30415.40	110.92	0.30 (0.30)	0.99	45133.1	10410.00
15	30027.62	115.20	0.30 (0.30)	0.99	46212.4	12231.00
16	29256.81	122.46	0.30 (0.30)	0.99	47765.1	10400.00
17	27981.81	131.54	0.30 (0.30)	0.99	49211.6	12010.00
18	27100.41	136.67	0.30 (0.30)	0.99	49474.1	10210.00
19	26550.44	140.55	0.30 (0.30)	0.99	49621.0	12000.00
20	23544.67	165.86	0.30 (0.30)	0.99	50233.9	10100.00
TOTAL AREA (ACRES) =						50233.9

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	17259.37	13.54	0.30 (0.29)	0.97	3427.6	12603.00
2	18368.05	17.15	0.30 (0.29)	0.97	4624.7	12606.00
3	19844.81	22.58	0.30 (0.29)	0.98	6279.3	600.00
4	23287.61	40.41	0.30 (0.30)	0.98	12291.5	40100.00
5	25006.00	48.55	0.30 (0.30)	0.99	15066.1	11801.00
6	27551.49	59.77	0.30 (0.30)	0.99	19596.6	11530.00
7	28998.84	68.71	0.30 (0.30)	0.99	24253.4	11910.00
8	31182.61	79.07	0.30 (0.30)	0.99	30556.4	11350.00
9	31839.34	83.89	0.30 (0.30)	0.99	33730.6	11130.00
10	31759.30	89.93	0.30 (0.30)	0.99	36657.2	12300.00
11	31699.57	93.79	0.30 (0.30)	0.99	38718.1	11620.00
12	31423.85	98.59	0.30 (0.30)	0.99	40917.8	12400.00
13	30747.43	107.91	0.30 (0.30)	0.99	44319.4	12201.00

14	30415.40	110.92	0.30	(0.30)	0.99	45133.1	10410.00
15	30027.62	115.20	0.30	(0.30)	0.99	46212.4	12231.00
16	29256.81	122.46	0.30	(0.30)	0.99	47765.1	10400.00
17	27981.81	131.54	0.30	(0.30)	0.99	49211.6	12010.00
18	27100.41	136.67	0.30	(0.30)	0.99	49474.1	10210.00
19	26550.44	140.55	0.30	(0.30)	0.99	49621.0	12000.00
20	23544.67	165.86	0.30	(0.30)	0.99	50233.9	10100.00
TOTAL AREA (ACRES) =			50233.9				

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) = 8.20
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
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) = 31842.39
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.10
AVERAGE FLOW DEPTH(FEET) = 8.20 TRAVEL TIME(MIN.) = 1.30
Tc(MIN.) = 85.20
SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 6.11
EFFECTIVE AREA(ACRES) = 33738.18 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50241.4 PEAK FLOW RATE(CFS) = 31839.34
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) = 8.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 8.20 FLOW VELOCITY(FEET/SEC.) = 16.10
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.) = 85.20
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
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) = 17.86
EFFECTIVE AREA(ACRES) = 33769.57 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50272.8 PEAK FLOW RATE(CFS) = 31839.34
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.) = 85.20
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.929
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) = 0.96
EFFECTIVE AREA(ACRES) = 33771.27 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50274.5 PEAK FLOW RATE(CFS) = 31839.34
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) = 8.58
* 25 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
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) = 31839.79
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.28
AVERAGE FLOW DEPTH(FEET) = 8.58 TRAVEL TIME(MIN.) = 0.16
Tc(MIN.) = 85.36
SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 0.90

EFFECTIVE AREA(ACRES) = 33772.76 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 50276.0 PEAK FLOW RATE(CFS) = 31839.34
 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) = 8.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 8.58 FLOW VELOCITY(FEET/SEC.) = 15.28
 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.) = 85.36
 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) = 33772.76
 TOTAL STREAM AREA(ACRES) = 50276.03
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 31839.34

 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) = 2.617
 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) = 13.68
 TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 13.68

 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) = 2.335
 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) = 38.43
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.22
 AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 2.45
 Tc(MIN.) = 16.36

SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 49.35
 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) = 61.36
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.86 FLOW VELOCITY(FEET/SEC.) = 6.11
 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) = 2.130

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) = 75.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.11
 AVERAGE FLOW DEPTH(FEET) = 0.90 TRAVEL TIME(MIN.) = 2.40
 Tc(MIN.) = 18.76

SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 27.84
 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) = 83.01
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.95 FLOW VELOCITY(FEET/SEC.) = 7.34
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) = 1.971

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	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) = 175.25

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.46

AVERAGE FLOW DEPTH(FEET) = 1.57 TRAVEL TIME(MIN.) = 2.26

Tc(MIN.) = 21.02

SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 184.52

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) = 260.62

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.96 FLOW VELOCITY(FEET/SEC.) = 9.53

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) = 1.849

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) = 364.68

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.38

AVERAGE FLOW DEPTH(FEET) = 2.57 TRAVEL TIME(MIN.) = 2.34

Tc(MIN.) = 23.36

SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 208.10

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) = 451.82

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 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

>>>>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.) = 23.36

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 = 451.82

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17259.37	15.34	2.422	0.30(0.29)	0.96	3469.7	12603.00
1	18368.05	18.92	2.117	0.30(0.29)	0.97	4666.9	12606.00
1	19844.81	24.30	1.800	0.30(0.29)	0.97	6321.4	600.00
1	23287.61	42.04	1.316	0.30(0.30)	0.98	12333.7	40100.00
1	25006.00	50.13	1.192	0.30(0.30)	0.99	15108.2	11801.00
1	27551.49	61.31	1.063	0.30(0.30)	0.99	19638.8	11530.00
1	28998.84	70.22	1.013	0.30(0.30)	0.99	24295.6	11910.00
1	31182.61	80.54	0.955	0.30(0.30)	0.99	30598.5	11350.00
1	31839.34	85.36	0.928	0.30(0.30)	0.99	33772.8	11130.00
1	31759.30	91.39	0.897	0.30(0.30)	0.99	36699.3	12300.00
1	31699.57	95.26	0.883	0.30(0.30)	0.99	38760.2	11620.00
1	31423.85	100.06	0.865	0.30(0.30)	0.99	40959.9	12400.00
1	30747.43	109.39	0.831	0.30(0.30)	0.99	44361.5	12201.00
1	30415.40	112.41	0.820	0.30(0.30)	0.99	45175.2	10410.00
1	30027.62	116.69	0.804	0.30(0.30)	0.99	46254.5	12231.00
1	29256.81	123.97	0.783	0.30(0.30)	0.99	47807.3	10400.00
1	27981.81	133.07	0.764	0.30(0.30)	0.99	49253.7	12010.00
1	27100.41	138.22	0.753	0.30(0.30)	0.99	49516.3	10210.00
1	26550.44	142.11	0.744	0.30(0.30)	0.99	49663.1	12000.00
1	23544.67	167.48	0.689	0.30(0.30)	0.99	50276.0	10100.00
2	451.82	23.36	1.849	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	17651.37	15.34	2.422	0.30 (0.28)	0.93	3654.3	12603.00
2	18788.82	18.92	2.117	0.30 (0.28)	0.93	4894.5	12606.00
3	20039.05	23.36	1.849	0.30 (0.28)	0.94	6313.8	12710.00
4	20284.25	24.30	1.800	0.30 (0.28)	0.94	6602.4	600.00
5	23604.66	42.04	1.316	0.30 (0.29)	0.97	12614.7	40100.00
6	25291.81	50.13	1.192	0.30 (0.29)	0.97	15389.2	11801.00
7	27804.50	61.31	1.063	0.30 (0.29)	0.98	19919.8	11530.00
8	29239.24	70.22	1.013	0.30 (0.29)	0.98	24576.6	11910.00
9	31408.39	80.54	0.955	0.30 (0.29)	0.98	30879.5	11350.00
10	32058.30	85.36	0.928	0.30 (0.30)	0.98	34053.8	11130.00
11	31970.39	91.39	0.897	0.30 (0.30)	0.99	36980.3	12300.00
12	31907.08	95.26	0.883	0.30 (0.30)	0.99	39041.2	11620.00
13	31626.91	100.06	0.865	0.30 (0.30)	0.99	41240.9	12400.00
14	30941.83	109.39	0.831	0.30 (0.30)	0.99	44642.5	12201.00
15	30607.01	112.41	0.820	0.30 (0.30)	0.99	45456.2	10410.00
16	30215.25	116.69	0.804	0.30 (0.30)	0.99	46535.5	12231.00
17	29439.21	123.97	0.783	0.30 (0.30)	0.99	48088.3	10400.00
18	28159.21	133.07	0.764	0.30 (0.30)	0.99	49534.7	12010.00
19	27275.00	138.22	0.753	0.30 (0.30)	0.99	49797.3	10210.00
20	26722.89	142.11	0.744	0.30 (0.30)	0.99	49944.1	12000.00
21	23703.22	167.48	0.689	0.30 (0.30)	0.99	50557.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 32058.30 Tc(MIN.) = 85.36
 EFFECTIVE AREA(ACRES) = 34053.76 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 50557.0
 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.) = 85.36

* 25 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
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) = 34058.26 AREA-AVERAGED Fm(INCH/HR) = 0.30

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

TOTAL AREA(ACRES) = 50561.5 PEAK FLOW RATE(CFS) = 32058.30

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) = 8.77

* 25 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
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) = 32082.95

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 15.00

AVERAGE FLOW DEPTH(FEET) = 8.77 TRAVEL TIME(MIN.) = 2.97

Tc(MIN.) = 88.32

SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 49.30

EFFECTIVE AREA(ACRES) = 34120.41 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50623.7 PEAK FLOW RATE(CFS) = 32058.30

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) = 8.77

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.77 FLOW VELOCITY(FEET/SEC.) = 14.99

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.) = 88.32

* 25 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
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) = 10.77

EFFECTIVE AREA(ACRES) = 34139.91 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 50643.2 PEAK FLOW RATE (CFS) = 32058.30
 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.) = 88.32
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.911
 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) = 1.96
 EFFECTIVE AREA (ACRES) = 34143.41 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 50646.7 PEAK FLOW RATE (CFS) = 32058.30
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION (MIN.) = 88.32
 RAINFALL INTENSITY (INCH/HR) = 0.91
 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 34143.41
 TOTAL STREAM AREA (ACRES) = 50646.68
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 32058.30

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 18.53 RAINFALL INTENSITY (INCH/HR) = 2.15
 EFFECTIVE AREA (ACRES) = 135.60

TOTAL AREA (ACRES) = 439.50 PEAK FLOW RATE (CFS) = 171.30
 AREA-AVERAGED Fm (INCH/HR) = 0.14 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.48
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION (MIN.) = 18.53
 RAINFALL INTENSITY (INCH/HR) = 2.15
 AREA-AVERAGED Fm (INCH/HR) = 0.14
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.48
 EFFECTIVE STREAM AREA (ACRES) = 135.60
 TOTAL STREAM AREA (ACRES) = 439.50
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 171.30

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17651.37	18.97	2.112	0.30 (0.27)	0.91	3744.0	12603.00
1	18788.82	22.46	1.895	0.30 (0.28)	0.92	4984.1	12606.00
1	20039.05	26.83	1.684	0.30 (0.28)	0.93	6403.5	12710.00
1	20284.25	27.75	1.644	0.30 (0.28)	0.93	6692.1	600.00
1	23604.66	45.32	1.266	0.30 (0.29)	0.96	12704.3	40100.00
1	25291.81	53.34	1.153	0.30 (0.29)	0.97	15478.9	11801.00
1	27804.50	64.42	1.045	0.30 (0.29)	0.97	20009.4	11530.00
1	29239.24	73.28	0.996	0.30 (0.29)	0.98	24666.2	11910.00
1	31408.39	83.53	0.938	0.30 (0.29)	0.98	30969.2	11350.00
1	32058.30	88.32	0.911	0.30 (0.29)	0.98	34143.4	11130.00
1	31970.39	94.36	0.886	0.30 (0.30)	0.98	37070.0	12300.00
1	31907.08	98.23	0.872	0.30 (0.30)	0.98	39130.9	11620.00
1	31626.91	103.04	0.854	0.30 (0.30)	0.98	41330.6	12400.00
1	30941.83	112.39	0.820	0.30 (0.30)	0.98	44732.2	12201.00
1	30607.01	115.42	0.809	0.30 (0.30)	0.98	45545.8	10410.00
1	30215.25	119.72	0.793	0.30 (0.30)	0.98	46625.2	12231.00
1	29439.21	127.02	0.777	0.30 (0.30)	0.98	48177.9	10400.00
1	28159.21	136.17	0.757	0.30 (0.30)	0.98	49624.4	12010.00
1	27275.00	141.35	0.746	0.30 (0.30)	0.98	49886.9	10210.00
1	26722.89	145.26	0.737	0.30 (0.30)	0.98	50033.7	12000.00
1	23703.22	170.76	0.682	0.30 (0.30)	0.98	50646.7	10100.00
2	171.30	18.53	2.150	0.30 (0.14)	0.48	135.6	12720.50

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17766.03	18.53	2.150	0.30 (0.27)	0.90	3793.3	12720.50
2	17819.48	18.97	2.112	0.30 (0.27)	0.90	3879.6	12603.00
3	18938.41	22.46	1.895	0.30 (0.27)	0.91	5119.7	12606.00

4	20170.59	26.83	1.684	0.30	(0.28)	0.92	6539.1	12710.00
5	20412.38	27.75	1.644	0.30	(0.28)	0.93	6827.7	600.00
6	23700.46	45.32	1.266	0.30	(0.29)	0.96	12839.9	40100.00
7	25377.95	53.34	1.153	0.30	(0.29)	0.96	15614.5	11801.00
8	27881.48	64.42	1.045	0.30	(0.29)	0.97	20145.0	11530.00
9	29311.98	73.28	0.996	0.30	(0.29)	0.98	24801.8	11910.00
10	31476.23	83.53	0.938	0.30	(0.29)	0.98	31104.8	11350.00
11	32123.85	88.32	0.911	0.30	(0.29)	0.98	34279.0	11130.00
12	32033.77	94.36	0.886	0.30	(0.29)	0.98	37205.6	12300.00
13	31969.24	98.23	0.872	0.30	(0.29)	0.98	39266.5	11620.00
14	31687.57	103.04	0.854	0.30	(0.29)	0.98	41466.2	12400.00
15	30999.56	112.39	0.820	0.30	(0.29)	0.98	44867.8	12201.00
16	30663.79	115.42	0.809	0.30	(0.29)	0.98	45681.4	10410.00
17	30270.69	119.72	0.793	0.30	(0.29)	0.98	46760.8	12231.00
18	29493.26	127.02	0.777	0.30	(0.29)	0.98	48313.5	10400.00
19	28211.57	136.17	0.757	0.30	(0.29)	0.98	49760.0	12010.00
20	27326.40	141.35	0.746	0.30	(0.29)	0.98	50022.5	10210.00
21	26773.57	145.26	0.737	0.30	(0.29)	0.98	50169.3	12000.00
22	23749.18	170.76	0.682	0.30	(0.29)	0.98	50782.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 32123.85 Tc(MIN.) = 88.32
EFFECTIVE AREA(ACRES) = 34279.01 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51086.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

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) = 9.65
CHANNEL FLOW THRU SUBAREA(CFS) = 32123.85
FLOW VELOCITY(FEET/SEC.) = 13.41 FLOW DEPTH(FEET) = 9.65
TRAVEL TIME(MIN.) = 0.55 Tc(MIN.) = 88.87
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

>>>>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) = 13.98
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.900
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN

COMMERCIAL B 11.24 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) = 32128.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.51
AVERAGE FLOW DEPTH(FEET) = 13.98 TRAVEL TIME(MIN.) = 1.63
Tc(MIN.) = 90.49
SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 8.80
EFFECTIVE AREA(ACRES) = 34290.25 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51097.4 PEAK FLOW RATE(CFS) = 32123.85
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) = 13.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 13.98 FLOW VELOCITY(FEET/SEC.) = 8.51
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.) = 90.49
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.900
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 5.35
EFFECTIVE AREA(ACRES) = 34300.15 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51107.3 PEAK FLOW RATE(CFS) = 32123.85
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.) = 90.49
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.900
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
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) = 1.42
 EFFECTIVE AREA(ACRES) = 34302.75 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51109.9 PEAK FLOW RATE(CFS) = 32123.85
 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) = 9.60
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.897

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) = 32128.84
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.49
 AVERAGE FLOW DEPTH(FEET) = 9.60 TRAVEL TIME(MIN.) = 0.77
 Tc(MIN.) = 91.27
 SUBAREA AREA(ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 9.99
 EFFECTIVE AREA(ACRES) = 34320.65 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51127.8 PEAK FLOW RATE(CFS) = 32123.85
 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) = 9.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 9.59 FLOW VELOCITY(FEET/SEC.) = 13.50
 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.) = 91.27
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.897
 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) = 23.87
 EFFECTIVE AREA(ACRES) = 34365.05 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51172.2 PEAK FLOW RATE(CFS) = 32123.85
 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.) = 91.27
 RAINFALL INTENSITY(INCH/HR) = 0.90
 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA(ACRES) = 34365.05
 TOTAL STREAM AREA(ACRES) = 51172.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 32123.85

 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) = 2.631
 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" B 6.33 0.30 1.000 63 13.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 13.28
TOTAL AREA (ACRES) = 6.33 PEAK FLOW RATE (CFS) = 13.28

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) = 0.86
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.266
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) = 48.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.84
AVERAGE FLOW DEPTH(FEET) = 0.85 TRAVEL TIME(MIN.) = 3.34
Tc(MIN.) = 17.17
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 69.67
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) = 80.87
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.15 FLOW VELOCITY(FEET/SEC.) = 5.73
LONGEST FLOWPATH FROM NODE 12730.00 TO NODE 12732.00 = 1533.45 FEET.

FLOW PROCESS FROM NODE 12732.00 TO NODE 12733.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 494.40 DOWNSTREAM(FEET) = 431.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1156.41 CHANNEL SLOPE = 0.0548
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.59
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.018
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) = 134.18
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.56
AVERAGE FLOW DEPTH(FEET) = 1.56 TRAVEL TIME(MIN.) = 2.94
Tc(MIN.) = 20.11
SUBAREA AREA(ACRES) = 59.52 SUBAREA RUNOFF(CFS) = 106.52
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) = 178.27
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.83 FLOW VELOCITY(FEET/SEC.) = 7.15
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<<<<<

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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) = 2.33
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.807
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) = 229.55
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.81
AVERAGE FLOW DEPTH(FEET) = 2.31 TRAVEL TIME(MIN.) = 4.05
Tc(MIN.) = 24.16
SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 102.44
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) = 261.59
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.47 FLOW VELOCITY(FEET/SEC.) = 7.07
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) = 1.640
 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) = 280.45
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.50
 AVERAGE FLOW DEPTH (FEET) = 2.27 TRAVEL TIME (MIN.) = 3.69
 Tc (MIN.) = 27.84
 SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 37.71
 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) = 274.59
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 2.24
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 2.24 FLOW VELOCITY (FEET/SEC.) = 8.46
 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.) = 27.84
 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 = 274.59

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	17766.03	22.09	1.915	0.30 (0.27)	0.90	3879.4	12720.50
1	17819.48	22.53	1.892	0.30 (0.27)	0.90	3965.6	12603.00
1	18938.41	25.95	1.722	0.30 (0.27)	0.91	5205.8	12606.00
1	20170.59	30.24	1.542	0.30 (0.28)	0.92	6625.1	12710.00
1	20412.38	31.16	1.524	0.30 (0.28)	0.92	6913.7	600.00
1	23700.46	48.56	1.216	0.30 (0.29)	0.96	12926.0	40100.00
1	25377.95	56.52	1.113	0.30 (0.29)	0.96	15700.5	11801.00
1	27881.48	67.50	1.028	0.30 (0.29)	0.97	20231.1	11530.00
1	29311.98	76.31	0.979	0.30 (0.29)	0.97	24887.9	11910.00
1	31476.23	86.49	0.922	0.30 (0.29)	0.98	31190.8	11350.00
1	32123.85	91.27	0.897	0.30 (0.29)	0.98	34365.0	11130.00

1	32033.77	97.31	0.875	0.30 (0.29)	0.98	37291.6	12300.00
1	31969.24	101.18	0.861	0.30 (0.29)	0.98	39352.5	11620.00
1	31687.57	105.99	0.843	0.30 (0.29)	0.98	41552.2	12400.00
1	30999.56	115.37	0.809	0.30 (0.29)	0.98	44953.8	12201.00
1	30663.79	118.41	0.798	0.30 (0.29)	0.98	45767.5	10410.00
1	30270.69	122.71	0.786	0.30 (0.29)	0.98	46846.8	12231.00
1	29493.26	130.05	0.770	0.30 (0.29)	0.98	48399.6	10400.00
1	28211.57	139.23	0.750	0.30 (0.29)	0.98	49846.0	12010.00
1	27326.40	144.44	0.739	0.30 (0.29)	0.98	50108.6	10210.00
1	26773.57	148.38	0.731	0.30 (0.29)	0.98	50255.4	12000.00
1	23749.18	174.00	0.675	0.30 (0.29)	0.98	50868.3	10100.00
2	274.59	27.84	1.640	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	18021.28	22.09	1.915	0.30 (0.26)	0.87	4030.6	12720.50
2	18076.60	22.53	1.892	0.30 (0.26)	0.87	4119.8	12603.00
3	19207.41	25.95	1.722	0.30 (0.27)	0.88	5383.4	12606.00
4	19755.38	27.84	1.640	0.30 (0.27)	0.89	6021.1	12730.00
5	20428.36	30.24	1.542	0.30 (0.27)	0.90	6815.7	12710.00
6	20667.02	31.16	1.524	0.30 (0.27)	0.90	7104.3	600.00
7	23902.29	48.56	1.216	0.30 (0.28)	0.94	13116.5	40100.00
8	25562.17	56.52	1.113	0.30 (0.29)	0.95	15891.0	11801.00
9	28051.09	67.50	1.028	0.30 (0.29)	0.96	20421.6	11530.00
10	29473.13	76.31	0.979	0.30 (0.29)	0.97	25078.4	11910.00
11	31627.60	86.49	0.922	0.30 (0.29)	0.97	31381.4	11350.00
12	32271.05	91.27	0.897	0.30 (0.29)	0.98	34555.6	11130.00
13	32177.17	97.31	0.875	0.30 (0.29)	0.98	37482.2	12300.00
14	32110.21	101.18	0.861	0.30 (0.29)	0.98	39543.0	11620.00
15	31825.52	105.99	0.843	0.30 (0.29)	0.98	41742.8	12400.00
16	31131.61	115.37	0.809	0.30 (0.29)	0.98	45144.3	12201.00
17	30793.93	118.41	0.798	0.30 (0.29)	0.98	45958.0	10410.00
18	30398.82	122.71	0.786	0.30 (0.29)	0.98	47037.4	12231.00
19	29618.66	130.05	0.770	0.30 (0.29)	0.98	48590.1	10400.00
20	28333.56	139.23	0.750	0.30 (0.29)	0.98	50036.5	12010.00
21	27446.45	144.44	0.739	0.30 (0.29)	0.98	50299.1	10210.00
22	26892.16	148.38	0.731	0.30 (0.29)	0.98	50445.9	12000.00
23	23858.25	174.00	0.675	0.30 (0.29)	0.98	51058.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 32271.05 Tc (MIN.) = 91.27
 EFFECTIVE AREA (ACRES) = 34555.59 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51362.8
 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) = 7.23
 CHANNEL FLOW THRU SUBAREA (CFS) = 32271.05
 FLOW VELOCITY (FEET/SEC.) = 18.91 FLOW DEPTH (FEET) = 7.23
 TRAVEL TIME (MIN.) = 0.35 Tc (MIN.) = 91.62
 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.) = 91.62
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.896
 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) = 7.73
 EFFECTIVE AREA (ACRES) = 34568.89 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51376.1 PEAK FLOW RATE (CFS) = 32271.05
 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.) = 91.62
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.896
 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) = 34569.79 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51377.0 PEAK FLOW RATE (CFS) = 32271.05
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 91.62
 RAINFALL INTENSITY (INCH/HR) = 0.90
 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 34569.79
 TOTAL STREAM AREA (ACRES) = 51376.95
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 32271.05

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 24.01 RAINFALL INTENSITY (INCH/HR) = 1.81
 EFFECTIVE AREA (ACRES) = 54.00
 TOTAL AREA (ACRES) = 870.60 PEAK FLOW RATE (CFS) = 72.90
 AREA-AVERAGED Fm (INCH/HR) = 0.15 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 24.01
 RAINFALL INTENSITY (INCH/HR) = 1.81
 AREA-AVERAGED Fm (INCH/HR) = 0.15
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 EFFECTIVE STREAM AREA (ACRES) = 54.00
 TOTAL STREAM AREA (ACRES) = 870.60
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 72.90

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18021.28	22.53	1.892	0.30 (0.26)	0.87	4044.8	12720.50
1	18076.60	22.96	1.870	0.30 (0.26)	0.87	4134.0	12603.00
1	19207.41	26.38	1.704	0.30 (0.27)	0.88	5397.6	12606.00
1	19755.38	28.26	1.622	0.30 (0.27)	0.89	6035.3	12730.00
1	20428.36	30.66	1.534	0.30 (0.27)	0.90	6829.9	12710.00
1	20667.02	31.57	1.516	0.30 (0.27)	0.90	7118.5	600.00
1	23902.29	48.96	1.210	0.30 (0.28)	0.94	13130.7	40100.00
1	25562.17	56.90	1.108	0.30 (0.29)	0.95	15905.2	11801.00
1	28051.09	67.87	1.026	0.30 (0.29)	0.96	20435.8	11530.00
1	29473.13	76.67	0.977	0.30 (0.29)	0.97	25092.6	11910.00

1	31627.60	86.85	0.920	0.30 (0.29)	0.97	31395.6	11350.00
1	32271.05	91.62	0.896	0.30 (0.29)	0.98	34569.8	11130.00
1	32177.17	97.66	0.874	0.30 (0.29)	0.98	37496.4	12300.00
1	32110.21	101.53	0.860	0.30 (0.29)	0.98	39557.2	11620.00
1	31825.52	106.35	0.842	0.30 (0.29)	0.98	41757.0	12400.00
1	31131.61	115.73	0.808	0.30 (0.29)	0.98	45158.5	12201.00
1	30793.93	118.76	0.797	0.30 (0.29)	0.98	45972.2	10410.00
1	30398.82	123.07	0.785	0.30 (0.29)	0.98	47051.6	12231.00
1	29618.66	130.41	0.769	0.30 (0.29)	0.98	48604.3	10400.00
1	28333.56	139.60	0.750	0.30 (0.29)	0.98	50050.7	12010.00
1	27446.45	144.82	0.738	0.30 (0.29)	0.98	50313.3	10210.00
1	26892.16	148.75	0.730	0.30 (0.29)	0.98	50460.1	12000.00
1	23858.25	174.39	0.674	0.30 (0.29)	0.98	51073.1	10100.00
2	72.90	24.01	1.815	0.30 (0.15)	0.50	54.0	12741.00

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	18092.86	22.53	1.892	0.30 (0.26)	0.86	4095.4	12720.50
2	18148.60	22.96	1.870	0.30 (0.26)	0.86	4185.6	12603.00
3	18497.45	24.01	1.815	0.30 (0.26)	0.87	4576.8	12741.00
4	19275.45	26.38	1.704	0.30 (0.26)	0.88	5451.6	12606.00
5	19819.85	28.26	1.622	0.30 (0.27)	0.89	6089.3	12730.00
6	20488.96	30.66	1.534	0.30 (0.27)	0.90	6883.9	12710.00
7	20726.82	31.57	1.516	0.30 (0.27)	0.90	7172.5	600.00
8	23948.71	48.96	1.210	0.30 (0.28)	0.94	13184.7	40100.00
9	25604.14	56.90	1.108	0.30 (0.29)	0.95	15959.2	11801.00
10	28089.45	67.87	1.026	0.30 (0.29)	0.96	20489.8	11530.00
11	29509.33	76.67	0.977	0.30 (0.29)	0.97	25146.6	11910.00
12	31661.30	86.85	0.920	0.30 (0.29)	0.97	31449.6	11350.00
13	32303.72	91.62	0.896	0.30 (0.29)	0.98	34623.8	11130.00
14	32208.88	97.66	0.874	0.30 (0.29)	0.98	37550.4	12300.00
15	32141.29	101.53	0.860	0.30 (0.29)	0.98	39611.2	11620.00
16	31855.82	106.35	0.842	0.30 (0.29)	0.98	41811.0	12400.00
17	31160.41	115.73	0.808	0.30 (0.29)	0.98	45212.5	12201.00
18	30822.24	118.76	0.797	0.30 (0.29)	0.98	46026.2	10410.00
19	30426.64	123.07	0.785	0.30 (0.29)	0.98	47105.6	12231.00
20	29645.79	130.41	0.769	0.30 (0.29)	0.98	48658.3	10400.00
21	28359.81	139.60	0.750	0.30 (0.29)	0.98	50104.7	12010.00
22	27472.21	144.82	0.738	0.30 (0.29)	0.98	50367.3	10210.00
23	26917.55	148.75	0.730	0.30 (0.29)	0.98	50514.1	12000.00
24	23881.20	174.39	0.674	0.30 (0.29)	0.98	51127.1	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 32303.72 Tc(MIN.) = 91.62
EFFECTIVE AREA(ACRES) = 34623.79 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52247.6
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

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) = 8.10
CHANNEL FLOW THRU SUBAREA(CFS) = 32303.72
FLOW VELOCITY(FEET/SEC.) = 16.58 FLOW DEPTH(FEET) = 8.10
TRAVEL TIME(MIN.) = 0.82 Tc(MIN.) = 92.44
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.) = 92.44
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.893
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	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) = 9.24
EFFECTIVE AREA(ACRES) = 34641.09 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52264.9 PEAK FLOW RATE(CFS) = 32303.72
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52264.9 TC(MIN.) = 92.44
EFFECTIVE AREA(ACRES) = 34641.09 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.975
PEAK FLOW RATE(CFS) = 32303.72

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18092.86	22.53	1.840	0.30 (0.26)	0.86	4112.7	12720.50
2	18148.60	23.96	1.817	0.30 (0.26)	0.86	4202.9	12603.00
3	18497.45	25.00	1.763	0.30 (0.26)	0.87	4594.1	12741.00
4	19275.45	27.36	1.661	0.30 (0.26)	0.88	5468.9	12606.00
5	19819.85	29.23	1.580	0.30 (0.27)	0.89	6106.6	12730.00
6	20488.96	31.62	1.515	0.30 (0.27)	0.90	6901.2	12710.00
7	20726.82	32.53	1.496	0.30 (0.27)	0.90	7189.8	600.00
8	23948.71	49.87	1.196	0.30 (0.28)	0.94	13202.0	40100.00
9	25604.14	57.79	1.097	0.30 (0.29)	0.95	15976.5	11801.00
10	28089.45	68.73	1.021	0.30 (0.29)	0.96	20507.1	11530.00
11	29509.33	77.52	0.972	0.30 (0.29)	0.97	25163.9	11910.00
12	31661.30	87.67	0.915	0.30 (0.29)	0.97	31466.9	11350.00
13	32303.72	92.44	0.893	0.30 (0.29)	0.98	34641.1	11130.00
14	32208.88	98.48	0.871	0.30 (0.29)	0.98	37567.7	12300.00
15	32141.29	102.36	0.857	0.30 (0.29)	0.98	39628.5	11620.00
16	31855.82	107.18	0.839	0.30 (0.29)	0.98	41828.3	12400.00
17	31160.41	116.56	0.805	0.30 (0.29)	0.98	45229.9	12201.00
18	30822.24	119.60	0.793	0.30 (0.29)	0.98	46043.5	10410.00

19	30426.64	123.91	0.784	0.30 (0.29)	0.98	47122.9	12231.00
20	29645.79	131.26	0.768	0.30 (0.29)	0.98	48675.6	10400.00
21	28359.81	140.46	0.748	0.30 (0.29)	0.98	50122.0	12010.00
22	27472.21	145.69	0.736	0.30 (0.29)	0.98	50384.6	10210.00
23	26917.55	149.63	0.728	0.30 (0.29)	0.98	50531.4	12000.00
24	23881.20	175.30	0.672	0.30 (0.29)	0.98	51144.4	10100.00

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END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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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 S28- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV28.DAT
TIME/DATE OF STUDY: 09:40 06/14/2019

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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; 4.933
- 2) 10.00; 3.214
- 3) 15.00; 2.451
- 4) 20.00; 2.024
- 5) 25.00; 1.763
- 6) 30.00; 1.547
- 7) 40.00; 1.347
- 8) 50.00; 1.194
- 9) 60.00; 1.070
- 10) 90.00; 0.902
- 11) 120.00; 0.792
- 12) 180.00; 0.662
- 13) 360.00; 0.490
- 14) 1200.00; 0.216

ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

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

NO.	WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL IN- / OUT- / SIDE / WAY	CURB HEIGHT (FT)	GUTTER WIDTH (FT)	GEOMETRIES LIP (FT)	MANNING HIKE (FT)	STREETS 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 # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RI25EV27.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18497.45	25.00	0.30 (0.26)	0.87	4594.1	12741.00
2	19819.85	29.23	0.30 (0.27)	0.89	6106.6	12730.00
3	20726.82	32.53	0.30 (0.27)	0.90	7189.8	600.00
4	23948.71	49.87	0.30 (0.28)	0.94	13202.0	40100.00
5	25604.14	57.79	0.30 (0.29)	0.95	15976.5	11801.00
6	28089.45	68.73	0.30 (0.29)	0.96	20507.1	11530.00
7	29509.33	77.52	0.30 (0.29)	0.97	25163.9	11910.00
8	31661.30	87.67	0.30 (0.29)	0.97	31466.9	11350.00
9	32303.72	92.44	0.30 (0.29)	0.98	34641.1	11130.00
10	32208.88	98.48	0.30 (0.29)	0.98	37567.7	12300.00
11	32141.29	102.36	0.30 (0.29)	0.98	39628.5	11620.00
12	31855.82	107.18	0.30 (0.29)	0.98	41828.3	12400.00
13	31160.41	116.56	0.30 (0.29)	0.98	45229.9	12201.00
14	30822.24	119.60	0.30 (0.29)	0.98	46043.5	10410.00
15	30426.64	123.91	0.30 (0.29)	0.98	47122.9	12231.00
16	29645.79	131.26	0.30 (0.29)	0.98	48675.6	10400.00
17	28359.81	140.46	0.30 (0.29)	0.98	50122.0	12010.00
18	27472.21	145.69	0.30 (0.29)	0.98	50384.6	10210.00
19	26917.55	149.63	0.30 (0.29)	0.98	50531.4	12000.00
20	23881.20	175.30	0.30 (0.29)	0.98	51144.4	10100.00
TOTAL AREA (ACRES) =						51144.4

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1

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

=====

PEAK FLOWRATE TABLE FILE NAME: 0610501W.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1339.03	26.38	0.30 (0.29)	0.98	1025.9	50120.00
2	1307.01	27.68	0.30 (0.29)	0.98	1041.3	50150.00
3	1190.23	31.24	0.30 (0.29)	0.98	1063.4	50100.00
TOTAL AREA (ACRES) =						1063.4

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0

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

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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	18497.45	25.00	0.30 (0.26)	0.87	4594.1 12741.00
2	19819.85	29.23	0.30 (0.27)	0.89	6106.6 12730.00
3	20726.82	32.53	0.30 (0.27)	0.90	7189.8 600.00
4	23948.71	49.87	0.30 (0.28)	0.94	13202.0 40100.00
5	25604.14	57.79	0.30 (0.29)	0.95	15976.5 11801.00
6	28089.45	68.73	0.30 (0.29)	0.96	20507.1 11530.00
7	29509.33	77.52	0.30 (0.29)	0.97	25163.9 11910.00
8	31661.30	87.67	0.30 (0.29)	0.97	31466.9 11350.00
9	32303.72	92.44	0.30 (0.29)	0.98	34641.1 11130.00
10	32208.88	98.48	0.30 (0.29)	0.98	37567.7 12300.00
11	32141.29	102.36	0.30 (0.29)	0.98	39628.5 11620.00
12	31855.82	107.18	0.30 (0.29)	0.98	41828.3 12400.00
13	31160.41	116.56	0.30 (0.29)	0.98	45229.9 12201.00
14	30822.24	119.60	0.30 (0.29)	0.98	46043.5 10410.00
15	30426.64	123.91	0.30 (0.29)	0.98	47122.9 12231.00
16	29645.79	131.26	0.30 (0.29)	0.98	48675.6 10400.00
17	28359.81	140.46	0.30 (0.29)	0.98	50122.0 12010.00
18	27472.21	145.69	0.30 (0.29)	0.98	50384.6 10210.00
19	26917.55	149.63	0.30 (0.29)	0.98	50531.4 12000.00
20	23881.20	175.30	0.30 (0.29)	0.98	51144.4 10100.00
TOTAL AREA (ACRES) =		51144.4			

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 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	18497.45	25.00	1.763	0.30 (0.26)	0.87	4594.1	12741.00
2	19819.85	29.23	1.580	0.30 (0.27)	0.89	6106.6	12730.00
3	20726.82	32.53	1.496	0.30 (0.27)	0.90	7189.8	600.00
4	23948.71	49.87	1.196	0.30 (0.28)	0.94	13202.0	40100.00
5	25604.14	57.79	1.097	0.30 (0.29)	0.95	15976.5	11801.00
6	28089.45	68.73	1.021	0.30 (0.29)	0.96	20507.1	11530.00
7	29509.33	77.52	0.972	0.30 (0.29)	0.97	25163.9	11910.00
8	31661.30	87.67	0.915	0.30 (0.29)	0.97	31466.9	11350.00
9	32303.72	92.44	0.893	0.30 (0.29)	0.98	34641.1	11130.00
10	32208.88	98.48	0.871	0.30 (0.29)	0.98	37567.7	12300.00
11	32141.29	102.36	0.857	0.30 (0.29)	0.98	39628.5	11620.00
12	31855.82	107.18	0.839	0.30 (0.29)	0.98	41828.3	12400.00
13	31160.41	116.56	0.805	0.30 (0.29)	0.98	45229.9	12201.00
14	30822.24	119.60	0.793	0.30 (0.29)	0.98	46043.5	10410.00
15	30426.64	123.91	0.784	0.30 (0.29)	0.98	47122.9	12231.00
16	29645.79	131.26	0.768	0.30 (0.29)	0.98	48675.6	10400.00
17	28359.81	140.46	0.748	0.30 (0.29)	0.98	50122.0	12010.00
18	27472.21	145.69	0.736	0.30 (0.29)	0.98	50384.6	10210.00
19	26917.55	149.63	0.728	0.30 (0.29)	0.98	50531.4	12000.00
20	23881.20	175.30	0.672	0.30 (0.29)	0.98	51144.4	10100.00
LONGEST FLOWPATH FROM NODE		10100.00 TO NODE 12800.00 = 111795.71 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	1339.03	26.38	1.703	0.30 (0.29)	0.98	1025.9	50120.00

2	1307.01	27.68	1.647	0.30 (0.29)	0.98	1041.3	50150.00
3	1190.23	31.24	1.522	0.30 (0.29)	0.98	1063.4	50100.00
LONGEST FLOWPATH FROM NODE		50150.00 TO NODE 12800.00 = 11349.00 FEET.					

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19820.15	25.00	1.763	0.30 (0.27)	0.89	5566.4	12741.00
2	20267.87	26.38	1.703	0.30 (0.27)	0.89	6113.4	50120.00
3	20641.07	27.68	1.647	0.30 (0.27)	0.90	6592.2	50150.00
4	21075.86	29.23	1.580	0.30 (0.27)	0.90	7157.5	12730.00
5	21561.79	31.24	1.522	0.30 (0.27)	0.91	7828.9	50100.00
6	21892.05	32.53	1.496	0.30 (0.27)	0.91	8253.2	600.00
7	24822.68	49.87	1.196	0.30 (0.28)	0.95	14265.4	40100.00
8	26382.52	57.79	1.097	0.30 (0.29)	0.95	17039.9	11801.00
9	28793.83	68.73	1.021	0.30 (0.29)	0.96	21570.5	11530.00
10	30166.00	77.52	0.972	0.30 (0.29)	0.97	26227.3	11910.00
11	32262.87	87.67	0.915	0.30 (0.29)	0.97	32530.3	11350.00
12	32883.97	92.44	0.893	0.30 (0.29)	0.98	35704.5	11130.00
13	32767.65	98.48	0.871	0.30 (0.29)	0.98	38631.1	12300.00
14	32686.30	102.36	0.857	0.30 (0.29)	0.98	40691.9	11620.00
15	32383.71	107.18	0.839	0.30 (0.29)	0.98	42891.7	12400.00
16	31654.94	116.56	0.805	0.30 (0.29)	0.98	46293.2	12201.00
17	31305.96	119.60	0.793	0.30 (0.29)	0.98	47106.9	10410.00
18	30900.72	123.91	0.784	0.30 (0.29)	0.98	48186.3	12231.00
19	30104.45	131.26	0.768	0.30 (0.29)	0.98	49739.0	10400.00
20	28799.13	140.46	0.748	0.30 (0.29)	0.98	51185.4	12010.00
21	27900.57	145.69	0.736	0.30 (0.29)	0.98	51448.0	10210.00
22	27337.63	149.63	0.728	0.30 (0.29)	0.98	51594.8	12000.00
23	24247.36	175.30	0.672	0.30 (0.29)	0.98	52207.8	10100.00
TOTAL AREA (ACRES) =		52207.8					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 32883.97 Tc (MIN.) = 92.442
EFFECTIVE AREA (ACRES) = 35704.48 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.96
TOTAL AREA (ACRES) = 52207.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 52207.8 TC (MIN.) = 92.44
EFFECTIVE AREA (ACRES) = 35704.48 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.975
PEAK FLOW RATE (CFS) = 32883.97

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19820.15	25.00	1.763	0.30 (0.27)	0.89	5566.4	12741.00
2	20267.87	26.38	1.703	0.30 (0.27)	0.89	6113.4	50120.00
3	20641.07	27.68	1.647	0.30 (0.27)	0.90	6592.2	50150.00
4	21075.86	29.23	1.580	0.30 (0.27)	0.90	7157.5	12730.00
5	21561.79	31.24	1.522	0.30 (0.27)	0.91	7828.9	50100.00
6	21892.05	32.53	1.496	0.30 (0.27)	0.91	8253.2	600.00
7	24822.68	49.87	1.196	0.30 (0.28)	0.95	14265.4	40100.00
8	26382.52	57.79	1.097	0.30 (0.29)	0.95	17039.9	11801.00
9	28793.83	68.73	1.021	0.30 (0.29)	0.96	21570.5	11530.00
10	30166.00	77.52	0.972	0.30 (0.29)	0.97	26227.3	11910.00

11	32262.87	87.67	0.915	0.30 (0.29)	0.97	32530.3	11350.00
12	32883.97	92.44	0.893	0.30 (0.29)	0.98	35704.5	11130.00
13	32767.65	98.48	0.871	0.30 (0.29)	0.98	38631.1	12300.00
14	32686.30	102.36	0.857	0.30 (0.29)	0.98	40691.9	11620.00
15	32383.71	107.18	0.839	0.30 (0.29)	0.98	42891.7	12400.00
16	31654.94	116.56	0.805	0.30 (0.29)	0.98	46293.2	12201.00
17	31305.96	119.60	0.793	0.30 (0.29)	0.98	47106.9	10410.00
18	30900.72	123.91	0.784	0.30 (0.29)	0.98	48186.3	12231.00
19	30104.45	131.26	0.768	0.30 (0.29)	0.98	49739.0	10400.00
20	28799.13	140.46	0.748	0.30 (0.29)	0.98	51185.4	12010.00
21	27900.57	145.69	0.736	0.30 (0.29)	0.98	51448.0	10210.00
22	27337.63	149.63	0.728	0.30 (0.29)	0.98	51594.8	12000.00
23	24247.36	175.30	0.672	0.30 (0.29)	0.98	52207.8	10100.00

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END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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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- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV29.DAT
TIME/DATE OF STUDY: 09:40 06/14/2019

=====

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; 4.920
- 2) 10.00; 3.206
- 3) 15.00; 2.446
- 4) 20.00; 2.021
- 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; 0.900
- 11) 120.00; 0.790
- 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: RI25EV28.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20641.07	27.68	0.30 (0.27)	0.90	6592.2	50150.00
2	21075.86	29.23	0.30 (0.27)	0.90	7157.5	12730.00
3	21892.05	32.53	0.30 (0.27)	0.91	8253.2	600.00
4	24822.68	49.87	0.30 (0.28)	0.95	14265.4	40100.00
5	26382.52	57.79	0.30 (0.29)	0.95	17039.9	11801.00
6	28793.83	68.73	0.30 (0.29)	0.96	21570.5	11530.00
7	30166.00	77.52	0.30 (0.29)	0.97	26227.3	11910.00
8	32262.87	87.67	0.30 (0.29)	0.97	32530.3	11350.00
9	32883.97	92.44	0.30 (0.29)	0.98	35704.5	11130.00
10	32767.65	98.48	0.30 (0.29)	0.98	38631.1	12300.00
11	32686.30	102.36	0.30 (0.29)	0.98	40691.9	11620.00
12	32383.71	107.18	0.30 (0.29)	0.98	42891.7	12400.00
13	31654.94	116.56	0.30 (0.29)	0.98	46293.2	12201.00
14	31305.96	119.60	0.30 (0.29)	0.98	47106.9	10410.00
15	30900.72	123.91	0.30 (0.29)	0.98	48186.3	12231.00
16	30104.45	131.26	0.30 (0.29)	0.98	49739.0	10400.00
17	28799.13	140.46	0.30 (0.29)	0.98	51185.4	12010.00
18	27900.57	145.69	0.30 (0.29)	0.98	51448.0	10210.00
19	27337.63	149.63	0.30 (0.29)	0.98	51594.8	12000.00
20	24247.36	175.30	0.30 (0.29)	0.98	52207.8	10100.00
TOTAL AREA (ACRES) =						52207.8

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	20641.07	27.68	0.30 (0.27)	0.90	6592.2	50150.00
2	21075.86	29.23	0.30 (0.27)	0.90	7157.5	12730.00
3	21892.05	32.53	0.30 (0.27)	0.91	8253.2	600.00
4	24822.68	49.87	0.30 (0.28)	0.95	14265.4	40100.00
5	26382.52	57.79	0.30 (0.29)	0.95	17039.9	11801.00
6	28793.83	68.73	0.30 (0.29)	0.96	21570.5	11530.00
7	30166.00	77.52	0.30 (0.29)	0.97	26227.3	11910.00
8	32262.87	87.67	0.30 (0.29)	0.97	32530.3	11350.00
9	32883.97	92.44	0.30 (0.29)	0.98	35704.5	11130.00
10	32767.65	98.48	0.30 (0.29)	0.98	38631.1	12300.00
11	32686.30	102.36	0.30 (0.29)	0.98	40691.9	11620.00
12	32383.71	107.18	0.30 (0.29)	0.98	42891.7	12400.00
13	31654.94	116.56	0.30 (0.29)	0.98	46293.2	12201.00

14	31305.96	119.60	0.30	(0.29)	0.98	47106.9	10410.00
15	30900.72	123.91	0.30	(0.29)	0.98	48186.3	12231.00
16	30104.45	131.26	0.30	(0.29)	0.98	49739.0	10400.00
17	28799.13	140.46	0.30	(0.29)	0.98	51185.4	12010.00
18	27900.57	145.69	0.30	(0.29)	0.98	51448.0	10210.00
19	27337.63	149.63	0.30	(0.29)	0.98	51594.8	12000.00
20	24247.36	175.30	0.30	(0.29)	0.98	52207.8	10100.00

TOTAL AREA (ACRES) = 52207.8

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) = 8.43
 CHANNEL FLOW THRU SUBAREA (CFS) = 32883.97
 FLOW VELOCITY (FEET/SEC.) = 16.10 FLOW DEPTH (FEET) = 8.43
 TRAVEL TIME (MIN.) = 3.23 Tc (MIN.) = 95.67
 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.) = 95.67
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.879
 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) = 13.21
 EFFECTIVE AREA (ACRES) = 35723.88 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 5227.1 PEAK FLOW RATE (CFS) = 32883.97
 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.) = 95.67
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.879
 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) = 4.50
 EFFECTIVE AREA (ACRES) = 35731.78 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52235.0 PEAK FLOW RATE (CFS) = 32883.97
 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.) = 95.67
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.879
 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) = 37.74
 EFFECTIVE AREA (ACRES) = 35801.18 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52304.4 PEAK FLOW RATE (CFS) = 32883.97
 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.) = 95.67

* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.879
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS
 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) = 8.30
 EFFECTIVE AREA (ACRES) = 35814.98 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52318.2 PEAK FLOW RATE (CFS) = 32883.97
 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.) = 95.67
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.879
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCSSOIL AREA Fp Ap SCSS
 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) = 5.63
 EFFECTIVE AREA (ACRES) = 35825.78 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52329.0 PEAK FLOW RATE (CFS) = 32883.97
 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) = 8.28
 CHANNEL FLOW THRU SUBAREA (CFS) = 32883.97
 FLOW VELOCITY (FEET/SEC.) = 16.45 FLOW DEPTH (FEET) = 8.28
 TRAVEL TIME (MIN.) = 0.12 Tc (MIN.) = 95.80
 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 # 3 <<<<<
 =====

PEAK FLOWRATE TABLE FILE NAME: E502XX25.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 58.93 11.21 0.30 (0.27) 0.91 28.7 50200.00
 TOTAL AREA (ACRES) = 28.7

 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 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	20641.07	31.60	1.513	0.30 (0.27)	0.89	6713.5	50150.00
2	21075.86	33.13	1.482	0.30 (0.27)	0.90	7278.8	12730.00
3	21892.05	36.37	1.418	0.30 (0.27)	0.91	8374.5	600.00
4	24822.68	53.55	1.148	0.30 (0.28)	0.94	14386.7	40100.00
5	26382.52	61.40	1.060	0.30 (0.29)	0.95	17161.2	11801.00
6	28793.83	72.24	0.999	0.30 (0.29)	0.96	21691.8	11530.00
7	30166.00	80.97	0.951	0.30 (0.29)	0.97	26348.6	11910.00
8	32262.87	91.05	0.896	0.30 (0.29)	0.97	32651.6	11350.00
9	32883.97	95.80	0.879	0.30 (0.29)	0.97	35825.8	11130.00
10	32767.65	101.84	0.857	0.30 (0.29)	0.98	38752.4	12300.00
11	32686.30	105.72	0.842	0.30 (0.29)	0.98	40813.2	11620.00
12	32383.71	110.54	0.825	0.30 (0.29)	0.98	43013.0	12400.00
13	31654.94	119.96	0.790	0.30 (0.29)	0.98	46414.5	12201.00
14	31305.96	123.01	0.783	0.30 (0.29)	0.98	47228.2	10410.00
15	30900.72	127.34	0.774	0.30 (0.29)	0.98	48307.6	12231.00
16	30104.45	134.71	0.758	0.30 (0.29)	0.98	49860.3	10400.00
17	28799.13	143.97	0.738	0.30 (0.29)	0.98	51306.7	12010.00
18	27900.57	149.23	0.727	0.30 (0.29)	0.98	51569.3	10210.00
19	27337.63	153.19	0.718	0.30 (0.29)	0.98	51716.1	12000.00
20	24247.36	179.01	0.662	0.30 (0.29)	0.98	52329.0	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 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	58.93	11.21	3.021	0.30 (0.27)	0.91	28.7	50200.00

LONGEST FLOWPATH FROM NODE 50200.00 TO NODE 12902.00 = 1426.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	58.93	11.21	3.021	0.30 (0.27)	0.91	28.7	50200.00

1	16260.80	11.21	3.021	0.30 (0.27)	0.89	2410.9	50200.00
2	20667.65	31.60	1.513	0.30 (0.27)	0.89	6742.2	50150.00
3	21101.79	33.13	1.482	0.30 (0.27)	0.90	7307.5	12730.00
4	21916.59	36.37	1.418	0.30 (0.27)	0.91	8403.2	600.00
5	24841.44	53.55	1.148	0.30 (0.28)	0.94	14415.4	40100.00
6	26399.39	61.40	1.060	0.30 (0.29)	0.95	17189.9	11801.00
7	28809.41	72.24	0.999	0.30 (0.29)	0.96	21720.5	11530.00
8	30180.53	80.97	0.951	0.30 (0.29)	0.97	26377.3	11910.00
9	32276.23	91.05	0.896	0.30 (0.29)	0.97	32680.3	11350.00
10	32896.96	95.80	0.879	0.30 (0.29)	0.97	35854.5	11130.00
11	32780.17	101.84	0.857	0.30 (0.29)	0.98	38781.1	12300.00
12	32698.51	105.72	0.842	0.30 (0.29)	0.98	40841.9	11620.00
13	32395.54	110.54	0.825	0.30 (0.29)	0.98	43041.7	12400.00
14	31666.03	119.96	0.790	0.30 (0.29)	0.98	46443.2	12201.00
15	31316.91	123.01	0.783	0.30 (0.29)	0.98	47256.9	10410.00
16	30911.47	127.34	0.774	0.30 (0.29)	0.98	48336.3	12231.00
17	30114.85	134.71	0.758	0.30 (0.29)	0.98	49889.0	10400.00
18	28809.11	143.97	0.738	0.30 (0.29)	0.98	51335.4	12010.00
19	27910.30	149.23	0.727	0.30 (0.29)	0.98	51598.0	10210.00
20	27347.17	153.19	0.718	0.30 (0.29)	0.98	51744.8	12000.00
21	24255.70	179.01	0.662	0.30 (0.29)	0.98	52357.7	10100.00

TOTAL AREA (ACRES) = 52357.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 32896.96 Tc (MIN.) = 95.796
EFFECTIVE AREA (ACRES) = 35854.48 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 52357.7
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 # 3 <<<<<

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: E503XX25.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	430.88	25.25	1.750	0.30 (0.30)	0.99	366.4	50300.00

TOTAL AREA (ACRES) = 366.4

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	16260.80	11.21	3.021	0.30 (0.27)	0.89	2410.9	50200.00

2	20667.65	31.60	1.513	0.30 (0.27)	0.89	6742.2	50150.00
3	21101.79	33.13	1.482	0.30 (0.27)	0.90	7307.5	12730.00
4	21916.59	36.37	1.418	0.30 (0.27)	0.91	8403.2	600.00
5	24841.44	53.55	1.148	0.30 (0.28)	0.94	14415.4	40100.00
6	26399.39	61.40	1.060	0.30 (0.29)	0.95	17189.9	11801.00
7	28809.41	72.24	0.999	0.30 (0.29)	0.96	21720.5	11530.00
8	30180.53	80.97	0.951	0.30 (0.29)	0.97	26377.3	11910.00
9	32276.23	91.05	0.896	0.30 (0.29)	0.97	32680.3	11350.00
10	32896.96	95.80	0.879	0.30 (0.29)	0.97	35854.5	11130.00
11	32780.17	101.84	0.857	0.30 (0.29)	0.98	38781.1	12300.00
12	32698.51	105.72	0.842	0.30 (0.29)	0.98	40841.9	11620.00
13	32395.54	110.54	0.825	0.30 (0.29)	0.98	43041.7	12400.00
14	31666.03	119.96	0.790	0.30 (0.29)	0.98	46443.2	12201.00
15	31316.91	123.01	0.783	0.30 (0.29)	0.98	47256.9	10410.00
16	30911.47	127.34	0.774	0.30 (0.29)	0.98	48336.3	12231.00
17	30114.85	134.71	0.758	0.30 (0.29)	0.98	49889.0	10400.00
18	28809.11	143.97	0.738	0.30 (0.29)	0.98	51335.4	12010.00
19	27910.30	149.23	0.727	0.30 (0.29)	0.98	51598.0	10210.00
20	27347.17	153.19	0.718	0.30 (0.29)	0.98	51744.8	12000.00
21	24255.70	179.01	0.662	0.30 (0.29)	0.98	52357.7	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	430.88	25.25	1.750	0.30 (0.30)	0.99	366.4	50300.00

LONGEST FLOWPATH FROM NODE 50300.00 TO NODE 12902.00 = 8614.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16619.41	11.21	3.021	0.30 (0.27)	0.90	2573.7	50200.00
2	19724.42	25.25	1.750	0.30 (0.27)	0.90	5758.1	50300.00
3	21028.21	31.60	1.513	0.30 (0.27)	0.90	7108.6	50150.00
4	21453.32	33.13	1.482	0.30 (0.27)	0.90	7673.9	12730.00
5	22248.91	36.37	1.418	0.30 (0.27)	0.91	8769.6	600.00
6	25093.91	53.55	1.148	0.30 (0.28)	0.95	14781.8	40100.00
7	26625.86	61.40	1.060	0.30 (0.29)	0.95	17556.3	11801.00
8	29017.89	72.24	0.999	0.30 (0.29)	0.96	22086.9	11530.00
9	30374.52	80.97	0.951	0.30 (0.29)	0.97	26743.7	11910.00
10	32454.12	91.05	0.896	0.30 (0.29)	0.97	33046.7	11350.00
11	33069.70	95.80	0.879	0.30 (0.29)	0.97	36220.9	11130.00
12	32946.34	101.84	0.857	0.30 (0.29)	0.98	39147.5	12300.00
13	32860.47	105.72	0.842	0.30 (0.29)	0.98	41208.3	11620.00
14	32552.26	110.54	0.825	0.30 (0.29)	0.98	43408.1	12400.00
15	31812.53	119.96	0.790	0.30 (0.29)	0.98	46809.6	12201.00
16	31461.43	123.01	0.783	0.30 (0.29)	0.98	47623.3	10410.00
17	31053.21	127.34	0.774	0.30 (0.29)	0.98	48702.7	12231.00
18	30251.86	134.71	0.758	0.30 (0.29)	0.98	50255.4	10400.00
19	28940.18	143.97	0.738	0.30 (0.29)	0.98	51701.8	12010.00
20	28037.99	149.23	0.727	0.30 (0.29)	0.98	51964.4	10210.00
21	27472.32	153.19	0.718	0.30 (0.29)	0.98	52111.2	12000.00
22	24364.28	179.01	0.662	0.30 (0.29)	0.98	52724.1	10100.00

TOTAL AREA (ACRES) = 52724.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 33069.70 Tc (MIN.) = 95.796
EFFECTIVE AREA (ACRES) = 36220.88 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52724.1
 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) = 14.51
 CHANNEL FLOW THRU SUBAREA(CFS) = 33069.70
 FLOW VELOCITY(FEET/SEC.) = 8.36 FLOW DEPTH(FEET) = 14.51
 TRAVEL TIME(MIN.) = 1.78 Tc(MIN.) = 97.58
 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: E504XX25.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	108.86	17.34	0.30 (0.29)	0.97	70.5	50400.00
TOTAL AREA (ACRES) = 70.5						

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	16619.41	13.43	2.685	0.30 (0.27)	0.90	2573.7	50200.00
2	19724.42	27.34	1.660	0.30 (0.27)	0.90	5758.1	50300.00
3	21028.21	33.66	1.472	0.30 (0.27)	0.90	7108.6	50150.00
4	21453.32	35.17	1.442	0.30 (0.27)	0.90	7673.9	12730.00
5	22248.91	38.39	1.377	0.30 (0.27)	0.91	8769.6	600.00
6	25093.91	55.49	1.124	0.30 (0.28)	0.95	14781.8	40100.00
7	26625.86	63.30	1.049	0.30 (0.29)	0.95	17556.3	11801.00
8	29017.89	74.09	0.989	0.30 (0.29)	0.96	22086.9	11530.00
9	30374.52	82.80	0.940	0.30 (0.29)	0.97	26743.7	11910.00
10	32454.12	92.84	0.890	0.30 (0.29)	0.97	33046.7	11350.00
11	33069.70	97.58	0.872	0.30 (0.29)	0.97	36220.9	11130.00

12	32946.34	103.63	0.850	0.30 (0.29)	0.98	39147.5	12300.00
13	32860.47	107.51	0.836	0.30 (0.29)	0.98	41208.3	11620.00
14	32552.26	112.34	0.818	0.30 (0.29)	0.98	43408.1	12400.00
15	31812.53	121.76	0.786	0.30 (0.29)	0.98	46809.6	12201.00
16	31461.43	124.82	0.780	0.30 (0.29)	0.98	47623.3	10410.00
17	31053.21	129.16	0.770	0.30 (0.29)	0.98	48702.7	12231.00
18	30251.86	136.54	0.754	0.30 (0.29)	0.98	50255.4	10400.00
19	28940.18	145.83	0.734	0.30 (0.29)	0.98	51701.8	12010.00
20	28037.99	151.11	0.723	0.30 (0.29)	0.98	51964.4	10210.00
21	27472.32	155.08	0.714	0.30 (0.29)	0.98	52111.2	12000.00
22	24364.28	180.98	0.659	0.30 (0.29)	0.98	52724.1	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	108.86	17.34	2.247	0.30 (0.29)	0.97	70.5	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	16722.57	13.43	2.685	0.30 (0.27)	0.90	2628.3	50200.00
2	17600.73	17.34	2.247	0.30 (0.27)	0.90	3539.0	50400.00
3	19800.61	27.34	1.660	0.30 (0.27)	0.90	5828.6	50300.00
4	21093.94	33.66	1.472	0.30 (0.27)	0.90	7179.1	50150.00
5	21517.38	35.17	1.442	0.30 (0.27)	0.90	7744.4	12730.00
6	22309.38	38.39	1.377	0.30 (0.27)	0.91	8840.1	600.00
7	25140.29	55.49	1.124	0.30 (0.28)	0.95	14852.3	40100.00
8	26668.10	63.30	1.049	0.30 (0.29)	0.95	17626.8	11801.00
9	29056.78	74.09	0.989	0.30 (0.29)	0.96	22157.4	11530.00
10	30410.69	82.80	0.940	0.30 (0.29)	0.97	26814.2	11910.00
11	32487.47	92.84	0.890	0.30 (0.29)	0.97	33117.2	11350.00
12	33102.08	97.58	0.872	0.30 (0.29)	0.97	36291.4	11130.00
13	32977.49	103.63	0.850	0.30 (0.29)	0.98	39218.0	12300.00
14	32890.83	107.51	0.836	0.30 (0.29)	0.98	41278.8	11620.00
15	32581.63	112.34	0.818	0.30 (0.29)	0.98	43478.6	12400.00
16	31840.13	121.76	0.786	0.30 (0.29)	0.98	46880.1	12201.00
17	31488.66	124.82	0.780	0.30 (0.29)	0.98	47693.8	10410.00
18	31079.92	129.16	0.770	0.30 (0.29)	0.98	48773.2	12231.00
19	30277.68	136.54	0.754	0.30 (0.29)	0.98	50325.9	10400.00
20	28964.88	145.83	0.734	0.30 (0.29)	0.98	51772.3	12010.00
21	28062.05	151.11	0.723	0.30 (0.29)	0.98	52034.9	10210.00
22	27495.91	155.08	0.714	0.30 (0.29)	0.98	52181.7	12000.00
23	24384.81	180.98	0.659	0.30 (0.29)	0.98	52794.6	10100.00

TOTAL AREA (ACRES) = 52794.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 33102.08 Tc (MIN.) = 97.580
 EFFECTIVE AREA (ACRES) = 36291.38 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52794.6
 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 <<<<<

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FLOW PROCESS FROM NODE 12903.00 TO NODE 12904.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
-----
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 13.91
CHANNEL FLOW THRU SUBAREA(CFS) = 33102.08
FLOW VELOCITY(FEET/SEC.) = 8.83 FLOW DEPTH(FEET) = 13.91
TRAVEL TIME(MIN.) = 1.45 Tc(MIN.) = 99.03
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 = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
-----
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 99.03
RAINFALL INTENSITY(INCH/HR) = 0.87
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.97
EFFECTIVE STREAM AREA(ACRES) = 36291.38
TOTAL STREAM AREA(ACRES) = 52794.64
PEAK FLOW RATE(CFS) AT CONFLUENCE = 33102.08
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7
-----
>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<
-----
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 18.01 RAINFALL INTENSITY(INCH/HR) = 2.19
EFFECTIVE AREA(ACRES) = 29.80
TOTAL AREA(ACRES) = 214.70 PEAK FLOW RATE(CFS) = 48.90
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.42
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
-----
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 18.01
RAINFALL INTENSITY(INCH/HR) = 2.19

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AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.42
EFFECTIVE STREAM AREA(ACRES) = 29.80
TOTAL STREAM AREA(ACRES) = 214.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 48.90

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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	16722.57	15.23	2.426	0.30 (0.27)	0.90	2628.3	50200.00
1	17600.73	19.11	2.097	0.30 (0.27)	0.90	3539.0	50400.00
1	19800.61	29.05	1.586	0.30 (0.27)	0.90	5828.6	50300.00
1	21093.94	35.33	1.438	0.30 (0.27)	0.90	7179.1	50150.00
1	21517.38	36.83	1.408	0.30 (0.27)	0.90	7744.4	12730.00
1	22309.38	40.03	1.345	0.30 (0.27)	0.91	8840.1	600.00
1	25140.29	57.07	1.104	0.30 (0.28)	0.95	14852.3	40100.00
1	26668.10	64.86	1.041	0.30 (0.29)	0.95	17626.8	11801.00
1	29056.78	75.60	0.981	0.30 (0.29)	0.96	22157.4	11530.00
1	30410.69	84.29	0.932	0.30 (0.29)	0.97	26814.2	11910.00
1	32487.47	94.30	0.884	0.30 (0.29)	0.97	33117.2	11350.00
1	33102.08	99.03	0.867	0.30 (0.29)	0.97	36291.4	11130.00
1	32977.49	105.08	0.845	0.30 (0.29)	0.98	39218.0	12300.00
1	32890.83	108.96	0.830	0.30 (0.29)	0.98	41278.8	11620.00
1	32581.63	113.79	0.813	0.30 (0.29)	0.98	43478.6	12400.00
1	31840.13	123.23	0.783	0.30 (0.29)	0.98	46880.1	12201.00
1	31488.66	126.29	0.776	0.30 (0.29)	0.98	47693.8	10410.00
1	31079.92	130.63	0.767	0.30 (0.29)	0.98	48773.2	12231.00
1	30277.68	138.03	0.751	0.30 (0.29)	0.98	50325.9	10400.00
1	28964.88	147.34	0.731	0.30 (0.29)	0.98	51772.3	12010.00
1	28062.05	152.63	0.719	0.30 (0.29)	0.98	52034.9	10210.00
1	27495.91	156.62	0.711	0.30 (0.29)	0.98	52181.7	12000.00
1	24384.81	182.57	0.658	0.30 (0.29)	0.98	52794.6	10100.00
2	48.90	18.01	2.190	0.30 (0.13)	0.42	29.8	12904.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16768.65	15.23	2.426	0.30 (0.27)	0.90	2653.5	50200.00
2	17400.67	18.01	2.190	0.30 (0.27)	0.90	3310.6	12904.00
3	17647.42	19.11	2.097	0.30 (0.27)	0.90	3568.8	50400.00
4	19835.20	29.05	1.586	0.30 (0.27)	0.90	5858.4	50300.00
5	21125.03	35.33	1.438	0.30 (0.27)	0.90	7208.9	50150.00
6	21547.76	36.83	1.408	0.30 (0.27)	0.90	7774.2	12730.00
7	22338.25	40.03	1.345	0.30 (0.27)	0.91	8869.9	600.00
8	25163.47	57.07	1.104	0.30 (0.28)	0.94	14882.1	40100.00
9	26689.78	64.86	1.041	0.30 (0.29)	0.95	17656.6	11801.00
10	29077.02	75.60	0.981	0.30 (0.29)	0.96	22187.2	11530.00
11	30429.79	84.29	0.932	0.30 (0.29)	0.97	26844.0	11910.00
12	32505.43	94.30	0.884	0.30 (0.29)	0.97	33147.0	11350.00
13	33119.63	99.03	0.867	0.30 (0.29)	0.97	36321.2	11130.00
14	32994.52	105.08	0.845	0.30 (0.29)	0.98	39247.8	12300.00
15	32907.52	108.96	0.830	0.30 (0.29)	0.98	41308.6	11620.00
16	32597.90	113.79	0.813	0.30 (0.29)	0.98	43508.4	12400.00
17	31855.69	123.23	0.783	0.30 (0.29)	0.98	46909.9	12201.00

18	31504.07	126.29	0.776	0.30	(0.29)	0.98	47723.6	10410.00
19	31095.10	130.63	0.767	0.30	(0.29)	0.98	48803.0	12231.00
20	30292.49	138.03	0.751	0.30	(0.29)	0.98	50355.7	10400.00
21	28979.20	147.34	0.731	0.30	(0.29)	0.98	51802.1	12010.00
22	28076.11	152.63	0.719	0.30	(0.29)	0.98	52064.7	10210.00
23	27509.76	156.62	0.711	0.30	(0.29)	0.98	52211.5	12000.00
24	24397.40	182.57	0.658	0.30	(0.29)	0.98	52824.4	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 33119.63 Tc(MIN.) = 99.03
EFFECTIVE AREA(ACRES) = 36321.18 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53009.3
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.) = 99.03
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.867
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 0.70 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) = 20.79
EFFECTIVE AREA(ACRES) = 36360.28 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53048.4 PEAK FLOW RATE(CFS) = 33119.63
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.) = 99.03
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.867
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL B 0.30 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) = 36365.28 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53053.4 PEAK FLOW RATE(CFS) = 33119.63
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.) = 99.03
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.867
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
AGRICULTURAL FAIR COVER
"ORCHARDS" B 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) = 3.08
EFFECTIVE AREA(ACRES) = 36371.18 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA(ACRES) = 53059.3 PEAK FLOW RATE(CFS) = 33119.63
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 53059.3 TC(MIN.) = 99.03
EFFECTIVE AREA(ACRES) = 36371.18 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.974
PEAK FLOW RATE(CFS) = 33119.63

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16768.65	15.23	2.426	0.30(0.27)	0.90	2703.5	50200.00
2	17400.67	18.01	2.190	0.30(0.27)	0.90	3360.6	12904.00
3	17647.42	19.11	2.097	0.30(0.27)	0.90	3618.8	50400.00
4	19835.20	29.05	1.586	0.30(0.27)	0.90	5908.4	50300.00
5	21125.03	35.33	1.438	0.30(0.27)	0.90	7258.9	50150.00
6	21547.76	36.83	1.408	0.30(0.27)	0.90	7824.2	12730.00
7	22338.25	40.03	1.345	0.30(0.27)	0.91	8919.9	600.00
8	25163.47	57.07	1.104	0.30(0.28)	0.94	14932.1	40100.00
9	26689.78	64.86	1.041	0.30(0.29)	0.95	17706.6	11801.00

10	29077.02	75.60	0.981	0.30	(0.29)	0.96	22237.2	11530.00
11	30429.79	84.29	0.932	0.30	(0.29)	0.97	26894.0	11910.00
12	32505.43	94.30	0.884	0.30	(0.29)	0.97	33197.0	11350.00
13	33119.63	99.03	0.867	0.30	(0.29)	0.97	36371.2	11130.00
14	32994.52	105.08	0.845	0.30	(0.29)	0.98	39297.8	12300.00
15	32907.52	108.96	0.830	0.30	(0.29)	0.98	41358.6	11620.00
16	32597.90	113.79	0.813	0.30	(0.29)	0.98	43558.4	12400.00
17	31855.69	123.23	0.783	0.30	(0.29)	0.98	46959.9	12201.00
18	31504.07	126.29	0.776	0.30	(0.29)	0.98	47773.6	10410.00
19	31095.10	130.63	0.767	0.30	(0.29)	0.98	48853.0	12231.00
20	30292.49	138.03	0.751	0.30	(0.29)	0.98	50405.7	10400.00
21	28979.20	147.34	0.731	0.30	(0.29)	0.98	51852.1	12010.00
22	28076.11	152.63	0.719	0.30	(0.29)	0.98	52114.7	10210.00
23	27509.76	156.62	0.711	0.30	(0.29)	0.98	52261.5	12000.00
24	24397.40	182.57	0.658	0.30	(0.29)	0.98	52874.4	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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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 S33- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV33.DAT
TIME/DATE OF STUDY: 09:41 06/14/2019

=====

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; 4.829
- 2) 10.00; 3.154
- 3) 15.00; 2.415
- 4) 20.00; 2.000
- 5) 25.00; 1.745
- 6) 30.00; 1.534
- 7) 40.00; 1.333
- 8) 50.00; 1.181
- 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 13222.00 TO NODE 13222.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

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USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 64.17 RAINFALL INTENSITY(INCH/HR) = 1.03
EFFECTIVE AREA(ACRES) = 3069.00
TOTAL AREA(ACRES) = 4924.40 PEAK FLOW RATE(CFS) = 2036.70
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.82
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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

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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) = 3.40
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.008
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) = 2054.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.04
AVERAGE FLOW DEPTH(FEET) = 3.40 TRAVEL TIME(MIN.) = 4.21
Tc(MIN.) = 68.38
SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 34.64
EFFECTIVE AREA(ACRES) = 3114.20 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 2138.83
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 3.48 FLOW VELOCITY(FEET/SEC.) = 10.18
 LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 68.38
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.008
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 12.31
 EFFECTIVE AREA(ACRES) = 3130.70 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 2151.14

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 68.38
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.008
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977
 SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 5.08
 EFFECTIVE AREA(ACRES) = 3138.60 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 4994.0 PEAK FLOW RATE(CFS) = 2156.22

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 68.38
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.008
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 14.01
 EFFECTIVE AREA(ACRES) = 3160.60 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5016.0 PEAK FLOW RATE(CFS) = 2170.23

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 68.38
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.008
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA(ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 9.56
 EFFECTIVE AREA(ACRES) = 3175.60 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5031.0 PEAK FLOW RATE(CFS) = 2179.79

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

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

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

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

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)] ** 0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 3.609
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63 8.64
NATURAL FAIR COVER
"OPEN BRUSH" B 0.30 0.30 1.000 66 8.64
NATURAL FAIR COVER
"OPEN BRUSH" B 0.30 0.30 1.000 66 8.64
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 3.28
TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 3.28

FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 685.00 DOWNSTREAM (FEET) = 655.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 135.00 CHANNEL SLOPE = 0.2222
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 3.497
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 0.70 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 5.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.69
AVERAGE FLOW DEPTH (FEET) = 0.51 TRAVEL TIME (MIN.) = 0.34
Tc (MIN.) = 8.98
SUBAREA AREA (ACRES) = 1.30 SUBAREA RUNOFF (CFS) = 3.74
EFFECTIVE AREA (ACRES) = 2.40 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 2.4 PEAK FLOW RATE (CFS) = 6.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.56 FLOW VELOCITY (FEET/SEC.) = 7.29
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 655.00 DOWNSTREAM (FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 10.00
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 3.353
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.30 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 1.90 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 10.07
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.91
AVERAGE FLOW DEPTH (FEET) = 0.65 TRAVEL TIME (MIN.) = 0.43
Tc (MIN.) = 9.40
SUBAREA AREA (ACRES) = 2.30 SUBAREA RUNOFF (CFS) = 6.32
EFFECTIVE AREA (ACRES) = 4.70 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 4.7 PEAK FLOW RATE (CFS) = 12.92

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.71 FLOW VELOCITY (FEET/SEC.) = 8.44
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 630.00 DOWNSTREAM (FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 3.114
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 1.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.50 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 17.48
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

>>>>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) = 210.27
 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					

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
"GRASS"	B	0.30	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.60	0.30	1.000	66
RESIDENTIAL					
".4 DWELLING/ACRE"	B	0.40	0.30	0.900	56
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	6.20	0.30	1.000	79
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	3.90	0.30	1.000	65
AGRICULTURAL POOR COVER					
"ROW CROPS, CONTOURED"	B	1.40	0.30	1.000	79

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.998
 SUBAREA AREA (ACRES) = 21.80 SUBAREA RUNOFF (CFS) = 37.35
 EFFECTIVE AREA (ACRES) = 136.40 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 136.4 PEAK FLOW RATE (CFS) = 233.61

FLOW PROCESS FROM NODE 31110.00 TO NODE 13301.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM (FEET) = 432.00 DOWNSTREAM (FEET) = 382.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1847.00 CHANNEL SLOPE = 0.0271
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 1.930

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.997
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 246.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.07
 AVERAGE FLOW DEPTH (FEET) = 3.19 TRAVEL TIME (MIN.) = 3.82
 Tc (MIN.) = 21.37
 SUBAREA AREA (ACRES) = 18.10 SUBAREA RUNOFF (CFS) = 26.57
 EFFECTIVE AREA (ACRES) = 154.50 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 154.5 PEAK FLOW RATE (CFS) = 233.61
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 3.13 FLOW VELOCITY (FEET/SEC.) = 7.94

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

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM 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	2179.79	68.38	1.008	0.30 (0.25)	0.82	3175.6	13222.00

LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1738.73	21.37	1.930	0.30 (0.25)	0.84	1147.0	31100.00
2	2281.24	68.38	1.008	0.30 (0.25)	0.83	3330.1	13222.00

TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2281.24 Tc(MIN.) = 68.377
EFFECTIVE AREA(ACRES) = 3330.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
TOTAL AREA (ACRES) = 5185.5
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.89
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.993
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 2284.18

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.22

AVERAGE FLOW DEPTH(FEET) = 4.89 TRAVEL TIME(MIN.) = 2.64

Tc(MIN.) = 71.01

SUBAREA AREA (ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 5.86

EFFECTIVE AREA(ACRES) = 3339.50 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA (ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 2281.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 4.89

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.89 FLOW VELOCITY(FEET/SEC.) = 7.22

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13302.00 = 7532.09 FEET.

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 71.01

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.993

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 RESIDENTIAL	B	1.10	0.30	0.100	56
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952

SUBAREA AREA (ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 17.89

EFFECTIVE AREA(ACRES) = 3367.60 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA (ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 2281.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 71.01

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.993

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.894
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 2.02
 EFFECTIVE AREA (ACRES) = 3370.70 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 2281.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 71.01
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.993
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 12.60
 EFFECTIVE AREA (ACRES) = 3390.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 2281.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 71.01
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.993
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.996
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 47.73
 EFFECTIVE AREA (ACRES) = 3467.30 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 2319.85

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 71.01
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.993
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.999
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 71.49
 EFFECTIVE AREA (ACRES) = 3581.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 2391.35

FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 375.00 DOWNSTREAM (FEET) = 355.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 2193.96 CHANNEL SLOPE = 0.0091
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 4.49
 CHANNEL FLOW THRU SUBAREA (CFS) = 2391.35
 FLOW VELOCITY (FEET/SEC.) = 8.39 FLOW DEPTH (FEET) = 4.49
 TRAVEL TIME (MIN.) = 4.36 Tc (MIN.) = 75.37
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

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

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MAINLINE Tc(MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"            B         0.20     0.30     1.000    86
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         0.40     0.30     1.000    65
NATURAL POOR COVER
"BARREN"            B         0.80     0.30     1.000    86
COMMERCIAL          B         1.40     0.30     0.100    56
NATURAL FAIR COVER
"GRASS"             B         2.60     0.30     1.000    69
NATURAL FAIR COVER
"OPEN BRUSH"       B         2.20     0.30     1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60      SUBAREA RUNOFF(CFS) = 4.91
EFFECTIVE AREA(ACRES) = 3589.50  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5444.9      PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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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.) = 75.37
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         3.10     0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         3.40     0.30     1.000    65
NATURAL POOR COVER
"BARREN"            B         0.50     0.30     1.000    86
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B         0.20     0.30     1.000    63
COMMERCIAL          B         3.60     0.30     0.100    56
NATURAL FAIR COVER
"GRASS"             B         4.00     0.30     1.000    69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80     SUBAREA RUNOFF(CFS) = 9.78
EFFECTIVE AREA(ACRES) = 3604.30  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5459.7      PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"       B         14.60    0.30     1.000    66
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         6.30     0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         3.70     0.30     1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60     SUBAREA RUNOFF(CFS) = 14.80
EFFECTIVE AREA(ACRES) = 3628.90  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3      PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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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.) = 75.37
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.968
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"            B         0.50     0.30     1.000    86
COMMERCIAL          B         0.30     0.30     0.100    56
NATURAL FAIR COVER
"OPEN BRUSH"       B         0.20     0.30     1.000    66
RESIDENTIAL
".4 DWELLING/ACRE" B         0.80     0.30     0.900    56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         1.60     0.30     1.000    79
NATURAL POOR COVER
"BARREN"            B         31.90    0.30     1.000    86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30     SUBAREA RUNOFF(CFS) = 21.33
EFFECTIVE AREA(ACRES) = 3664.20  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6      PEAK FLOW RATE(CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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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.) = 75.37

* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.968
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.830
SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 6.80
EFFECTIVE AREA (ACRES) = 3674.70 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 75.37
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.968
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 "OPEN BRUSH"	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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 7.24
EFFECTIVE AREA (ACRES) = 3686.30 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 5.21
* 25 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
PUBLIC PARK	B	13.80	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) = 2395.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.01
AVERAGE FLOW DEPTH (FEET) = 5.21 TRAVEL TIME (MIN.) = 2.20
Tc (MIN.) = 77.57
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 8.71
EFFECTIVE AREA (ACRES) = 3700.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 5.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 5.20 FLOW VELOCITY (FEET/SEC.) = 7.01
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13304.00 = 10651.45 FEET.

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 77.57
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.956
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 22.80 SUBAREA RUNOFF (CFS) = 13.46
EFFECTIVE AREA (ACRES) = 3722.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5578.3 PEAK FLOW RATE (CFS) = 2391.35
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 77.57

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.956

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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

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) = 4.19

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.926

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

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.18 FLOW VELOCITY(FEET/SEC.) = 9.16

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

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

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

MAINLINE Tc(MIN.) = 82.96

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.926

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

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

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

MAINLINE Tc(MIN.) = 82.96

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.926

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

EFFECTIVE AREA(ACRES) = 3834.50 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5689.9 PEAK FLOW RATE(CFS) = 2391.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 82.96
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.926
 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) = 14.67
 EFFECTIVE AREA(ACRES) = 3860.20 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5715.6 PEAK FLOW RATE(CFS) = 2391.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 82.96
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.926
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.00	0.30	0.100	56
AGRICULTURAL POOR COVER "FALLOW"	B	3.70	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	2.10	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	0.20	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807

SUBAREA AREA(ACRES) = 10.70 SUBAREA RUNOFF(CFS) = 6.58
 EFFECTIVE AREA(ACRES) = 3870.90 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5726.3 PEAK FLOW RATE(CFS) = 2391.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 82.96
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.926
 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	0.50	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	8.20	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 5.12
 EFFECTIVE AREA(ACRES) = 3879.60 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5735.0 PEAK FLOW RATE(CFS) = 2391.35
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: 3A25EVRL.DNA
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	985.27	13.67	0.30(0.13)	0.43	435.6	120.00
2	984.49	13.73	0.30(0.13)	0.43	436.6	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<<<<<

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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	1917.45	37.06	1.392	0.30(0.26)	0.88	1696.5	31100.00
2	2391.35	82.96	0.926	0.30(0.25)	0.84	3879.6	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	985.27	13.67	2.612	0.30(0.13)	0.43	435.6 120.00
2	984.49	13.73	2.603	0.30(0.13)	0.43	436.6 110.00
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 (ACRES)	Ae (ACRES)	HEADWATER NODE
1	2457.03	13.67	2.612	0.30(0.21)	0.70	1061.4	120.00
2	2457.11	13.73	2.603	0.30(0.21)	0.70	1065.1	110.00
3	2449.67	20.84	1.957	0.30(0.22)	0.72	1458.3	100.00
4	2458.05	23.57	1.818	0.30(0.22)	0.74	1589.1	150.00
5	2499.35	37.06	1.392	0.30(0.23)	0.78	2206.7	31100.00
6	2758.17	82.96	0.926	0.30(0.24)	0.80	4389.8	13222.00

TOTAL AREA (ACRES) = 6245.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2758.17 Tc(MIN.) = 82.963
EFFECTIVE AREA(ACRES) = 4389.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.70
TOTAL AREA (ACRES) = 6245.2
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50
CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.19
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.887
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) = 2777.72
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.61
AVERAGE FLOW DEPTH(FEET) = 4.19 TRAVEL TIME(MIN.) = 6.93
Tc(MIN.) = 89.89
SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 39.11
EFFECTIVE AREA(ACRES) = 4458.60 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 2758.17
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.17 FLOW VELOCITY(FEET/SEC.) = 10.58
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13306.00 = 18026.13 FEET.

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.89
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.887
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) = 28.38
EFFECTIVE AREA(ACRES) = 4504.90 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) = 2758.17
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 89.89
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.887
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) = 32.26
 EFFECTIVE AREA (ACRES) = 4563.50 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) = 2758.17
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 89.89

* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.887

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) = 5.41

EFFECTIVE AREA (ACRES) = 4573.20 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) = 2758.17

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 89.89

* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.887

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) = 1.27

EFFECTIVE AREA (ACRES) = 4575.50 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) = 2758.17

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 245.50 DOWNSTREAM (FEET) = 220.00

CHANNEL LENGTH THRU SUBAREA (FEET) = 1543.21 CHANNEL SLOPE = 0.0165

GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

* ESTIMATED CHANNEL HEIGHT (FEET) = 4.12

CHANNEL FLOW THRU SUBAREA (CFS) = 2758.17

FLOW VELOCITY (FEET/SEC.) = 10.74 FLOW DEPTH (FEET) = 4.12

TRAVEL TIME (MIN.) = 2.39 Tc (MIN.) = 92.28

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13307.00 = 19569.34 FEET.

 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 92.28

* 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	0.20	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	0.10	0.30	1.000	69
AGRICULTURAL FAIR COVER "ORCHARDS"	B	0.20	0.30	1.000	65
NATURAL POOR COVER "BARREN"	B	3.70	0.30	1.000	86
COMMERCIAL	B	0.30	0.30	0.100	56
NATURAL FAIR COVER "GRASS"	B	3.20	0.30	1.000	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.942

SUBAREA AREA (ACRES) = 7.70 SUBAREA RUNOFF (CFS) = 4.12

EFFECTIVE AREA (ACRES) = 4583.20 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) = 2758.17

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 92.28

* 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
NATURAL FAIR COVER "WOODLAND, GRASS"	B	3.60	0.30	1.000	65
NATURAL FAIR COVER "GRASS"	B	1.90	0.30	1.000	69

NATURAL FAIR COVER

"WOODLAND,GRASS" B 0.60 0.30 1.000 65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA(ACRES) = 6.10 SUBAREA RUNOFF(CFS) = 3.17
 EFFECTIVE AREA(ACRES) = 4589.30 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) = 2758.17
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56

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

 ELEVATION DATA: UPSTREAM(FEET) = 220.00 DOWNSTREAM(FEET) = 212.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 925.62 CHANNEL SLOPE = 0.0086
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 4.94
 CHANNEL FLOW THRU SUBAREA(CFS) = 2758.17
 FLOW VELOCITY(FEET/SEC.) = 8.62 FLOW DEPTH(FEET) = 4.94
 TRAVEL TIME(MIN.) = 1.79 Tc(MIN.) = 94.07
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

 MAINLINE Tc(MIN.) = 94.07
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
 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) = 5.66
 EFFECTIVE AREA(ACRES) = 4598.80 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) = 2758.17
 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<<<<<

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MAINLINE Tc(MIN.) = 94.07
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
 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) = 49.09
 EFFECTIVE AREA(ACRES) = 4674.40 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) = 2758.17
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

 MAINLINE Tc(MIN.) = 94.07
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
 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) = 8.16
 EFFECTIVE AREA(ACRES) = 4690.00 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) = 2758.17
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

 MAINLINE Tc(MIN.) = 94.07
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871

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) = 49.92
EFFECTIVE AREA(ACRES) = 4770.40 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) = 2758.17
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 94.07
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
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) = 0.55
EFFECTIVE AREA(ACRES) = 4771.40 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) = 2758.17
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 94.07
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
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) = 1.08
EFFECTIVE AREA(ACRES) = 4773.50 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) = 2758.17
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 94.07
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.871
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) = 6.03
EFFECTIVE AREA(ACRES) = 4785.10 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) = 2758.17
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: RI25EV29.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16768.65	15.23	0.30(0.27)	0.90	2703.5	50200.00
2	17647.42	19.11	0.30(0.27)	0.90	3618.8	50400.00
3	19835.20	29.05	0.30(0.27)	0.90	5908.4	50300.00

4	22338.25	40.03	0.30	(0.27)	0.91	8919.9	600.00
5	25163.47	57.07	0.30	(0.28)	0.94	14932.1	40100.00
6	26689.78	64.86	0.30	(0.29)	0.95	17706.6	11801.00
7	29077.02	75.60	0.30	(0.29)	0.96	22237.2	11530.00
8	30429.79	84.29	0.30	(0.29)	0.97	26894.0	11910.00
9	32505.43	94.30	0.30	(0.29)	0.97	33197.0	11350.00
10	33119.63	99.03	0.30	(0.29)	0.97	36371.2	11130.00
11	32994.52	105.08	0.30	(0.29)	0.98	39297.8	12300.00
12	32907.52	108.96	0.30	(0.29)	0.98	41358.6	11620.00
13	32597.90	113.79	0.30	(0.29)	0.98	43558.4	12400.00
14	31855.69	123.23	0.30	(0.29)	0.98	46959.9	12201.00
15	31095.10	130.63	0.30	(0.29)	0.98	48853.0	12231.00
16	30292.49	138.03	0.30	(0.29)	0.98	50405.7	10400.00
17	28979.20	147.34	0.30	(0.29)	0.98	51852.1	12010.00
18	28076.11	152.63	0.30	(0.29)	0.98	52114.7	10210.00
19	27509.76	156.62	0.30	(0.29)	0.98	52261.5	12000.00
20	24397.40	182.57	0.30	(0.29)	0.98	52874.4	10100.00

TOTAL AREA (ACRES) = 52874.4

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	16768.65	15.23	0.30 (0.27)	0.90	2703.5	50200.00
2	17647.42	19.11	0.30 (0.27)	0.90	3618.8	50400.00
3	19835.20	29.05	0.30 (0.27)	0.90	5908.4	50300.00
4	22338.25	40.03	0.30 (0.27)	0.91	8919.9	600.00
5	25163.47	57.07	0.30 (0.28)	0.94	14932.1	40100.00
6	26689.78	64.86	0.30 (0.29)	0.95	17706.6	11801.00
7	29077.02	75.60	0.30 (0.29)	0.96	22237.2	11530.00
8	30429.79	84.29	0.30 (0.29)	0.97	26894.0	11910.00
9	32505.43	94.30	0.30 (0.29)	0.97	33197.0	11350.00
10	33119.63	99.03	0.30 (0.29)	0.97	36371.2	11130.00
11	32994.52	105.08	0.30 (0.29)	0.98	39297.8	12300.00
12	32907.52	108.96	0.30 (0.29)	0.98	41358.6	11620.00
13	32597.90	113.79	0.30 (0.29)	0.98	43558.4	12400.00
14	31855.69	123.23	0.30 (0.29)	0.98	46959.9	12201.00
15	31095.10	130.63	0.30 (0.29)	0.98	48853.0	12231.00
16	30292.49	138.03	0.30 (0.29)	0.98	50405.7	10400.00
17	28979.20	147.34	0.30 (0.29)	0.98	51852.1	12010.00
18	28076.11	152.63	0.30 (0.29)	0.98	52114.7	10210.00
19	27509.76	156.62	0.30 (0.29)	0.98	52261.5	12000.00
20	24397.40	182.57	0.30 (0.29)	0.98	52874.4	10100.00

TOTAL AREA (ACRES) = 52874.4

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) = 16.36
CHANNEL FLOW THRU SUBAREA (CFS) = 33119.63
FLOW VELOCITY (FEET/SEC.) = 7.18 FLOW DEPTH (FEET) = 16.36
TRAVEL TIME (MIN.) = 3.22 Tc (MIN.) = 102.25
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

>>>>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	16768.65	19.21	2.066	0.30 (0.27)	0.90	2703.5	50200.00
2	17647.42	23.03	1.846	0.30 (0.27)	0.90	3618.8	50400.00
3	19835.20	32.82	1.477	0.30 (0.27)	0.90	5908.4	50300.00
4	22338.25	43.67	1.277	0.30 (0.27)	0.91	8919.9	600.00
5	25163.47	60.58	1.052	0.30 (0.28)	0.94	14932.1	40100.00
6	26689.78	68.30	1.008	0.30 (0.29)	0.95	17706.6	11801.00
7	29077.02	78.96	0.948	0.30 (0.29)	0.96	22237.2	11530.00
8	30429.79	87.60	0.900	0.30 (0.29)	0.97	26894.0	11910.00
9	32505.43	97.54	0.858	0.30 (0.29)	0.97	33197.0	11350.00
10	33119.63	102.25	0.841	0.30 (0.29)	0.97	36371.2	11130.00
11	32994.52	108.31	0.818	0.30 (0.29)	0.98	39297.8	12300.00
12	32907.52	112.19	0.804	0.30 (0.29)	0.98	41358.6	11620.00
13	32597.90	117.03	0.786	0.30 (0.29)	0.98	43558.4	12400.00
14	31855.69	126.49	0.761	0.30 (0.29)	0.98	46959.9	12201.00
15	31095.10	133.92	0.745	0.30 (0.29)	0.98	48853.0	12231.00
16	30292.49	141.35	0.729	0.30 (0.29)	0.98	50405.7	10400.00
17	28979.20	150.69	0.709	0.30 (0.29)	0.98	51852.1	12010.00
18	28076.11	156.02	0.698	0.30 (0.29)	0.98	52114.7	10210.00
19	27509.76	160.03	0.689	0.30 (0.29)	0.98	52261.5	12000.00
20	24397.40	186.11	0.640	0.30 (0.29)	0.98	52874.4	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	2457.03	25.17	1.738	0.30 (0.21)	0.71	1456.7	120.00
2	2457.11	25.23	1.735	0.30 (0.21)	0.71	1460.4	110.00
3	2449.67	32.37	1.486	0.30 (0.22)	0.73	1853.6	100.00
4	2458.05	35.08	1.432	0.30 (0.22)	0.74	1984.4	150.00
5	2499.35	48.52	1.204	0.30 (0.23)	0.77	2602.0	31100.00
6	2758.17	94.07	0.871	0.30 (0.24)	0.79	4785.1	13222.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19046.53	19.21	2.066	0.30 (0.25)	0.84	3815.1	50200.00
2	20053.95	23.03	1.846	0.30 (0.25)	0.85	4951.3	50400.00
3	20583.90	25.17	1.738	0.30 (0.25)	0.85	5577.2	120.00
4	20597.17	25.23	1.735	0.30 (0.25)	0.85	5594.8	110.00
5	22183.21	32.37	1.486	0.30 (0.26)	0.86	7655.6	100.00

6	22286.28	32.82	1.477	0.30 (0.26)	0.86	7783.9	50300.00
7	22813.68	35.08	1.432	0.30 (0.26)	0.86	8518.9	150.00
8	24822.70	43.67	1.277	0.30 (0.26)	0.88	11299.0	600.00
9	25647.92	48.52	1.204	0.30 (0.27)	0.89	13246.3	31100.00
10	27731.34	60.58	1.052	0.30 (0.27)	0.91	18112.1	40100.00
11	29301.50	68.30	1.008	0.30 (0.28)	0.92	21256.5	11801.00
12	31749.31	78.96	0.948	0.30 (0.28)	0.93	26297.9	11530.00
13	33151.18	87.60	0.900	0.30 (0.28)	0.94	31368.9	11910.00
14	34539.43	94.07	0.871	0.30 (0.28)	0.95	35783.0	13222.00
15	35207.73	97.54	0.858	0.30 (0.28)	0.95	37982.1	11350.00
16	35746.03	102.25	0.841	0.30 (0.29)	0.95	41156.3	11130.00
17	35523.41	108.31	0.818	0.30 (0.29)	0.96	44082.9	12300.00
18	35373.88	112.19	0.804	0.30 (0.29)	0.96	46143.7	11620.00
19	34986.20	117.03	0.786	0.30 (0.29)	0.96	48343.5	12400.00
20	34135.45	126.49	0.761	0.30 (0.29)	0.96	51745.0	12201.00
21	33305.30	133.92	0.745	0.30 (0.29)	0.96	53638.1	12231.00
22	32433.18	141.35	0.729	0.30 (0.29)	0.96	55190.8	10400.00
23	31032.38	150.69	0.709	0.30 (0.29)	0.96	56637.2	12010.00
24	30079.42	156.02	0.698	0.30 (0.29)	0.96	56899.8	10210.00
25	29475.57	160.03	0.689	0.30 (0.29)	0.96	57046.6	12000.00
26	26150.98	186.11	0.640	0.30 (0.29)	0.96	57659.5	10100.00

TOTAL AREA (ACRES) = 59514.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 35746.03 Tc (MIN.) = 102.253
EFFECTIVE AREA (ACRES) = 41156.28 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
TOTAL AREA (ACRES) = 59514.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 59514.9 TC (MIN.) = 102.25
EFFECTIVE AREA (ACRES) = 41156.28 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.953
PEAK FLOW RATE (CFS) = 35746.03

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19046.53	19.21	2.066	0.30 (0.25)	0.84	3815.1	50200.00
2	20053.95	23.03	1.846	0.30 (0.25)	0.85	4951.3	50400.00
3	20583.90	25.17	1.738	0.30 (0.25)	0.85	5577.2	120.00
4	20597.17	25.23	1.735	0.30 (0.25)	0.85	5594.8	110.00
5	22183.21	32.37	1.486	0.30 (0.26)	0.86	7655.6	100.00
6	22286.28	32.82	1.477	0.30 (0.26)	0.86	7783.9	50300.00
7	22813.68	35.08	1.432	0.30 (0.26)	0.86	8518.9	150.00
8	24822.70	43.67	1.277	0.30 (0.26)	0.88	11299.0	600.00
9	25647.92	48.52	1.204	0.30 (0.27)	0.89	13246.3	31100.00
10	27731.34	60.58	1.052	0.30 (0.27)	0.91	18112.1	40100.00
11	29301.50	68.30	1.008	0.30 (0.28)	0.92	21256.5	11801.00
12	31749.31	78.96	0.948	0.30 (0.28)	0.93	26297.9	11530.00
13	33151.18	87.60	0.900	0.30 (0.28)	0.94	31368.9	11910.00
14	34539.43	94.07	0.871	0.30 (0.28)	0.95	35783.0	13222.00
15	35207.73	97.54	0.858	0.30 (0.28)	0.95	37982.1	11350.00
16	35746.03	102.25	0.841	0.30 (0.29)	0.95	41156.3	11130.00
17	35523.41	108.31	0.818	0.30 (0.29)	0.96	44082.9	12300.00
18	35373.88	112.19	0.804	0.30 (0.29)	0.96	46143.7	11620.00
19	34986.20	117.03	0.786	0.30 (0.29)	0.96	48343.5	12400.00

20	34135.45	126.49	0.761	0.30 (0.29)	0.96	51745.0	12201.00
21	33305.30	133.92	0.745	0.30 (0.29)	0.96	53638.1	12231.00
22	32433.18	141.35	0.729	0.30 (0.29)	0.96	55190.8	10400.00
23	31032.38	150.69	0.709	0.30 (0.29)	0.96	56637.2	12010.00
24	30079.42	156.02	0.698	0.30 (0.29)	0.96	56899.8	10210.00
25	29475.57	160.03	0.689	0.30 (0.29)	0.96	57046.6	12000.00
26	26150.98	186.11	0.640	0.30 (0.29)	0.96	57659.5	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
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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S34- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV34.DAT
TIME/DATE OF STUDY: 09:44 06/14/2019

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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; 4.808
- 2) 10.00; 3.143
- 3) 15.00; 2.408
- 4) 20.00; 1.996
- 5) 25.00; 1.742
- 6) 30.00; 1.531
- 7) 40.00; 1.331
- 8) 50.00; 1.178
- 9) 60.00; 1.052
- 10) 90.00; 0.883
- 11) 120.00; 0.772
- 12) 180.00; 0.643
- 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

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

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PEAK FLOWRATE TABLE FILE NAME: RI25EV33.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19046.53	19.21	0.30 (0.25)	0.84	3815.1	50200.00
2	20597.17	25.23	0.30 (0.25)	0.85	5594.8	110.00
3	22813.68	35.08	0.30 (0.26)	0.86	8518.9	150.00
4	24822.70	43.67	0.30 (0.26)	0.88	11299.0	600.00
5	25647.92	48.52	0.30 (0.27)	0.89	13246.3	31100.00
6	27731.34	60.58	0.30 (0.27)	0.91	18112.1	40100.00
7	29301.50	68.30	0.30 (0.28)	0.92	21256.5	11801.00
8	31749.31	78.96	0.30 (0.28)	0.93	26297.9	11530.00
9	33151.18	87.60	0.30 (0.28)	0.94	31368.9	11910.00
10	35207.73	97.54	0.30 (0.28)	0.95	37982.1	11350.00
11	35746.03	102.25	0.30 (0.29)	0.95	41156.3	11130.00
12	35523.41	108.31	0.30 (0.29)	0.96	44082.9	12300.00
13	34986.20	117.03	0.30 (0.29)	0.96	48343.5	12400.00
14	34135.45	126.49	0.30 (0.29)	0.96	51745.0	12201.00
15	33305.30	133.92	0.30 (0.29)	0.96	53638.1	12231.00
16	32433.18	141.35	0.30 (0.29)	0.96	55190.8	10400.00
17	31032.38	150.69	0.30 (0.29)	0.96	56637.2	12010.00
18	30079.42	156.02	0.30 (0.29)	0.96	56899.8	10210.00
19	29475.57	160.03	0.30 (0.29)	0.96	57046.6	12000.00
20	26150.98	186.11	0.30 (0.29)	0.96	57659.5	10100.00
TOTAL AREA (ACRES) =						57659.5

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	19046.53	19.21	0.30 (0.25)	0.84	3815.1	50200.00
2	20597.17	25.23	0.30 (0.25)	0.85	5594.8	110.00
3	22813.68	35.08	0.30 (0.26)	0.86	8518.9	150.00
4	24822.70	43.67	0.30 (0.26)	0.88	11299.0	600.00
5	25647.92	48.52	0.30 (0.27)	0.89	13246.3	31100.00
6	27731.34	60.58	0.30 (0.27)	0.91	18112.1	40100.00
7	29301.50	68.30	0.30 (0.28)	0.92	21256.5	11801.00
8	31749.31	78.96	0.30 (0.28)	0.93	26297.9	11530.00
9	33151.18	87.60	0.30 (0.28)	0.94	31368.9	11910.00
10	35207.73	97.54	0.30 (0.28)	0.95	37982.1	11350.00
11	35746.03	102.25	0.30 (0.29)	0.95	41156.3	11130.00
12	35523.41	108.31	0.30 (0.29)	0.96	44082.9	12300.00
13	34986.20	117.03	0.30 (0.29)	0.96	48343.5	12400.00

14	34135.45	126.49	0.30	(0.29)	0.96	51745.0	12201.00
15	33305.30	133.92	0.30	(0.29)	0.96	53638.1	12231.00
16	32433.18	141.35	0.30	(0.29)	0.96	55190.8	10400.00
17	31032.38	150.69	0.30	(0.29)	0.96	56637.2	12010.00
18	30079.42	156.02	0.30	(0.29)	0.96	56899.8	10210.00
19	29475.57	160.03	0.30	(0.29)	0.96	57046.6	12000.00
20	26150.98	186.11	0.30	(0.29)	0.96	57659.5	10100.00

TOTAL AREA (ACRES) = 57659.5

FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 215.00 DOWNSTREAM (FEET) = 209.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 623.02 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) = 8.29
 CHANNEL FLOW THRU SUBAREA (CFS) = 35746.03
 FLOW VELOCITY (FEET/SEC.) = 17.86 FLOW DEPTH (FEET) = 8.29
 TRAVEL TIME (MIN.) = 0.58 Tc (MIN.) = 102.83
 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: 0610505W.DNA
 MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	233.86	20.08	0.30 (0.30)	0.99	153.2	50500.00

TOTAL AREA (ACRES) = 153.2

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	19046.53	19.93	2.002	0.30 (0.25)	0.84	3815.1	50200.00
2	20597.17	25.93	1.703	0.30 (0.25)	0.85	5594.8	110.00
3	22813.68	35.75	1.416	0.30 (0.26)	0.86	8518.9	150.00
4	24822.70	44.33	1.265	0.30 (0.26)	0.88	11299.0	600.00
5	25647.92	49.17	1.191	0.30 (0.27)	0.89	13246.3	31100.00
6	27731.34	61.21	1.045	0.30 (0.27)	0.91	18112.1	40100.00
7	29301.50	68.92	1.002	0.30 (0.28)	0.92	21256.5	11801.00
8	31749.31	79.56	0.942	0.30 (0.28)	0.93	26297.9	11530.00
9	33151.18	88.20	0.893	0.30 (0.28)	0.94	31368.9	11910.00
10	35207.73	98.13	0.853	0.30 (0.28)	0.95	37982.1	11350.00
11	35746.03	102.83	0.836	0.30 (0.29)	0.95	41156.3	11130.00
12	35523.41	108.89	0.813	0.30 (0.29)	0.96	44082.9	12300.00

13	34986.20	117.62	0.781	0.30 (0.29)	0.96	48343.5	12400.00
14	34135.45	127.08	0.757	0.30 (0.29)	0.96	51745.0	12201.00
15	33305.30	134.51	0.741	0.30 (0.29)	0.96	53638.1	12231.00
16	32433.18	141.95	0.725	0.30 (0.29)	0.96	55190.8	10400.00
17	31032.38	151.30	0.705	0.30 (0.29)	0.96	56637.2	12010.00
18	30079.42	156.64	0.693	0.30 (0.29)	0.96	56899.8	10210.00
19	29475.57	160.65	0.685	0.30 (0.29)	0.96	57046.6	12000.00
20	26150.98	186.76	0.637	0.30 (0.29)	0.96	57659.5	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	233.86	20.08	1.992	0.30 (0.30)	0.99	153.2	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 6247.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19279.99	19.93	2.002	0.30 (0.25)	0.85	3967.2	50200.00
2	19319.15	20.08	1.992	0.30 (0.25)	0.85	4012.8	50500.00
3	20791.14	25.93	1.703	0.30 (0.26)	0.85	5748.0	110.00
4	22968.13	35.75	1.416	0.30 (0.26)	0.87	8672.1	150.00
5	24956.31	44.33	1.265	0.30 (0.26)	0.88	11452.2	600.00
6	25771.32	49.17	1.191	0.30 (0.27)	0.89	13399.5	31100.00
7	27834.67	61.21	1.045	0.30 (0.27)	0.92	18265.2	40100.00
8	29398.84	68.92	1.002	0.30 (0.28)	0.92	21409.7	11801.00
9	31838.38	79.56	0.942	0.30 (0.28)	0.93	26451.1	11530.00
10	33233.55	88.20	0.893	0.30 (0.28)	0.94	31522.1	11910.00
11	35284.54	98.13	0.853	0.30 (0.28)	0.95	38135.3	11350.00
12	35820.45	102.83	0.836	0.30 (0.29)	0.95	41309.5	11130.00
13	35594.73	108.89	0.813	0.30 (0.29)	0.96	44236.0	12300.00
14	35053.07	117.62	0.781	0.30 (0.29)	0.96	48496.6	12400.00
15	34199.01	127.08	0.757	0.30 (0.29)	0.96	51898.2	12201.00
16	33366.66	134.51	0.741	0.30 (0.29)	0.96	53791.2	12231.00
17	32492.33	141.95	0.725	0.30 (0.29)	0.96	55344.0	10400.00
18	31088.75	151.30	0.705	0.30 (0.29)	0.96	56790.4	12010.00
19	30134.22	156.64	0.693	0.30 (0.29)	0.96	57053.0	10210.00
20	29529.17	160.65	0.685	0.30 (0.29)	0.96	57199.8	12000.00
21	26197.96	186.76	0.637	0.30 (0.29)	0.96	57812.7	10100.00

TOTAL AREA (ACRES) = 57812.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 35820.45 Tc (MIN.) = 102.834
 EFFECTIVE AREA (ACRES) = 41309.46 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA (ACRES) = 57812.7
 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) = 9.97
 CHANNEL FLOW THRU SUBAREA(CFS) = 35820.45
 FLOW VELOCITY(FEET/SEC.) = 14.39 FLOW DEPTH(FEET) = 9.97
 TRAVEL TIME(MIN.) = 0.46 Tc(MIN.) = 103.29
 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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0610506W.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	84.62	17.59	0.30	(0.30)	1.00	49.6	50600.00
TOTAL AREA (ACRES) =							49.6

 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	19279.99	20.49	1.971	0.30(0.25)	0.85	3967.2	50200.00
2	19319.15	20.64	1.963	0.30(0.25)	0.85	4012.8	50500.00
3	20791.14	26.48	1.679	0.30(0.26)	0.85	5748.0	110.00
4	22968.13	36.28	1.405	0.30(0.26)	0.87	8672.1	150.00
5	24956.31	44.84	1.257	0.30(0.26)	0.88	11452.2	600.00
6	25771.32	49.68	1.183	0.30(0.27)	0.89	13399.5	31100.00
7	27834.67	61.71	1.042	0.30(0.27)	0.92	18265.2	40100.00
8	29398.84	69.41	0.999	0.30(0.28)	0.92	21409.7	11801.00
9	31838.38	80.04	0.939	0.30(0.28)	0.93	26451.1	11530.00
10	33233.55	88.67	0.891	0.30(0.28)	0.94	31522.1	11910.00
11	35284.54	98.59	0.851	0.30(0.28)	0.95	38135.3	11350.00
12	35820.45	103.29	0.834	0.30(0.29)	0.95	41309.5	11130.00
13	35594.73	109.35	0.811	0.30(0.29)	0.96	44236.0	12300.00
14	35053.07	118.08	0.779	0.30(0.29)	0.96	48496.6	12400.00
15	34199.01	127.54	0.756	0.30(0.29)	0.96	51898.2	12201.00
16	33366.66	134.98	0.740	0.30(0.29)	0.96	53791.2	12231.00
17	32492.33	142.42	0.724	0.30(0.29)	0.96	55344.0	10400.00
18	31088.75	151.78	0.704	0.30(0.29)	0.96	56790.4	12010.00
19	30134.22	157.12	0.692	0.30(0.29)	0.96	57053.0	10210.00
20	29529.17	161.14	0.684	0.30(0.29)	0.96	57199.8	12000.00
21	26197.96	187.26	0.636	0.30(0.29)	0.96	57812.7	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	84.62	17.59	2.195	0.30(0.30)	1.00	49.6	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	18787.80	17.59	2.195	0.30(0.25)	0.85	3453.8	50600.00
2	19354.61	20.49	1.971	0.30(0.25)	0.85	4016.8	50200.00
3	19393.42	20.64	1.963	0.30(0.25)	0.85	4062.4	50500.00
4	20852.74	26.48	1.679	0.30(0.26)	0.85	5797.6	110.00
5	23017.49	36.28	1.405	0.30(0.26)	0.87	8721.7	150.00
6	24999.04	44.84	1.257	0.30(0.26)	0.88	11501.8	600.00
7	25810.74	49.68	1.183	0.30(0.27)	0.89	13449.0	31100.00
8	27867.82	61.71	1.042	0.30(0.27)	0.92	18314.8	40100.00
9	29430.05	69.41	0.999	0.30(0.28)	0.92	21459.3	11801.00
10	31866.93	80.04	0.939	0.30(0.28)	0.93	26500.7	11530.00
11	33259.92	88.67	0.891	0.30(0.28)	0.94	31571.7	11910.00
12	35309.16	98.59	0.851	0.30(0.28)	0.95	38184.9	11350.00
13	35844.29	103.29	0.834	0.30(0.29)	0.95	41359.1	11130.00
14	35617.57	109.35	0.811	0.30(0.29)	0.96	44285.6	12300.00
15	35074.47	118.08	0.779	0.30(0.29)	0.96	48546.2	12400.00
16	34219.36	127.54	0.756	0.30(0.29)	0.96	51947.8	12201.00
17	33386.30	134.98	0.740	0.30(0.29)	0.96	53840.8	12231.00
18	32511.26	142.42	0.724	0.30(0.29)	0.96	55393.6	10400.00
19	31106.78	151.78	0.704	0.30(0.29)	0.96	56840.0	12010.00
20	30151.73	157.12	0.692	0.30(0.29)	0.96	57102.6	10210.00
21	29546.30	161.14	0.684	0.30(0.29)	0.96	57249.4	12000.00
22	26212.97	187.26	0.636	0.30(0.29)	0.96	57862.3	10100.00
TOTAL AREA (ACRES) =							57862.3

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 35844.29 Tc(MIN.) = 103.292
 EFFECTIVE AREA(ACRES) = 41359.05 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 57862.3
 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

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

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ELEVATION DATA: UPSTREAM(FEET) = 207.00 DOWNSTREAM(FEET) = 195.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1601.97 CHANNEL SLOPE = 0.0075
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 8.92
 CHANNEL FLOW THRU SUBAREA(CFS) = 35844.29
 FLOW VELOCITY(FEET/SEC.) = 16.42 FLOW DEPTH(FEET) = 8.92
 TRAVEL TIME(MIN.) = 1.63 Tc(MIN.) = 104.92
 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<<<<<

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MAINLINE Tc(MIN.) = 104.92
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.828
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER					
"GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, STRAIGHT ROW"	B	1.80	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) = 20.30 SUBAREA RUNOFF (CFS) = 9.64
EFFECTIVE AREA (ACRES) = 41379.35 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 57882.6 PEAK FLOW RATE (CFS) = 35844.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 104.92
* 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	3.50	0.30	1.000	81
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	12.60	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) = 22.00 SUBAREA RUNOFF (CFS) = 10.45
EFFECTIVE AREA (ACRES) = 41401.35 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 57904.6 PEAK FLOW RATE (CFS) = 35844.29
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 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			

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 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	18787.80	19.61	2.028	0.30 (0.26)	0.85	3496.1	50600.00
2	19354.61	22.49	1.869	0.30 (0.26)	0.85	4059.1	50200.00
3	19393.42	22.64	1.862	0.30 (0.26)	0.85	4104.7	50500.00
4	20852.74	28.43	1.597	0.30 (0.26)	0.85	5839.9	110.00
5	23017.49	38.17	1.368	0.30 (0.26)	0.87	8764.0	150.00
6	24999.04	46.67	1.229	0.30 (0.26)	0.88	11544.1	600.00
7	25810.74	51.49	1.159	0.30 (0.27)	0.89	13491.3	31100.00
8	27867.82	63.48	1.032	0.30 (0.27)	0.92	18357.1	40100.00
9	29430.05	71.14	0.989	0.30 (0.28)	0.92	21501.6	11801.00
10	31866.93	81.73	0.930	0.30 (0.28)	0.93	26543.0	11530.00
11	33259.92	90.33	0.882	0.30 (0.28)	0.94	31614.0	11910.00
12	35309.16	100.22	0.845	0.30 (0.28)	0.95	38227.2	11350.00
13	35844.29	104.92	0.828	0.30 (0.29)	0.95	41401.4	11130.00
14	35617.57	110.98	0.805	0.30 (0.29)	0.96	44327.9	12300.00
15	35074.47	119.72	0.773	0.30 (0.29)	0.96	48588.5	12400.00
16	34219.36	129.19	0.752	0.30 (0.29)	0.96	51990.1	12201.00
17	33386.30	136.65	0.736	0.30 (0.29)	0.96	53883.1	12231.00
18	32511.26	144.10	0.720	0.30 (0.29)	0.96	55435.9	10400.00
19	31106.78	153.49	0.700	0.30 (0.29)	0.96	56882.3	12010.00
20	30151.73	158.84	0.688	0.30 (0.29)	0.96	57144.9	10210.00
21	29546.30	162.87	0.680	0.30 (0.29)	0.96	57291.7	12000.00
22	26212.97	189.07	0.634	0.30 (0.29)	0.96	57904.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 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	676.18	9.97	3.155	0.30 (0.11)	0.38	243.5	429.00
2	719.57	11.48	2.926	0.30 (0.11)	0.38	280.3	425.00
3	729.64	11.90	2.864	0.30 (0.11)	0.38	290.5	400.00
4	756.99	13.36	2.648	0.30 (0.11)	0.38	326.6	300.00
5	801.01	18.55	2.115	0.30 (0.11)	0.38	439.8	210.00
6	788.68	20.66	1.962	0.30 (0.11)	0.38	466.8	410.00
7	782.25	21.72	1.909	0.30 (0.11)	0.38	480.1	200.00

8 780.36 22.29 1.880 0.30(0.11) 0.38 486.6 230.00
 9 762.79 23.40 1.823 0.30(0.11) 0.37 491.2 220.50
 LONGEST FLOWPATH FROM NODE 230.00 TO NODE 13406.00 = 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	16290.60	9.97	3.155	0.30(0.24)	0.79	2020.5	429.00
2	17284.64	11.48	2.926	0.30(0.24)	0.79	2327.0	425.00
3	17503.77	11.90	2.864	0.30(0.24)	0.79	2412.1	400.00
4	18041.76	13.36	2.648	0.30(0.24)	0.79	2709.8	300.00
5	19449.45	18.55	2.115	0.30(0.24)	0.80	3747.8	210.00
6	19582.65	19.61	2.028	0.30(0.24)	0.80	3949.4	50600.00
7	19784.05	20.66	1.962	0.30(0.24)	0.80	4169.0	410.00
8	19985.30	21.72	1.909	0.30(0.24)	0.80	4388.6	200.00
9	20094.50	22.29	1.880	0.30(0.24)	0.80	4505.5	230.00
10	20131.71	22.49	1.869	0.30(0.24)	0.80	4546.5	50200.00
11	20168.20	22.64	1.862	0.30(0.24)	0.80	4592.7	50500.00
12	20347.48	23.40	1.823	0.30(0.24)	0.80	4823.3	220.50
13	21514.73	28.43	1.597	0.30(0.25)	0.82	6331.1	110.00
14	23577.13	38.17	1.368	0.30(0.25)	0.84	9255.2	150.00
15	25496.83	46.67	1.229	0.30(0.26)	0.86	12035.3	600.00
16	26277.46	51.49	1.159	0.30(0.26)	0.87	13982.5	31100.00
17	28278.00	63.48	1.032	0.30(0.27)	0.90	18848.3	40100.00
18	29820.98	71.14	0.989	0.30(0.27)	0.91	21992.8	11801.00
19	32231.27	81.73	0.930	0.30(0.28)	0.92	27034.2	11530.00
20	33602.93	90.33	0.882	0.30(0.28)	0.93	32105.2	11910.00
21	35635.86	100.22	0.845	0.30(0.28)	0.94	38718.4	11350.00
22	36163.24	104.92	0.828	0.30(0.28)	0.95	41892.6	11130.00
23	35926.53	110.98	0.805	0.30(0.28)	0.95	44819.1	12300.00
24	35369.01	119.72	0.773	0.30(0.29)	0.95	49079.7	12400.00
25	34504.62	129.19	0.752	0.30(0.29)	0.95	52481.3	12201.00
26	33664.41	136.65	0.736	0.30(0.29)	0.96	54374.3	12231.00
27	32782.23	144.10	0.720	0.30(0.29)	0.96	55927.1	10400.00
28	31368.75	153.49	0.700	0.30(0.29)	0.96	57373.5	12010.00
29	30408.57	158.84	0.688	0.30(0.29)	0.96	57636.1	10210.00
30	29799.28	162.87	0.680	0.30(0.29)	0.96	57782.9	12000.00
31	26445.69	189.07	0.634	0.30(0.29)	0.96	58395.8	10100.00
TOTAL AREA (ACRES) =		58395.8					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 36163.24 Tc(MIN.) = 104.918
 EFFECTIVE AREA(ACRES) = 41892.55 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 58395.8
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

 FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.89

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.817
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 7.00 0.30 1.000 -
 USER-DEFINED - 3.30 0.30 1.000 -
 USER-DEFINED - 0.40 0.30 0.100 -
 USER-DEFINED - 1.40 0.30 1.000 -
 USER-DEFINED - 0.30 0.30 0.100 -
 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) = 36166.21
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.66
 AVERAGE FLOW DEPTH(FEET) = 9.89 TRAVEL TIME(MIN.) = 2.80
 Tc(MIN.) = 107.71
 SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 5.95
 EFFECTIVE AREA(ACRES) = 41904.95 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 58408.2 PEAK FLOW RATE(CFS) = 36163.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 9.89

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 9.89 FLOW VELOCITY(FEET/SEC.) = 14.65
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0610507W.DNA
 MEMORY BANK # 2 DEFINED AS FOLLOWS:
 STREAM Q Tc Fp(Fm) Ap Ae HEADWATER
 NUMBER (CFS) (MIN.) (INCH/HR) (ACRES) NODE
 1 358.70 20.30 0.30(0.30) 0.99 236.8 50700.00
 TOTAL AREA(ACRES) = 236.8

 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	16290.60	13.61	2.612	0.30(0.24)	0.80	2032.9	429.00
2	17284.64	15.05	2.403	0.30(0.24)	0.80	2339.4	425.00
3	17503.77	15.46	2.370	0.30(0.24)	0.80	2424.5	400.00

4	18041.76	16.89	2.252	0.30 (0.24)	0.80	2722.2	300.00
5	19449.45	21.99	1.895	0.30 (0.24)	0.80	3760.2	210.00
6	19582.65	23.03	1.842	0.30 (0.24)	0.80	3961.8	50600.00
7	19784.05	24.08	1.789	0.30 (0.24)	0.80	4181.4	410.00
8	19985.30	25.13	1.737	0.30 (0.24)	0.80	4401.0	200.00
9	20094.50	25.69	1.713	0.30 (0.24)	0.80	4517.9	230.00
10	20131.71	25.89	1.704	0.30 (0.24)	0.80	4558.9	50200.00
11	20168.20	26.04	1.698	0.30 (0.24)	0.80	4605.1	50500.00
12	20347.48	26.78	1.667	0.30 (0.24)	0.80	4835.7	220.50
13	21514.73	31.75	1.496	0.30 (0.25)	0.82	6343.5	110.00
14	23577.13	41.39	1.310	0.30 (0.25)	0.84	9267.6	150.00
15	25496.83	49.81	1.181	0.30 (0.26)	0.86	12047.7	600.00
16	26277.46	54.60	1.120	0.30 (0.26)	0.88	13994.9	31100.00
17	28278.00	66.51	1.015	0.30 (0.27)	0.90	18860.7	40100.00
18	29820.98	74.12	0.972	0.30 (0.27)	0.91	22005.2	11801.00
19	32231.27	84.63	0.913	0.30 (0.28)	0.92	27046.6	11530.00
20	33602.93	93.20	0.871	0.30 (0.28)	0.93	32117.6	11910.00
21	35635.86	103.03	0.835	0.30 (0.28)	0.94	38730.8	11350.00
22	36163.24	107.71	0.817	0.30 (0.28)	0.95	41904.9	11130.00
23	35926.53	113.78	0.795	0.30 (0.28)	0.95	44831.5	12300.00
24	35369.01	122.53	0.767	0.30 (0.29)	0.95	49092.1	12400.00
25	34504.62	132.03	0.746	0.30 (0.29)	0.95	52493.7	12201.00
26	33664.41	139.51	0.730	0.30 (0.29)	0.96	54386.7	12231.00
27	32782.23	146.98	0.714	0.30 (0.29)	0.96	55939.5	10400.00
28	31368.75	156.42	0.694	0.30 (0.29)	0.96	57385.9	12010.00
29	30408.57	161.80	0.682	0.30 (0.29)	0.96	57648.5	10210.00
30	29799.28	165.85	0.673	0.30 (0.29)	0.96	57795.3	12000.00
31	26445.69	192.17	0.631	0.30 (0.29)	0.96	58408.2	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	358.70	20.30	1.981	0.30 (0.30)	0.99	236.8	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7903.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16621.34	13.61	2.612	0.30 (0.24)	0.81	2191.7	429.00
2	17617.46	15.05	2.403	0.30 (0.24)	0.81	2515.0	425.00
3	17840.12	15.46	2.370	0.30 (0.24)	0.81	2604.8	400.00
4	18388.33	16.89	2.252	0.30 (0.24)	0.81	2919.2	300.00
5	19342.71	20.30	1.981	0.30 (0.24)	0.81	3653.8	50700.00
6	19789.90	21.99	1.895	0.30 (0.24)	0.81	3997.0	210.00
7	19911.78	23.03	1.842	0.30 (0.24)	0.81	4198.6	50600.00
8	20101.88	24.08	1.789	0.30 (0.24)	0.81	4418.2	410.00
9	20292.01	25.13	1.737	0.30 (0.24)	0.81	4637.8	200.00
10	20396.17	25.69	1.713	0.30 (0.24)	0.81	4754.7	230.00
11	20431.55	25.89	1.704	0.30 (0.24)	0.81	4795.7	50200.00
12	20466.72	26.04	1.698	0.30 (0.24)	0.81	4841.9	50500.00
13	20639.29	26.78	1.667	0.30 (0.24)	0.81	5072.5	220.50
14	21770.12	31.75	1.496	0.30 (0.25)	0.82	6580.2	110.00
15	23792.84	41.39	1.310	0.30 (0.25)	0.84	9504.4	150.00
16	25685.07	49.81	1.181	0.30 (0.26)	0.86	12284.5	600.00
17	26452.73	54.60	1.120	0.30 (0.26)	0.88	14231.7	31100.00
18	28430.95	66.51	1.015	0.30 (0.27)	0.90	19097.5	40100.00
19	29964.79	74.12	0.972	0.30 (0.27)	0.91	22242.0	11801.00

20	32362.46	84.63	0.913	0.30 (0.28)	0.92	27283.4	11530.00
21	33725.16	93.20	0.871	0.30 (0.28)	0.93	32354.4	11910.00
22	35750.34	103.03	0.835	0.30 (0.28)	0.94	38967.5	11350.00
23	36274.02	107.71	0.817	0.30 (0.28)	0.95	42141.7	11130.00
24	36032.52	113.78	0.795	0.30 (0.28)	0.95	45068.3	12300.00
25	35468.94	122.53	0.767	0.30 (0.29)	0.95	49328.9	12400.00
26	34600.20	132.03	0.746	0.30 (0.29)	0.95	52730.5	12201.00
27	33756.56	139.51	0.730	0.30 (0.29)	0.96	54623.5	12231.00
28	32870.95	146.98	0.714	0.30 (0.29)	0.96	56176.2	10400.00
29	31453.15	156.42	0.694	0.30 (0.29)	0.96	57622.7	12010.00
30	30490.50	161.80	0.682	0.30 (0.29)	0.96	57885.2	10210.00
31	29879.36	165.85	0.673	0.30 (0.29)	0.96	58032.1	12000.00
32	26516.82	192.17	0.631	0.30 (0.29)	0.96	58645.0	10100.00

TOTAL AREA (ACRES) = 58645.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 36274.02 Tc (MIN.) = 107.714
EFFECTIVE AREA (ACRES) = 42141.73 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 58645.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 182.00 DOWNSTREAM (FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA (FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 11.18
* 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
USER-DEFINED	-	0.40	0.30	1.000	-
USER-DEFINED	-	2.90	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) = 36274.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.68
AVERAGE FLOW DEPTH (FEET) = 11.18 TRAVEL TIME (MIN.) = 1.25
Tc (MIN.) = 108.97
SUBAREA AREA (ACRES) = 3.30 SUBAREA RUNOFF (CFS) = 1.52
EFFECTIVE AREA (ACRES) = 42145.04 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 58648.3 PEAK FLOW RATE (CFS) = 36274.02
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) = 11.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 11.18 FLOW VELOCITY (FEET/SEC.) = 12.68
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

 >>>>CLEAR MEMORY BANK # 3 <<<<<<
 =====

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: RI25EV36.DNA
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2146.96	28.56	0.30 (0.27)	0.90	1467.2	110.00
2	2209.71	30.95	0.30 (0.27)	0.90	1632.7	100.00
3	2208.12	32.23	0.30 (0.27)	0.90	1711.6	100.00
4	2242.47	35.30	0.30 (0.27)	0.91	1886.6	130.00
5	2335.96	48.91	0.30 (0.28)	0.93	2627.1	20100.00
6	2291.37	54.60	0.30 (0.28)	0.93	2814.2	13600.00
7	2090.26	91.42	0.30 (0.28)	0.93	3793.8	13510.00
8	1979.94	100.93	0.30 (0.28)	0.93	3859.7	13500.00
TOTAL AREA (ACRES) =						3859.7

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16621.34	15.23	2.389	0.30 (0.24)	0.81	2195.0	429.00
2	17617.46	16.64	2.273	0.30 (0.24)	0.81	2518.3	425.00
3	17840.12	17.04	2.240	0.30 (0.24)	0.81	2608.1	400.00
4	18388.33	18.45	2.123	0.30 (0.24)	0.81	2922.5	300.00
5	19342.71	21.84	1.903	0.30 (0.24)	0.81	3657.1	50700.00
6	19789.90	23.51	1.817	0.30 (0.24)	0.81	4000.3	210.00
7	19911.78	24.56	1.764	0.30 (0.24)	0.81	4201.9	50600.00
8	20101.88	25.60	1.717	0.30 (0.24)	0.81	4421.5	410.00
9	20292.01	26.64	1.673	0.30 (0.24)	0.81	4641.1	200.00
10	20396.17	27.20	1.649	0.30 (0.24)	0.81	4758.0	230.00
11	20431.55	27.40	1.641	0.30 (0.24)	0.81	4799.0	50200.00
12	20466.72	27.55	1.635	0.30 (0.24)	0.81	4845.2	50500.00
13	20639.29	28.29	1.603	0.30 (0.24)	0.81	5075.8	220.50
14	21770.12	33.23	1.466	0.30 (0.25)	0.82	6583.5	110.00
15	23792.84	42.82	1.288	0.30 (0.25)	0.84	9507.7	150.00
16	25685.07	51.21	1.163	0.30 (0.26)	0.86	12287.8	600.00
17	26452.73	55.98	1.103	0.30 (0.26)	0.88	14235.0	31100.00
18	28430.95	67.86	1.008	0.30 (0.27)	0.90	19100.8	40100.00
19	29964.79	75.45	0.965	0.30 (0.27)	0.91	22245.3	11801.00
20	32362.46	85.93	0.906	0.30 (0.28)	0.92	27286.7	11530.00
21	33725.16	94.48	0.866	0.30 (0.28)	0.93	32357.7	11910.00
22	35750.34	104.29	0.830	0.30 (0.28)	0.94	38970.8	11350.00
23	36274.02	108.97	0.813	0.30 (0.28)	0.95	42145.0	11130.00
24	36032.52	115.03	0.790	0.30 (0.28)	0.95	45071.6	12300.00

25	35468.94	123.79	0.764	0.30 (0.29)	0.95	49332.2	12400.00
26	34600.20	133.31	0.743	0.30 (0.29)	0.95	52733.8	12201.00
27	33756.56	140.79	0.727	0.30 (0.29)	0.96	54626.8	12231.00
28	32870.95	148.28	0.711	0.30 (0.29)	0.96	56179.5	10400.00
29	31453.15	157.73	0.691	0.30 (0.29)	0.96	57626.0	12010.00
30	30490.50	163.13	0.679	0.30 (0.29)	0.96	57888.5	10210.00
31	29879.36	167.18	0.671	0.30 (0.29)	0.96	58035.4	12000.00
32	26516.82	193.55	0.630	0.30 (0.29)	0.96	58648.3	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	2146.96	28.56	1.592	0.30 (0.27)	0.90	1467.2	110.00
2	2209.71	30.95	1.512	0.30 (0.27)	0.90	1632.7	100.00
3	2208.12	32.23	1.486	0.30 (0.27)	0.90	1711.6	100.00
4	2242.47	35.30	1.425	0.30 (0.27)	0.91	1886.6	130.00
5	2335.96	48.91	1.195	0.30 (0.28)	0.93	2627.1	20100.00
6	2291.37	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	18457.26	15.23	2.389	0.30 (0.25)	0.83	2977.4	429.00
2	19513.26	16.64	2.273	0.30 (0.25)	0.83	3373.1	425.00
3	19749.41	17.04	2.240	0.30 (0.25)	0.83	3483.3	400.00
4	20333.77	18.45	2.123	0.30 (0.25)	0.83	3870.4	300.00
5	21370.66	21.84	1.903	0.30 (0.25)	0.83	4778.9	50700.00
6	21859.52	23.51	1.817	0.30 (0.25)	0.83	5208.2	210.00
7	21999.17	24.56	1.764	0.30 (0.25)	0.83	5463.3	50600.00
8	22208.17	25.60	1.717	0.30 (0.25)	0.83	5736.3	410.00
9	22417.42	26.64	1.673	0.30 (0.25)	0.83	6009.4	200.00
10	22529.66	27.20	1.649	0.30 (0.25)	0.83	6154.9	230.00
11	22567.60	27.40	1.641	0.30 (0.25)	0.83	6206.4	50200.00
12	22604.49	27.55	1.635	0.30 (0.25)	0.83	6260.1	50500.00
13	22784.25	28.29	1.603	0.30 (0.25)	0.83	6528.8	220.50
14	22849.23	28.56	1.592	0.30 (0.25)	0.83	6626.9	110.00
15	23458.94	30.95	1.512	0.30 (0.25)	0.84	7521.8	100.00
16	23749.42	32.23	1.486	0.30 (0.25)	0.84	7990.0	100.00
17	23989.45	33.23	1.466	0.30 (0.25)	0.84	8352.3	110.00
18	24447.93	35.30	1.425	0.30 (0.25)	0.84	9099.5	130.00
19	26087.00	42.82	1.288	0.30 (0.26)	0.86	11803.7	150.00
20	27502.36	48.91	1.195	0.30 (0.26)	0.87	14152.8	20100.00
21	28003.01	51.21	1.163	0.30 (0.26)	0.88	14990.5	600.00
22	28521.19	54.60	1.120	0.30 (0.26)	0.88	16483.7	13600.00
23	28736.53	55.98	1.103	0.30 (0.27)	0.89	17086.1	31100.00
24	30649.88	67.86	1.008	0.30 (0.27)	0.91	22267.8	40100.00
25	32142.27	75.45	0.965	0.30 (0.27)	0.92	25614.3	11801.00
26	34482.70	85.93	0.906	0.30 (0.28)	0.93	30934.4	11530.00
27	35327.85	91.42	0.878	0.30 (0.28)	0.93	34337.1	13510.00
28	35779.93	94.48	0.866	0.30 (0.28)	0.93	36172.7	11910.00
29	37035.98	100.93	0.843	0.30 (0.28)	0.94	40563.3	13500.00
30	37686.48	104.29	0.830	0.30 (0.28)	0.94	42830.5	11350.00
31	38149.25	108.97	0.813	0.30 (0.28)	0.95	46004.7	11130.00
32	37828.73	115.03	0.790	0.30 (0.28)	0.95	48931.3	12300.00

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
33	37171.77	123.79	0.764	0.30 (0.29)	0.95	53191.9	12400.00
34	36231.05	133.31	0.743	0.30 (0.29)	0.95	56593.5	12201.00
35	35330.77	140.79	0.727	0.30 (0.29)	0.95	58486.5	12231.00
36	34388.52	148.28	0.711	0.30 (0.29)	0.96	60039.2	10400.00
37	32899.20	157.73	0.691	0.30 (0.29)	0.96	61485.7	12010.00
38	31895.70	163.13	0.679	0.30 (0.29)	0.96	61748.2	10210.00
39	31253.88	167.18	0.671	0.30 (0.29)	0.96	61895.1	12000.00
40	27749.01	193.55	0.630	0.30 (0.29)	0.96	62508.0	10100.00
TOTAL AREA (ACRES) =							62508.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38149.25 Tc (MIN.) = 108.966
EFFECTIVE AREA (ACRES) = 46004.72 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.89
TOTAL AREA (ACRES) = 62508.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93
CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 8.39
CHANNEL FLOW THRU SUBAREA (CFS) = 38149.25
FLOW VELOCITY (FEET/SEC.) = 18.80 FLOW DEPTH (FEET) = 8.39
TRAVEL TIME (MIN.) = 0.15 Tc (MIN.) = 109.12
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506101d.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM 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	18457.26	15.43	2.373	0.30 (0.25)	0.83	2977.4	429.00
2	19513.26	16.83	2.257	0.30 (0.25)	0.83	3373.1	425.00
3	19749.41	17.23	2.225	0.30 (0.25)	0.83	3483.3	400.00
4	20333.77	18.64	2.108	0.30 (0.25)	0.83	3870.4	300.00
5	21370.66	22.02	1.893	0.30 (0.25)	0.83	4778.9	50700.00
6	21859.52	23.70	1.808	0.30 (0.25)	0.83	5208.2	210.00
7	21999.17	24.74	1.755	0.30 (0.25)	0.83	5463.3	50600.00
8	22208.17	25.78	1.709	0.30 (0.25)	0.83	5736.3	410.00
9	22417.42	26.82	1.665	0.30 (0.25)	0.83	6009.4	200.00
10	22529.66	27.38	1.642	0.30 (0.25)	0.83	6154.9	230.00
11	22567.60	27.58	1.633	0.30 (0.25)	0.83	6206.4	50200.00
12	22604.49	27.72	1.627	0.30 (0.25)	0.83	6260.1	50500.00
13	22784.25	28.47	1.596	0.30 (0.25)	0.83	6528.8	220.50
14	22849.23	28.74	1.584	0.30 (0.25)	0.83	6626.9	110.00
15	23458.94	31.13	1.508	0.30 (0.25)	0.84	7521.8	100.00
16	23749.42	32.41	1.483	0.30 (0.25)	0.84	7990.0	100.00
17	23989.45	33.41	1.463	0.30 (0.25)	0.84	8352.3	110.00
18	24447.93	35.47	1.422	0.30 (0.25)	0.84	9099.5	130.00
19	26087.00	43.00	1.285	0.30 (0.26)	0.86	11803.7	150.00
20	27502.36	49.08	1.192	0.30 (0.26)	0.87	14152.8	20100.00
21	28003.01	51.38	1.161	0.30 (0.26)	0.88	14990.5	600.00
22	28521.19	54.76	1.118	0.30 (0.26)	0.88	16483.7	13600.00
23	28736.53	56.15	1.101	0.30 (0.27)	0.89	17086.1	31100.00
24	30649.88	68.02	1.007	0.30 (0.27)	0.91	22267.8	40100.00
25	32142.27	75.61	0.964	0.30 (0.27)	0.92	25614.3	11801.00
26	34482.70	86.09	0.905	0.30 (0.28)	0.93	30934.4	11530.00
27	35327.85	91.57	0.877	0.30 (0.28)	0.93	34337.1	13510.00
28	35779.93	94.63	0.866	0.30 (0.28)	0.93	36172.7	11910.00
29	37035.98	101.08	0.842	0.30 (0.28)	0.94	40563.3	13500.00
30	37686.48	104.44	0.830	0.30 (0.28)	0.94	42630.5	11350.00
31	38149.25	109.12	0.812	0.30 (0.28)	0.95	46004.7	11130.00
32	37828.73	115.19	0.790	0.30 (0.28)	0.95	48931.3	12300.00
33	37171.77	123.95	0.764	0.30 (0.29)	0.95	53191.9	12400.00
34	36231.05	133.46	0.743	0.30 (0.29)	0.95	56593.5	12201.00
35	35330.77	140.95	0.727	0.30 (0.29)	0.95	58486.5	12231.00
36	34388.52	148.43	0.711	0.30 (0.29)	0.96	60039.2	10400.00
37	32899.20	157.89	0.691	0.30 (0.29)	0.96	61485.7	12010.00
38	31895.70	163.29	0.679	0.30 (0.29)	0.96	61748.2	10210.00
39	31253.88	167.34	0.670	0.30 (0.29)	0.96	61895.1	12000.00
40	27749.01	193.72	0.630	0.30 (0.29)	0.96	62508.0	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	1.367	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	18863.15	15.43	2.373	0.30 (0.25)	0.85	3216.1	429.00
2	19931.44	16.83	2.257	0.30 (0.25)	0.84	3633.6	425.00
3	20170.31	17.23	2.225	0.30 (0.25)	0.84	3749.9	400.00
4	20761.72	18.64	2.108	0.30 (0.25)	0.84	4158.9	300.00
5	21816.36	22.02	1.893	0.30 (0.25)	0.84	5119.8	50700.00

6	22313.58	23.70	1.808	0.30	(0.25)	0.84	5574.9	210.00
7	22456.61	24.74	1.755	0.30	(0.25)	0.84	5846.2	50600.00
8	22669.78	25.78	1.709	0.30	(0.25)	0.84	6135.2	410.00
9	22882.75	26.82	1.665	0.30	(0.25)	0.84	6424.5	200.00
10	22996.51	27.38	1.642	0.30	(0.25)	0.84	6578.6	230.00
11	23034.92	27.58	1.633	0.30	(0.25)	0.84	6633.2	50200.00
12	23072.12	27.72	1.627	0.30	(0.25)	0.84	6689.2	50500.00
13	23253.11	28.47	1.596	0.30	(0.25)	0.84	6969.3	220.50
14	23318.40	28.74	1.584	0.30	(0.25)	0.84	7071.7	110.00
15	23937.26	31.13	1.508	0.30	(0.25)	0.84	8003.5	100.00
16	24236.87	32.41	1.483	0.30	(0.25)	0.85	8491.6	100.00
17	24483.48	33.41	1.463	0.30	(0.25)	0.85	8869.2	110.00
18	24953.93	35.47	1.422	0.30	(0.26)	0.85	9648.4	130.00
19	25558.73	38.19	1.367	0.30	(0.26)	0.86	10667.7	10100.00
20	26565.83	43.00	1.285	0.30	(0.26)	0.86	12394.7	150.00
21	27936.17	49.08	1.192	0.30	(0.26)	0.88	14743.8	20100.00
22	28421.62	51.38	1.161	0.30	(0.26)	0.88	15581.5	600.00
23	28919.16	54.76	1.118	0.30	(0.27)	0.89	17074.7	13600.00
24	29126.06	56.15	1.101	0.30	(0.27)	0.89	17677.1	31100.00
25	30994.09	68.02	1.007	0.30	(0.27)	0.91	22858.8	40100.00
26	32465.80	75.61	0.964	0.30	(0.27)	0.92	26205.3	11801.00
27	34777.71	86.09	0.905	0.30	(0.28)	0.93	31525.4	11530.00
28	35609.38	91.57	0.877	0.30	(0.28)	0.93	34928.1	13510.00
29	36055.98	94.63	0.866	0.30	(0.28)	0.93	36763.7	11910.00
30	37300.50	101.08	0.842	0.30	(0.28)	0.94	41154.3	13500.00
31	37944.98	104.44	0.830	0.30	(0.28)	0.94	43421.5	11350.00
32	38399.39	109.12	0.812	0.30	(0.28)	0.95	46595.7	11130.00
33	38068.00	115.19	0.790	0.30	(0.28)	0.95	49522.3	12300.00
34	37398.32	123.95	0.764	0.30	(0.29)	0.95	53782.9	12400.00
35	36447.73	133.46	0.743	0.30	(0.29)	0.95	57184.5	12201.00
36	35539.66	140.95	0.727	0.30	(0.29)	0.95	59077.5	12231.00
37	34589.62	148.43	0.711	0.30	(0.29)	0.96	60630.2	10400.00
38	33090.48	157.89	0.691	0.30	(0.29)	0.96	62076.7	12010.00
39	32081.36	163.29	0.679	0.30	(0.29)	0.96	62339.2	10210.00
40	31435.32	167.34	0.670	0.30	(0.29)	0.96	62486.1	12000.00
41	27910.98	193.72	0.630	0.30	(0.29)	0.96	63099.0	10100.00

TOTAL AREA (ACRES) = 63099.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38399.39 Tc (MIN.) = 109.117
EFFECTIVE AREA (ACRES) = 46595.72 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63099.0
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 = 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) = 7.60
CHANNEL FLOW THRU SUBAREA (CFS) = 38399.39
FLOW VELOCITY (FEET/SEC.) = 21.24 FLOW DEPTH (FEET) = 7.60

TRAVEL TIME (MIN.) = 0.20 Tc (MIN.) = 109.32
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: 0610508W.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	194.47	21.06	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	18863.15	15.69	2.351	0.30 (0.25)	0.85	3216.1	429.00
2	19931.44	17.09	2.236	0.30 (0.25)	0.84	3633.6	425.00
3	20170.31	17.48	2.204	0.30 (0.25)	0.84	3749.9	400.00
4	20761.72	18.89	2.087	0.30 (0.25)	0.84	4158.9	300.00
5	21816.36	22.27	1.881	0.30 (0.25)	0.84	5119.8	50700.00
6	22313.58	23.94	1.796	0.30 (0.25)	0.84	5574.9	210.00
7	22456.61	24.98	1.743	0.30 (0.25)	0.84	5846.2	50600.00
8	22669.78	26.02	1.699	0.30 (0.25)	0.84	6135.2	410.00
9	22882.75	27.06	1.655	0.30 (0.25)	0.84	6424.5	200.00
10	22996.51	27.62	1.631	0.30 (0.25)	0.84	6578.6	230.00
11	23034.92	27.82	1.623	0.30 (0.25)	0.84	6633.2	50200.00
12	23072.12	27.97	1.617	0.30 (0.25)	0.84	6689.2	50500.00
13	23253.11	28.71	1.585	0.30 (0.25)	0.84	6969.3	220.50
14	23318.40	28.98	1.574	0.30 (0.25)	0.84	7071.7	110.00
15	23937.26	31.37	1.504	0.30 (0.25)	0.84	8003.5	100.00
16	24236.87	32.65	1.478	0.30 (0.25)	0.85	8491.6	100.00
17	24483.48	33.64	1.458	0.30 (0.25)	0.85	8869.2	110.00
18	24953.93	35.71	1.417	0.30 (0.26)	0.85	9648.4	130.00
19	25558.73	38.42	1.363	0.30 (0.26)	0.86	10667.7	10100.00
20	26565.83	43.23	1.282	0.30 (0.26)	0.86	12394.7	150.00
21	27936.17	49.31	1.189	0.30 (0.26)	0.88	14743.8	20100.00
22	28421.62	51.60	1.158	0.30 (0.26)	0.88	15581.5	600.00
23	28919.16	54.99	1.115	0.30 (0.27)	0.89	17074.7	13600.00
24	29126.06	56.37	1.098	0.30 (0.27)	0.89	17677.1	31100.00
25	30994.09	68.24	1.006	0.30 (0.27)	0.91	22858.8	40100.00
26	32465.80	75.83	0.963	0.30 (0.27)	0.92	26205.3	11801.00
27	34777.71	86.30	0.904	0.30 (0.28)	0.93	31525.4	11530.00
28	35609.38	91.78	0.876	0.30 (0.28)	0.93	34928.1	13510.00

29	36055.98	94.84	0.865	0.30 (0.28)	0.93	36763.7	11910.00
30	37300.50	101.28	0.841	0.30 (0.28)	0.94	41154.3	13500.00
31	37944.98	104.64	0.829	0.30 (0.28)	0.94	43421.5	11350.00
32	38399.39	109.32	0.812	0.30 (0.28)	0.95	46595.7	11130.00
33	38068.00	115.39	0.789	0.30 (0.28)	0.95	49522.3	12300.00
34	37398.32	124.15	0.763	0.30 (0.29)	0.95	53782.9	12400.00
35	36447.73	133.67	0.743	0.30 (0.29)	0.95	57184.5	12201.00
36	35539.66	141.16	0.727	0.30 (0.29)	0.95	59077.5	12231.00
37	34589.62	148.64	0.710	0.30 (0.29)	0.96	60630.2	10400.00
38	33090.48	158.10	0.690	0.30 (0.29)	0.96	62076.7	12010.00
39	32081.36	163.50	0.678	0.30 (0.29)	0.96	62339.2	10210.00
40	31435.32	167.56	0.670	0.30 (0.29)	0.96	62486.1	12000.00
41	27910.98	193.95	0.630	0.30 (0.29)	0.96	63099.0	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	194.47	21.06	1.942	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	19044.03	15.69	2.351	0.30 (0.25)	0.85	3313.9	429.00
2	20117.41	17.09	2.236	0.30 (0.25)	0.85	3740.1	425.00
3	20357.39	17.48	2.204	0.30 (0.25)	0.85	3858.9	400.00
4	20951.57	18.89	2.087	0.30 (0.25)	0.85	4276.6	300.00
5	21631.69	21.06	1.942	0.30 (0.25)	0.85	4905.6	50800.00
6	22003.54	22.27	1.881	0.30 (0.25)	0.84	5251.0	50700.00
7	22490.73	23.94	1.796	0.30 (0.25)	0.84	5706.1	210.00
8	22627.51	24.98	1.743	0.30 (0.25)	0.84	5977.4	50600.00
9	22835.49	26.02	1.699	0.30 (0.25)	0.84	6266.5	410.00
10	23043.27	27.06	1.655	0.30 (0.25)	0.84	6555.7	200.00
11	23154.25	27.62	1.631	0.30 (0.25)	0.84	6709.9	230.00
12	23191.65	27.82	1.623	0.30 (0.25)	0.84	6764.5	50200.00
13	23228.13	27.97	1.617	0.30 (0.25)	0.84	6820.4	50500.00
14	23405.42	28.71	1.585	0.30 (0.25)	0.84	7100.6	220.50
15	23469.33	28.98	1.574	0.30 (0.25)	0.84	7203.0	110.00
16	24079.89	31.37	1.504	0.30 (0.25)	0.85	8134.8	100.00
17	24376.49	32.65	1.478	0.30 (0.25)	0.85	8622.8	100.00
18	24620.74	33.64	1.458	0.30 (0.26)	0.85	9000.5	110.00
19	25086.32	35.71	1.417	0.30 (0.26)	0.85	9779.7	130.00
20	25684.69	38.42	1.363	0.30 (0.26)	0.86	10799.0	10100.00
21	26682.23	43.23	1.282	0.30 (0.26)	0.87	12526.0	150.00
22	28041.59	49.31	1.189	0.30 (0.26)	0.88	14875.1	20100.00
23	28523.39	51.60	1.158	0.30 (0.26)	0.88	15712.8	600.00
24	29015.89	54.99	1.115	0.30 (0.27)	0.89	17206.0	13600.00
25	29220.73	56.37	1.098	0.30 (0.27)	0.89	17808.3	31100.00
26	31077.88	68.24	1.006	0.30 (0.27)	0.91	22990.1	40100.00
27	32544.54	75.83	0.963	0.30 (0.28)	0.92	26336.5	11801.00
28	34849.47	86.30	0.904	0.30 (0.28)	0.93	31656.7	11530.00
29	35677.90	91.78	0.876	0.30 (0.28)	0.93	35059.3	13510.00
30	36123.17	94.84	0.865	0.30 (0.28)	0.93	36894.9	11910.00
31	37364.88	101.28	0.841	0.30 (0.28)	0.94	41285.6	13500.00
32	38007.89	104.64	0.829	0.30 (0.28)	0.94	43552.8	11350.00
33	38460.24	109.32	0.812	0.30 (0.28)	0.95	46727.0	11130.00
34	38126.21	115.39	0.789	0.30 (0.28)	0.95	49653.6	12300.00

35	37453.46	124.15	0.763	0.30 (0.29)	0.95	53914.2	12400.00
36	36500.44	133.67	0.743	0.30 (0.29)	0.95	57315.7	12201.00
37	35590.47	141.16	0.727	0.30 (0.29)	0.95	59208.8	12231.00
38	34638.53	148.64	0.710	0.30 (0.29)	0.96	60761.5	10400.00
39	33136.98	158.10	0.690	0.30 (0.29)	0.96	62207.9	12010.00
40	32126.49	163.50	0.678	0.30 (0.29)	0.96	62470.5	10210.00
41	31479.42	167.56	0.670	0.30 (0.29)	0.96	62617.3	12000.00
42	27950.36	193.95	0.630	0.30 (0.29)	0.96	63230.3	10100.00

TOTAL AREA (ACRES) = 63230.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38460.24 Tc(MIN.) = 109.321
EFFECTIVE AREA(ACRES) = 46726.98 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63230.3
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 = 124551.97 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 63230.3 TC(MIN.) = 109.32
EFFECTIVE AREA(ACRES) = 46726.98 AREA-AVERAGED Fm(INCH/HR)= 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.946
PEAK FLOW RATE(CFS) = 38460.24

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19044.03	15.69	2.351	0.30 (0.25)	0.85	3313.9	429.00
2	20117.41	17.09	2.236	0.30 (0.25)	0.85	3740.1	425.00
3	20357.39	17.48	2.204	0.30 (0.25)	0.85	3858.9	400.00
4	20951.57	18.89	2.087	0.30 (0.25)	0.85	4276.6	300.00
5	21631.69	21.06	1.942	0.30 (0.25)	0.85	4905.6	50800.00
6	22003.54	22.27	1.881	0.30 (0.25)	0.84	5251.0	50700.00
7	22490.73	23.94	1.796	0.30 (0.25)	0.84	5706.1	210.00
8	22627.51	24.98	1.743	0.30 (0.25)	0.84	5977.4	50600.00
9	22835.49	26.02	1.699	0.30 (0.25)	0.84	6266.5	410.00
10	23043.27	27.06	1.655	0.30 (0.25)	0.84	6555.7	200.00
11	23154.25	27.62	1.631	0.30 (0.25)	0.84	6709.9	230.00
12	23191.65	27.82	1.623	0.30 (0.25)	0.84	6764.5	50200.00
13	23228.13	27.97	1.617	0.30 (0.25)	0.84	6820.4	50500.00
14	23405.42	28.71	1.585	0.30 (0.25)	0.84	7100.6	220.50
15	23469.33	28.98	1.574	0.30 (0.25)	0.84	7203.0	110.00
16	24079.89	31.37	1.504	0.30 (0.25)	0.85	8134.8	100.00
17	24376.49	32.65	1.478	0.30 (0.25)	0.85	8622.8	100.00
18	24620.74	33.64	1.458	0.30 (0.26)	0.85	9000.5	110.00
19	25086.32	35.71	1.417	0.30 (0.26)	0.85	9779.7	130.00
20	25684.69	38.42	1.363	0.30 (0.26)	0.86	10799.0	10100.00
21	26682.23	43.23	1.282	0.30 (0.26)	0.87	12526.0	150.00
22	28041.59	49.31	1.189	0.30 (0.26)	0.88	14875.1	20100.00
23	28523.39	51.60	1.158	0.30 (0.26)	0.88	15712.8	600.00
24	29015.89	54.99	1.115	0.30 (0.27)	0.89	17206.0	13600.00
25	29220.73	56.37	1.098	0.30 (0.27)	0.89	17808.3	31100.00
26	31077.88	68.24	1.006	0.30 (0.27)	0.91	22990.1	40100.00
27	32544.54	75.83	0.963	0.30 (0.28)	0.92	26336.5	11801.00
28	34849.47	86.30	0.904	0.30 (0.28)	0.93	31656.7	11530.00
29	35677.90	91.78	0.876	0.30 (0.28)	0.93	35059.3	13510.00
30	36123.17	94.84	0.865	0.30 (0.28)	0.93	36894.9	11910.00
31	37364.88	101.28	0.841	0.30 (0.28)	0.94	41285.6	13500.00
32	38007.89	104.64	0.829	0.30 (0.28)	0.94	43552.8	11350.00

33	38460.24	109.32	0.812	0.30 (0.28)	0.95	46727.0	11130.00
34	38126.21	115.39	0.789	0.30 (0.28)	0.95	49653.6	12300.00
35	37453.46	124.15	0.763	0.30 (0.29)	0.95	53914.2	12400.00
36	36500.44	133.67	0.743	0.30 (0.29)	0.95	57315.7	12201.00
37	35590.47	141.16	0.727	0.30 (0.29)	0.95	59208.8	12231.00
38	34638.53	148.64	0.710	0.30 (0.29)	0.96	60761.5	10400.00
39	33136.98	158.10	0.690	0.30 (0.29)	0.96	62207.9	12010.00
40	32126.49	163.50	0.678	0.30 (0.29)	0.96	62470.5	10210.00
41	31479.42	167.56	0.670	0.30 (0.29)	0.96	62617.3	12000.00
42	27950.36	193.95	0.630	0.30 (0.29)	0.96	63230.3	10100.00

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END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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Analysis prepared by:

Michael Baker International
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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S37- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV37.DAT
TIME/DATE OF STUDY: 09:44 06/14/2019

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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; 4.753
- 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 CROSSFALL (FT)	TO STREET / SIDE (FT)	CROSSFALL IN- / SIDE (FT)	STREET-CROSSFALL (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 13700.00 TO NODE 13700.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: RI25EV34.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	22835.49	26.02	0.30 (0.25)	0.84	6266.5	410.00
2	25684.69	38.42	0.30 (0.26)	0.86	10799.0	10100.00
3	26682.23	43.23	0.30 (0.26)	0.87	12526.0	150.00
4	28523.39	51.60	0.30 (0.26)	0.88	15712.8	600.00
5	29220.73	56.37	0.30 (0.27)	0.89	17808.3	31100.00
6	31077.88	68.24	0.30 (0.27)	0.91	22990.1	40100.00
7	32544.54	75.83	0.30 (0.28)	0.92	26336.5	11801.00
8	34849.47	86.30	0.30 (0.28)	0.93	31656.7	11530.00
9	36123.17	94.84	0.30 (0.28)	0.93	36894.9	11910.00
10	38007.89	104.64	0.30 (0.28)	0.94	43552.8	11350.00
11	38460.24	109.32	0.30 (0.28)	0.95	46727.0	11130.00
12	38126.21	115.39	0.30 (0.28)	0.95	49653.6	12300.00
13	37453.46	124.15	0.30 (0.29)	0.95	53914.2	12400.00
14	36500.44	133.67	0.30 (0.29)	0.95	57315.7	12201.00
15	35590.47	141.16	0.30 (0.29)	0.95	59208.8	12231.00
16	34638.53	148.64	0.30 (0.29)	0.96	60761.5	10400.00
17	33136.98	158.10	0.30 (0.29)	0.96	62207.9	12010.00
18	32126.49	163.50	0.30 (0.29)	0.96	62470.5	10210.00
19	31479.42	167.56	0.30 (0.29)	0.96	62617.3	12000.00
20	27950.36	193.95	0.30 (0.29)	0.96	63230.3	10100.00
TOTAL AREA (ACRES) =						63230.3

FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0

>>>>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	22835.49	26.02	0.30 (0.25)	0.84	6266.5	410.00
2	25684.69	38.42	0.30 (0.26)	0.86	10799.0	10100.00
3	26682.23	43.23	0.30 (0.26)	0.87	12526.0	150.00
4	28523.39	51.60	0.30 (0.26)	0.88	15712.8	600.00
5	29220.73	56.37	0.30 (0.27)	0.89	17808.3	31100.00
6	31077.88	68.24	0.30 (0.27)	0.91	22990.1	40100.00
7	32544.54	75.83	0.30 (0.28)	0.92	26336.5	11801.00
8	34849.47	86.30	0.30 (0.28)	0.93	31656.7	11530.00
9	36123.17	94.84	0.30 (0.28)	0.93	36894.9	11910.00
10	38007.89	104.64	0.30 (0.28)	0.94	43552.8	11350.00
11	38460.24	109.32	0.30 (0.28)	0.95	46727.0	11130.00
12	38126.21	115.39	0.30 (0.28)	0.95	49653.6	12300.00
13	37453.46	124.15	0.30 (0.29)	0.95	53914.2	12400.00

14 36500.44 133.67 0.30(0.29) 0.95 57315.7 12201.00
 15 35590.47 141.16 0.30(0.29) 0.95 59208.8 12231.00
 16 34638.53 148.64 0.30(0.29) 0.96 60761.5 10400.00
 17 33136.98 158.10 0.30(0.29) 0.96 62207.9 12010.00
 18 32126.49 163.50 0.30(0.29) 0.96 62470.5 10210.00
 19 31479.42 167.56 0.30(0.29) 0.96 62617.3 12000.00
 20 27950.36 193.95 0.30(0.29) 0.96 63230.3 10100.00
 TOTAL AREA (ACRES) = 63230.3

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 170.00 DOWNSTREAM (FEET) = 165.51
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1891.83 CHANNEL SLOPE = 0.0024
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT (FEET) = 12.81
 CHANNEL FLOW THRU SUBAREA (CFS) = 38460.24
 FLOW VELOCITY (FEET/SEC.) = 11.37 FLOW DEPTH (FEET) = 12.81
 TRAVEL TIME (MIN.) = 2.77 Tc (MIN.) = 112.09
 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	22835.49	29.30	1.553	0.30(0.25)	0.84	6266.5	410.00
2	25684.69	41.58	1.299	0.30(0.26)	0.86	10799.0	10100.00
3	26682.23	46.34	1.227	0.30(0.26)	0.87	12526.0	150.00

4	28523.39	54.65	1.112	0.30(0.26)	0.88	15712.8	600.00
5	29220.73	59.40	1.053	0.30(0.27)	0.89	17808.3	31100.00
6	31077.88	71.21	0.981	0.30(0.27)	0.91	22990.1	40100.00
7	32544.54	78.75	0.939	0.30(0.28)	0.92	26336.5	11801.00
8	34849.47	89.16	0.880	0.30(0.28)	0.93	31656.7	11530.00
9	36123.17	97.67	0.846	0.30(0.28)	0.93	36894.9	11910.00
10	38007.89	107.43	0.810	0.30(0.28)	0.94	43552.8	11350.00
11	38460.24	112.09	0.793	0.30(0.28)	0.95	46727.0	11130.00
12	38126.21	118.17	0.770	0.30(0.28)	0.95	49653.6	12300.00
13	37453.46	126.95	0.748	0.30(0.29)	0.95	53914.2	12400.00
14	36500.44	136.48	0.728	0.30(0.29)	0.95	57315.7	12201.00
15	35590.47	144.00	0.711	0.30(0.29)	0.95	59208.8	12231.00
16	34638.53	151.51	0.695	0.30(0.29)	0.96	60761.5	10400.00
17	33136.98	161.01	0.675	0.30(0.29)	0.96	62207.9	12010.00
18	32126.49	166.44	0.663	0.30(0.29)	0.96	62470.5	10210.00
19	31479.42	170.51	0.654	0.30(0.29)	0.96	62617.3	12000.00
20	27950.36	197.02	0.618	0.30(0.29)	0.96	63230.3	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	19734.09	15.37	2.360	0.30(0.25)	0.85	3480.4	10230.00
2	22381.89	24.48	1.758	0.30(0.25)	0.85	5477.2	10200.00
3	22416.89	24.71	1.747	0.30(0.25)	0.85	5527.5	10250.00
4	23058.01	28.63	1.581	0.30(0.25)	0.85	6369.7	10220.00
5	23096.10	29.30	1.553	0.30(0.25)	0.85	6512.7	410.00
6	25893.02	41.58	1.299	0.30(0.26)	0.86	11045.2	10100.00
7	26875.67	46.34	1.227	0.30(0.26)	0.87	12772.2	150.00
8	28693.33	54.65	1.112	0.30(0.26)	0.88	15959.0	600.00
9	29378.38	59.40	1.053	0.30(0.27)	0.89	18054.6	31100.00
10	31220.89	71.21	0.981	0.30(0.27)	0.91	23236.4	40100.00
11	32678.77	78.75	0.939	0.30(0.28)	0.92	26582.8	11801.00
12	34971.57	89.16	0.880	0.30(0.28)	0.93	31903.0	11530.00
13	36238.40	97.67	0.846	0.30(0.28)	0.93	37141.2	11910.00
14	38115.62	107.43	0.810	0.30(0.28)	0.94	43799.0	11350.00
15	38564.40	112.09	0.793	0.30(0.28)	0.95	46973.2	11130.00
16	38225.70	118.17	0.770	0.30(0.28)	0.95	49899.8	12300.00
17	37548.47	126.95	0.748	0.30(0.29)	0.95	54160.4	12400.00
18	36591.24	136.48	0.728	0.30(0.29)	0.95	57562.0	12201.00
19	35677.95	144.00	0.711	0.30(0.29)	0.95	59455.0	12231.00
20	34722.68	151.51	0.695	0.30(0.29)	0.96	61007.8	10400.00
21	33216.94	161.01	0.675	0.30(0.29)	0.96	62454.2	12010.00
22	32204.05	166.44	0.663	0.30(0.29)	0.96	62716.8	10210.00
23	31555.17	170.51	0.654	0.30(0.29)	0.96	62863.6	12000.00
24	28018.61	197.02	0.618	0.30(0.29)	0.96	63476.5	10100.00
TOTAL AREA (ACRES) =							63476.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38564.40 Tc(MIN.) = 112.093
 EFFECTIVE AREA(ACRES) = 46973.24 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA(ACRES) = 63476.5
 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<<<<<

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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
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 13.16
 CHANNEL FLOW THRU SUBAREA(CFS) = 38564.40
 FLOW VELOCITY(FEET/SEC.) = 11.03 FLOW DEPTH(FEET) = 13.16
 TRAVEL TIME(MIN.) = 3.12 Tc(MIN.) = 115.22
 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 <<<<<

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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	19734.09	19.24	2.046	0.30(0.25)	0.85	3480.4	10230.00
2	22381.89	28.19	1.599	0.30(0.25)	0.85	5477.2	10200.00
3	22416.89	28.42	1.590	0.30(0.25)	0.85	5527.5	10250.00
4	23058.01	32.31	1.478	0.30(0.25)	0.85	6369.7	10220.00
5	23096.10	32.97	1.464	0.30(0.25)	0.85	6512.7	410.00

6	25893.02	45.12	1.245	0.30(0.26)	0.86	11045.2	10100.00
7	26875.67	49.84	1.173	0.30(0.26)	0.87	12772.2	150.00
8	28693.33	58.08	1.069	0.30(0.26)	0.88	15959.0	600.00
9	29378.38	62.80	1.029	0.30(0.27)	0.89	18054.6	31100.00
10	31220.89	74.55	0.963	0.30(0.27)	0.91	23236.4	40100.00
11	32678.77	82.04	0.920	0.30(0.28)	0.92	26582.8	11801.00
12	34971.57	92.38	0.866	0.30(0.28)	0.93	31903.0	11530.00
13	36238.40	100.85	0.834	0.30(0.28)	0.93	37141.2	11910.00
14	38115.62	110.56	0.798	0.30(0.28)	0.94	43799.0	11350.00
15	38564.40	115.22	0.781	0.30(0.28)	0.95	46973.2	11130.00
16	38225.70	121.30	0.760	0.30(0.28)	0.95	49899.8	12300.00
17	37548.47	130.10	0.741	0.30(0.29)	0.95	54160.4	12400.00
18	36591.24	139.66	0.721	0.30(0.29)	0.95	57562.0	12201.00
19	35677.95	147.20	0.705	0.30(0.29)	0.95	59455.0	12231.00
20	34722.68	154.74	0.688	0.30(0.29)	0.96	61007.8	10400.00
21	33216.94	164.28	0.668	0.30(0.29)	0.96	62454.2	12010.00
22	32204.05	169.74	0.656	0.30(0.29)	0.96	62716.8	10210.00
23	31555.17	173.84	0.647	0.30(0.29)	0.96	62863.6	12000.00
24	28018.61	200.47	0.615	0.30(0.29)	0.96	63476.5	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	20238.29	18.38	2.116	0.30(0.25)	0.84	3724.2	10300.00
2	20383.98	19.22	2.047	0.30(0.25)	0.84	3889.7	10380.00
3	20386.96	19.24	2.046	0.30(0.25)	0.84	3894.2	10230.00
4	21082.81	21.63	1.902	0.30(0.25)	0.84	4454.1	10320.00
5	21680.28	23.73	1.796	0.30(0.25)	0.84	4933.7	10360.00
6	22497.36	26.62	1.665	0.30(0.25)	0.84	5586.8	10340.00
7	22936.52	28.19	1.599	0.30(0.25)	0.84	5938.0	10200.00
8	22967.64	28.42	1.590	0.30(0.25)	0.84	5988.3	10250.00
9	23563.45	32.31	1.478	0.30(0.25)	0.84	6830.5	10220.00
10	23596.13	32.97	1.464	0.30(0.25)	0.84	6973.5	410.00
11	26304.37	45.12	1.245	0.30(0.26)	0.86	11506.0	10100.00
12	27257.96	49.84	1.173	0.30(0.26)	0.86	13233.0	150.00
13	29033.44	58.08	1.069	0.30(0.26)	0.88	16419.8	600.00
14	29702.27	62.80	1.029	0.30(0.27)	0.89	18515.4	31100.00
15	31517.84	74.55	0.963	0.30(0.27)	0.91	23697.2	40100.00
16	32958.52	82.04	0.920	0.30(0.27)	0.91	27043.6	11801.00
17	35229.48	92.38	0.866	0.30(0.28)	0.92	32363.8	11530.00
18	36483.50	100.85	0.834	0.30(0.28)	0.93	37602.0	11910.00
19	38346.05	110.56	0.798	0.30(0.28)	0.94	44259.8	11350.00
20	38787.79	115.22	0.781	0.30(0.28)	0.94	47434.0	11130.00
21	38440.72	121.30	0.760	0.30(0.28)	0.95	50360.6	12300.00
22	37755.84	130.10	0.741	0.30(0.29)	0.95	54621.2	12400.00
23	36790.29	139.66	0.721	0.30(0.29)	0.95	58022.8	12201.00
24	35870.43	147.20	0.705	0.30(0.29)	0.95	59915.8	12231.00

25 34908.61 154.74 0.688 0.30(0.29) 0.95 61468.6 10400.00
 26 33394.55 164.28 0.668 0.30(0.29) 0.96 62915.0 12010.00
 27 32376.91 169.74 0.656 0.30(0.29) 0.96 63177.6 10210.00
 28 31724.47 173.84 0.647 0.30(0.29) 0.96 63324.4 12000.00
 29 28174.72 200.47 0.615 0.30(0.29) 0.96 63937.3 10100.00
 TOTAL AREA (ACRES) = 63937.3

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 38787.79 Tc(MIN.) = 115.217
 EFFECTIVE AREA(ACRES) = 47434.04 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
 TOTAL AREA(ACRES) = 63937.3
 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

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

ELEVATION DATA: UPSTREAM(FEET) = 161.03 DOWNSTREAM(FEET) = 141.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 364.08 CHANNEL SLOPE = 0.0550
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 7.64
 CHANNEL FLOW THRU SUBAREA(CFS) = 38787.79
 FLOW VELOCITY(FEET/SEC.) = 38.87 FLOW DEPTH(FEET) = 7.64
 TRAVEL TIME(MIN.) = 0.16 Tc(MIN.) = 115.37
 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

>>>>CLEAR MEMORY BANK # 3 <<<<<

FLOW PROCESS FROM NODE 13741.00 TO NODE 13741.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506104D.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM 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

>>>>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	20238.29	18.57	2.100	0.30(0.25)	0.84	3724.2	10300.00

2	20383.98	19.41	2.032	0.30(0.25)	0.84	3889.7	10380.00
3	20386.96	19.43	2.030	0.30(0.25)	0.84	3894.2	10230.00
4	21082.81	21.82	1.892	0.30(0.25)	0.84	4454.1	10320.00
5	21680.28	23.92	1.786	0.30(0.25)	0.84	4933.7	10360.00
6	22497.36	26.81	1.657	0.30(0.25)	0.84	5586.8	10340.00
7	22936.52	28.38	1.591	0.30(0.25)	0.84	5938.0	10200.00
8	22967.64	28.61	1.582	0.30(0.25)	0.84	5988.3	10250.00
9	23563.45	32.49	1.474	0.30(0.25)	0.84	6830.5	10220.00
10	23596.13	33.16	1.461	0.30(0.25)	0.84	6973.5	410.00
11	26304.37	45.30	1.242	0.30(0.26)	0.86	11506.0	10100.00
12	27257.96	50.02	1.171	0.30(0.26)	0.86	13233.0	150.00
13	29033.44	58.25	1.067	0.30(0.26)	0.88	16419.8	600.00
14	29702.27	62.97	1.028	0.30(0.27)	0.89	18515.4	31100.00
15	31517.84	74.71	0.962	0.30(0.27)	0.91	23697.2	40100.00
16	32958.52	82.21	0.919	0.30(0.27)	0.91	27043.6	11801.00
17	35229.48	92.54	0.866	0.30(0.28)	0.92	32363.8	11530.00
18	36483.50	101.01	0.834	0.30(0.28)	0.93	37602.0	11910.00
19	38346.05	110.72	0.798	0.30(0.28)	0.94	44259.8	11350.00
20	38787.79	115.37	0.780	0.30(0.28)	0.94	47434.0	11130.00
21	38440.72	121.46	0.760	0.30(0.28)	0.95	50360.6	12300.00
22	37755.84	130.26	0.741	0.30(0.29)	0.95	54621.2	12400.00
23	36790.29	139.82	0.720	0.30(0.29)	0.95	58022.8	12201.00
24	35870.43	147.36	0.704	0.30(0.29)	0.95	59915.8	12231.00
25	34908.61	154.90	0.688	0.30(0.29)	0.95	61468.6	10400.00
26	33394.55	164.44	0.667	0.30(0.29)	0.96	62915.0	12010.00
27	32376.91	169.91	0.656	0.30(0.29)	0.96	63177.6	10210.00
28	31724.47	174.01	0.647	0.30(0.29)	0.96	63324.4	12000.00
29	28174.72	200.64	0.615	0.30(0.29)	0.96	63937.3	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	20303.68	18.57	2.100	0.30(0.25)	0.84	3765.8	10300.00
2	20449.82	19.41	2.032	0.30(0.25)	0.84	3933.2	10380.00
3	20452.82	19.43	2.030	0.30(0.25)	0.84	3937.8	10230.00
4	20553.40	19.78	2.002	0.30(0.25)	0.84	4019.4	10400.00
5	21144.67	21.82	1.892	0.30(0.25)	0.84	4498.4	10320.00
6	21738.19	23.92	1.786	0.30(0.25)	0.84	4978.0	10360.00
7	22550.42	26.81	1.657	0.30(0.25)	0.84	5631.1	10340.00
8	22987.13	28.38	1.591	0.30(0.25)	0.84	5982.3	10200.00
9	23017.89	28.61	1.582	0.30(0.25)	0.84	6032.6	10250.00
10	23609.66	32.49	1.474	0.30(0.25)	0.84	6874.8	10220.00
11	23641.83	33.16	1.461	0.30(0.25)	0.84	7017.8	410.00
12	26341.91	45.30	1.242	0.30(0.26)	0.86	11550.3	10100.00
13	27292.83	50.02	1.171	0.30(0.26)	0.86	13277.3	150.00
14	29064.42	58.25	1.067	0.30(0.26)	0.88	16464.1	600.00
15	29731.79	62.97	1.028	0.30(0.27)	0.89	18559.7	31100.00
16	31544.87	74.71	0.962	0.30(0.27)	0.91	23741.5	40100.00
17	32983.96	82.21	0.919	0.30(0.27)	0.91	27087.9	11801.00
18	35252.91	92.54	0.866	0.30(0.28)	0.92	32408.1	11530.00
19	36505.75	101.01	0.834	0.30(0.28)	0.93	37646.3	11910.00

20	38366.94	110.72	0.798	0.30	(0.28)	0.94	44304.1	11350.00
21	38808.03	115.37	0.780	0.30	(0.28)	0.94	47478.3	11130.00
22	38460.20	121.46	0.760	0.30	(0.28)	0.95	50404.9	12300.00
23	37774.61	130.26	0.741	0.30	(0.29)	0.95	54665.5	12400.00
24	36808.29	139.82	0.720	0.30	(0.29)	0.95	58067.1	12201.00
25	35887.83	147.36	0.704	0.30	(0.29)	0.95	59960.1	12231.00
26	34925.39	154.90	0.688	0.30	(0.29)	0.95	61512.9	10400.00
27	33410.57	164.44	0.667	0.30	(0.29)	0.96	62959.3	12010.00
28	32392.49	169.91	0.656	0.30	(0.29)	0.96	63221.9	10210.00
29	31739.72	174.01	0.647	0.30	(0.29)	0.96	63368.7	12000.00
30	28188.76	200.64	0.615	0.30	(0.29)	0.96	63981.6	10100.00

TOTAL AREA (ACRES) = 63981.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38808.03 Tc (MIN.) = 115.373
EFFECTIVE AREA (ACRES) = 47478.34 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 63981.6
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) = 15.56
CHANNEL FLOW THRU SUBAREA (CFS) = 38808.03
FLOW VELOCITY (FEET/SEC.) = 15.37 FLOW DEPTH (FEET) = 15.56
TRAVEL TIME (MIN.) = 1.66 Tc (MIN.) = 117.04
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	20303.68	20.58	1.955	0.30 (0.25)	0.84	3765.8	10300.00
2	20449.82	21.41	1.913	0.30 (0.25)	0.84	3933.2	10380.00
3	20452.82	21.44	1.912	0.30 (0.25)	0.84	3937.8	10230.00
4	20553.40	21.78	1.894	0.30 (0.25)	0.84	4019.4	10400.00
5	21144.67	23.81	1.792	0.30 (0.25)	0.84	4498.4	10320.00
6	21738.19	25.89	1.695	0.30 (0.25)	0.84	4978.0	10360.00
7	22550.42	28.75	1.576	0.30 (0.25)	0.84	5631.1	10340.00
8	22987.13	30.31	1.518	0.30 (0.25)	0.84	5982.3	10200.00
9	23017.89	30.54	1.513	0.30 (0.25)	0.84	6032.6	10250.00
10	23609.66	34.41	1.435	0.30 (0.25)	0.84	6874.8	10220.00
11	23641.83	35.07	1.422	0.30 (0.25)	0.84	7017.8	410.00
12	26341.91	47.16	1.214	0.30 (0.26)	0.86	11550.3	10100.00
13	27292.83	51.86	1.148	0.30 (0.26)	0.86	13277.3	150.00
14	29064.42	60.06	1.045	0.30 (0.26)	0.88	16464.1	600.00
15	29731.79	64.76	1.018	0.30 (0.27)	0.89	18559.7	31100.00
16	31544.87	76.48	0.952	0.30 (0.27)	0.91	23741.5	40100.00
17	32983.96	83.95	0.909	0.30 (0.27)	0.91	27087.9	11801.00
18	35252.91	94.25	0.859	0.30 (0.28)	0.92	32408.1	11530.00
19	36505.75	102.71	0.828	0.30 (0.28)	0.93	37646.3	11910.00
20	38366.94	112.39	0.791	0.30 (0.28)	0.94	44304.1	11350.00
21	38808.03	117.04	0.774	0.30 (0.28)	0.94	47478.3	11130.00
22	38460.20	123.13	0.756	0.30 (0.28)	0.95	50404.9	12300.00
23	37774.61	131.93	0.737	0.30 (0.29)	0.95	54665.5	12400.00
24	36808.29	141.51	0.717	0.30 (0.29)	0.95	58067.1	12201.00
25	35887.83	149.06	0.701	0.30 (0.29)	0.95	59960.1	12231.00
26	34925.39	156.61	0.684	0.30 (0.29)	0.95	61512.9	10400.00
27	33410.57	166.18	0.664	0.30 (0.29)	0.96	62959.3	12010.00
28	32392.49	171.66	0.652	0.30 (0.29)	0.96	63221.9	10210.00
29	31739.72	175.77	0.643	0.30 (0.29)	0.96	63368.7	12000.00
30	28188.76	202.47	0.613	0.30 (0.29)	0.96	63981.6	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	18935.84	14.74	2.428	0.30 (0.25)	0.84	2903.6	10520.00
2	20679.81	20.58	1.955	0.30 (0.25)	0.84	4040.6	10300.00
3	20828.87	21.41	1.913	0.30 (0.25)	0.84	4217.8	10380.00
4	20831.94	21.44	1.912	0.30 (0.25)	0.84	4222.6	10230.00
5	20933.73	21.78	1.894	0.30 (0.25)	0.84	4308.2	10400.00
6	21532.08	23.81	1.792	0.30 (0.25)	0.85	4810.9	10320.00
7	22132.86	25.89	1.695	0.30 (0.25)	0.85	5314.7	10360.00
8	22955.10	28.75	1.576	0.30 (0.25)	0.85	6001.3	10340.00
9	23397.26	30.31	1.518	0.30 (0.25)	0.85	6370.7	10200.00
10	23428.82	30.54	1.513	0.30 (0.25)	0.85	6423.7	10250.00

11	23596.55	31.61	1.492	0.30	(0.25)	0.85	6669.6	10500.00
12	24005.14	34.41	1.435	0.30	(0.25)	0.85	7278.4	10220.00
13	24032.75	35.07	1.422	0.30	(0.25)	0.85	7421.4	410.00
14	26661.83	47.16	1.214	0.30	(0.26)	0.86	11953.9	10100.00
15	27589.98	51.86	1.148	0.30	(0.26)	0.87	13680.9	150.00
16	29326.40	60.06	1.045	0.30	(0.26)	0.88	16867.7	600.00
17	29984.66	64.76	1.018	0.30	(0.27)	0.89	18963.3	31100.00
18	31775.06	76.48	0.952	0.30	(0.27)	0.91	24145.1	40100.00
19	33199.68	83.95	0.909	0.30	(0.27)	0.91	27491.5	11801.00
20	35451.49	94.25	0.859	0.30	(0.28)	0.92	32811.7	11530.00
21	36693.54	102.71	0.828	0.30	(0.28)	0.93	38049.9	11910.00
22	38542.38	112.39	0.791	0.30	(0.28)	0.94	44707.7	11350.00
23	38977.54	117.04	0.774	0.30	(0.28)	0.94	47881.9	11130.00
24	38623.63	123.13	0.756	0.30	(0.28)	0.95	50808.5	12300.00
25	37931.57	131.93	0.737	0.30	(0.28)	0.95	55069.1	12400.00
26	36958.22	141.51	0.717	0.30	(0.29)	0.95	58470.7	12201.00
27	36032.21	149.06	0.701	0.30	(0.29)	0.95	60363.7	12231.00
28	35064.23	156.61	0.684	0.30	(0.29)	0.95	61916.5	10400.00
29	33542.38	166.18	0.664	0.30	(0.29)	0.95	63362.9	12010.00
30	32520.27	171.66	0.652	0.30	(0.29)	0.96	63625.5	10210.00
31	31864.48	175.77	0.643	0.30	(0.29)	0.96	63772.3	12000.00
32	28303.16	202.47	0.613	0.30	(0.29)	0.96	64385.2	10100.00

TOTAL AREA (ACRES) = 64385.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38977.54 Tc (MIN.) = 117.036
EFFECTIVE AREA (ACRES) = 47881.95 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA (ACRES) = 64385.2
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) = 12.30
CHANNEL FLOW THRU SUBAREA (CFS) = 38977.54
FLOW VELOCITY (FEET/SEC.) = 21.23 FLOW DEPTH (FEET) = 12.30
TRAVEL TIME (MIN.) = 0.16 Tc (MIN.) = 117.20
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 117.20
* 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.773
SUBAREA LOSS RATE DATA (AMC II):

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

"1 DWELLING/ACRE" B 48.80 0.30 0.800 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.800
SUBAREA AREA (ACRES) = 48.80 SUBAREA RUNOFF (CFS) = 23.43
EFFECTIVE AREA (ACRES) = 47930.75 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64434.0 PEAK FLOW RATE (CFS) = 38977.54
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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	18935.84	14.94	2.399	0.30 (0.25)	0.84	2952.4	10520.00
2	20679.81	20.77	1.945	0.30 (0.25)	0.84	4089.4	10300.00
3	20828.87	21.61	1.903	0.30 (0.25)	0.84	4266.6	10380.00
4	20831.94	21.63	1.902	0.30 (0.25)	0.84	4271.4	10230.00
5	20933.73	21.97	1.884	0.30 (0.25)	0.84	4357.0	10400.00
6	21532.08	24.00	1.782	0.30 (0.25)	0.84	4859.7	10320.00
7	22132.86	26.08	1.687	0.30 (0.25)	0.85	5363.5	10360.00
8	22955.10	28.94	1.568	0.30 (0.25)	0.85	6050.1	10340.00
9	23397.26	30.50	1.514	0.30 (0.25)	0.85	6419.5	10200.00
10	23428.82	30.73	1.509	0.30 (0.25)	0.85	6472.5	10250.00
11	23596.55	31.80	1.488	0.30 (0.25)	0.85	6718.4	10500.00
12	24005.14	34.60	1.432	0.30 (0.25)	0.85	7327.2	10220.00
13	24032.75	35.26	1.418	0.30 (0.25)	0.85	7470.2	410.00
14	26661.83	47.34	1.211	0.30 (0.26)	0.86	1202.7	10100.00
15	27589.98	52.04	1.145	0.30 (0.26)	0.87	13729.7	150.00
16	29326.40	60.23	1.044	0.30 (0.26)	0.88	16916.5	600.00
17	29984.66	64.94	1.017	0.30 (0.27)	0.89	19012.1	31100.00
18	31775.06	76.65	0.951	0.30 (0.27)	0.91	24193.9	40100.00
19	33199.68	84.12	0.908	0.30 (0.27)	0.91	27540.3	11801.00
20	35451.49	94.41	0.859	0.30 (0.28)	0.92	32860.5	11530.00
21	36693.54	102.87	0.827	0.30 (0.28)	0.93	38098.7	11910.00
22	38542.38	112.55	0.791	0.30 (0.28)	0.94	44756.5	11350.00

23 38977.54 117.20 0.773 0.30(0.28) 0.94 47930.7 11130.00
 24 38623.63 123.29 0.756 0.30(0.28) 0.95 50857.3 12300.00
 25 37931.57 132.10 0.737 0.30(0.28) 0.95 55117.9 12400.00
 26 36958.22 141.67 0.716 0.30(0.29) 0.95 58519.5 12201.00
 27 36032.21 149.22 0.700 0.30(0.29) 0.95 60412.5 12231.00
 28 35064.23 156.78 0.684 0.30(0.29) 0.95 61965.3 10400.00
 29 33542.38 166.35 0.663 0.30(0.29) 0.95 63411.7 12010.00
 30 32520.27 171.83 0.652 0.30(0.29) 0.95 63674.3 10210.00
 31 31864.48 175.94 0.643 0.30(0.29) 0.95 63821.1 12000.00
 32 28303.16 202.65 0.613 0.30(0.29) 0.96 64434.0 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18991.65	14.94	2.399	0.30(0.25)	0.84	2983.6	10520.00
2	19807.48	17.66	2.174	0.30(0.25)	0.84	3519.0	10600.00
3	20732.16	20.77	1.945	0.30(0.25)	0.84	4126.3	10300.00
4	20879.96	21.61	1.903	0.30(0.25)	0.84	4303.5	10380.00
5	20883.00	21.63	1.902	0.30(0.25)	0.84	4308.3	10230.00
6	20984.26	21.97	1.884	0.30(0.25)	0.84	4393.9	10400.00
7	21579.55	24.00	1.782	0.30(0.25)	0.84	4896.6	10320.00
8	22177.47	26.08	1.687	0.30(0.25)	0.84	5400.4	10360.00
9	22996.13	28.94	1.568	0.30(0.25)	0.84	6087.0	10340.00
10	23436.67	30.50	1.514	0.30(0.25)	0.85	6456.4	10200.00
11	23468.10	30.73	1.509	0.30(0.25)	0.85	6509.4	10250.00
12	23635.18	31.80	1.488	0.30(0.25)	0.85	6755.3	10500.00
13	24042.08	34.60	1.432	0.30(0.25)	0.85	7364.1	10220.00
14	24069.29	35.26	1.418	0.30(0.25)	0.85	7507.1	410.00
15	26692.17	47.34	1.211	0.30(0.26)	0.86	12039.6	10100.00
16	27618.33	52.04	1.145	0.30(0.26)	0.87	13766.6	150.00
17	29351.70	60.23	1.044	0.30(0.26)	0.88	16953.4	600.00
18	30009.15	64.94	1.017	0.30(0.27)	0.89	19049.0	31100.00
19	31797.56	76.65	0.951	0.30(0.27)	0.91	24230.8	40100.00
20	33220.91	84.12	0.908	0.30(0.27)	0.91	27577.2	11801.00
21	35471.23	94.41	0.859	0.30(0.28)	0.92	32897.4	11530.00
22	36712.33	102.87	0.827	0.30(0.28)	0.93	38135.6	11910.00
23	38560.09	112.55	0.791	0.30(0.28)	0.94	44793.4	11350.00
24	38994.73	117.20	0.773	0.30(0.28)	0.94	47967.6	11130.00
25	38640.29	123.29	0.756	0.30(0.28)	0.95	50894.2	12300.00
26	37947.66	132.10	0.737	0.30(0.28)	0.95	55154.8	12400.00
27	36973.69	141.67	0.716	0.30(0.29)	0.95	58556.4	12201.00
28	36047.20	149.22	0.700	0.30(0.29)	0.95	60449.4	12231.00
29	35078.72	156.78	0.684	0.30(0.29)	0.95	62002.2	10400.00
30	33556.26	166.35	0.663	0.30(0.29)	0.95	63448.6	12010.00
31	32533.79	171.83	0.652	0.30(0.29)	0.95	63711.2	10210.00
32	31877.74	175.94	0.643	0.30(0.29)	0.95	63858.0	12000.00
33	28315.52	202.65	0.613	0.30(0.29)	0.96	64470.9	10100.00

TOTAL AREA (ACRES) = 64470.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 38994.73 Tc (MIN.) = 117.198

EFFECTIVE AREA (ACRES) = 47967.64 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 64470.9
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

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 END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 64470.9 TC (MIN.) = 117.20
 EFFECTIVE AREA (ACRES) = 47967.64 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.944
 PEAK FLOW RATE (CFS) = 38994.73

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18991.65	14.94	2.399	0.30(0.25)	0.84	2983.6	10520.00
2	19807.48	17.66	2.174	0.30(0.25)	0.84	3519.0	10600.00
3	20732.16	20.77	1.945	0.30(0.25)	0.84	4126.3	10300.00
4	20879.96	21.61	1.903	0.30(0.25)	0.84	4303.5	10380.00
5	20883.00	21.63	1.902	0.30(0.25)	0.84	4308.3	10230.00
6	20984.26	21.97	1.884	0.30(0.25)	0.84	4393.9	10400.00
7	21579.55	24.00	1.782	0.30(0.25)	0.84	4896.6	10320.00
8	22177.47	26.08	1.687	0.30(0.25)	0.84	5400.4	10360.00
9	22996.13	28.94	1.568	0.30(0.25)	0.84	6087.0	10340.00
10	23436.67	30.50	1.514	0.30(0.25)	0.85	6456.4	10200.00
11	23468.10	30.73	1.509	0.30(0.25)	0.85	6509.4	10250.00
12	23635.18	31.80	1.488	0.30(0.25)	0.85	6755.3	10500.00
13	24042.08	34.60	1.432	0.30(0.25)	0.85	7364.1	10220.00
14	24069.29	35.26	1.418	0.30(0.25)	0.85	7507.1	410.00
15	26692.17	47.34	1.211	0.30(0.26)	0.86	12039.6	10100.00
16	27618.33	52.04	1.145	0.30(0.26)	0.87	13766.6	150.00
17	29351.70	60.23	1.044	0.30(0.26)	0.88	16953.4	600.00
18	30009.15	64.94	1.017	0.30(0.27)	0.89	19049.0	31100.00
19	31797.56	76.65	0.951	0.30(0.27)	0.91	24230.8	40100.00
20	33220.91	84.12	0.908	0.30(0.27)	0.91	27577.2	11801.00
21	35471.23	94.41	0.859	0.30(0.28)	0.92	32897.4	11530.00
22	36712.33	102.87	0.827	0.30(0.28)	0.93	38135.6	11910.00
23	38560.09	112.55	0.791	0.30(0.28)	0.94	44793.4	11350.00
24	38994.73	117.20	0.773	0.30(0.28)	0.94	47967.6	11130.00
25	38640.29	123.29	0.756	0.30(0.28)	0.95	50894.2	12300.00
26	37947.66	132.10	0.737	0.30(0.28)	0.95	55154.8	12400.00
27	36973.69	141.67	0.716	0.30(0.29)	0.95	58556.4	12201.00
28	36047.20	149.22	0.700	0.30(0.29)	0.95	60449.4	12231.00
29	35078.72	156.78	0.684	0.30(0.29)	0.95	62002.2	10400.00
30	33556.26	166.35	0.663	0.30(0.29)	0.95	63448.6	12010.00
31	32533.79	171.83	0.652	0.30(0.29)	0.95	63711.2	10210.00
32	31877.74	175.94	0.643	0.30(0.29)	0.95	63858.0	12000.00
33	28315.52	202.65	0.613	0.30(0.29)	0.96	64470.9	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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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S38- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV38.DAT
TIME/DATE OF STUDY: 09:45 06/14/2019

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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; 4.741
- 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; 1.160
- 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-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: RI25EV37.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	19807.48	17.66	0.30 (0.25)	0.84	3519.0	10600.00
2	24069.29	35.26	0.30 (0.25)	0.85	7507.1	410.00
3	26692.17	47.34	0.30 (0.26)	0.86	12039.6	10100.00
4	27618.33	52.04	0.30 (0.26)	0.87	13766.6	150.00
5	29351.70	60.23	0.30 (0.26)	0.88	16953.4	600.00
6	30009.15	64.94	0.30 (0.27)	0.89	19049.0	31100.00
7	31797.56	76.65	0.30 (0.27)	0.91	24230.8	40100.00
8	33220.91	84.12	0.30 (0.27)	0.91	27577.2	11801.00
9	35471.23	94.41	0.30 (0.28)	0.92	32897.4	11530.00
10	36712.33	102.87	0.30 (0.28)	0.93	38135.6	11910.00
11	38560.09	112.55	0.30 (0.28)	0.94	44793.4	11350.00
12	38994.73	117.20	0.30 (0.28)	0.94	47967.6	11130.00
13	38640.29	123.29	0.30 (0.28)	0.95	50894.2	12300.00
14	37947.66	132.10	0.30 (0.28)	0.95	55154.8	12400.00
15	36973.69	141.67	0.30 (0.29)	0.95	58556.4	12201.00
16	36047.20	149.22	0.30 (0.29)	0.95	60449.4	12231.00
17	35078.72	156.78	0.30 (0.29)	0.95	62002.2	10400.00
18	33556.26	166.35	0.30 (0.29)	0.95	63448.6	12010.00
19	32533.79	171.83	0.30 (0.29)	0.95	63711.2	10210.00
20	28315.52	202.65	0.30 (0.29)	0.96	64470.9	10100.00
TOTAL AREA(ACRES) =						64470.9

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	19807.48	17.66	0.30 (0.25)	0.84	3519.0	10600.00
2	24069.29	35.26	0.30 (0.25)	0.85	7507.1	410.00
3	26692.17	47.34	0.30 (0.26)	0.86	12039.6	10100.00
4	27618.33	52.04	0.30 (0.26)	0.87	13766.6	150.00
5	29351.70	60.23	0.30 (0.26)	0.88	16953.4	600.00
6	30009.15	64.94	0.30 (0.27)	0.89	19049.0	31100.00
7	31797.56	76.65	0.30 (0.27)	0.91	24230.8	40100.00
8	33220.91	84.12	0.30 (0.27)	0.91	27577.2	11801.00
9	35471.23	94.41	0.30 (0.28)	0.92	32897.4	11530.00
10	36712.33	102.87	0.30 (0.28)	0.93	38135.6	11910.00
11	38560.09	112.55	0.30 (0.28)	0.94	44793.4	11350.00
12	38994.73	117.20	0.30 (0.28)	0.94	47967.6	11130.00
13	38640.29	123.29	0.30 (0.28)	0.95	50894.2	12300.00

14 37947.66 132.10 0.30(0.28) 0.95 55154.8 12400.00
 15 36973.69 141.67 0.30(0.29) 0.95 58556.4 12201.00
 16 36047.20 149.22 0.30(0.29) 0.95 60449.4 12231.00
 17 35078.72 156.78 0.30(0.29) 0.95 62002.2 10400.00
 18 33556.26 166.35 0.30(0.29) 0.95 63448.6 12010.00
 19 32533.79 171.83 0.30(0.29) 0.95 63711.2 10210.00
 20 28315.52 202.65 0.30(0.29) 0.96 64470.9 10100.00
 TOTAL AREA (ACRES) = 64470.9

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) = 16.38

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.767

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) = 39001.41

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.39

AVERAGE FLOW DEPTH(FEET) = 16.38 TRAVEL TIME(MIN.) = 1.07

Tc(MIN.) = 118.27

SUBAREA AREA(ACRES) = 31.44 SUBAREA RUNOFF(CFS) = 13.37

EFFECTIVE AREA(ACRES) = 47999.09 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 64502.4 PEAK FLOW RATE(CFS) = 38994.73

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 16.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 16.38 FLOW VELOCITY(FEET/SEC.) = 14.39

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.) = 118.27

RAINFALL INTENSITY(INCH/HR) = 0.77

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 47999.09

TOTAL STREAM AREA(ACRES) = 64502.36

PEAK FLOW RATE(CFS) AT CONFLUENCE = 38994.73

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/ 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	56	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

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/ 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) = 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.

*****
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

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.11 FLOW VELOCITY(FEET/SEC.) = 7.72
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31
-----
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00
FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 22.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 22.06
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 104.66
PIPE TRAVEL TIME(MIN.) = 1.82 Tc(MIN.) = 21.26
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 21.26
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 1.918
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE           GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED      -      83.64   0.30  0.570  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570
SUBAREA AREA(ACRES) = 83.64 SUBAREA RUNOFF(CFS) = 131.50
EFFECTIVE AREA(ACRES) = 150.29 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 150.3 PEAK FLOW RATE(CFS) = 229.62

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 21.26
RAINFALL INTENSITY(INCH/HR) = 1.92
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.73
EFFECTIVE STREAM AREA(ACRES) = 150.29

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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	19807.48	18.96	2.065	0.30 (0.25)	0.84	3550.4	10600.00
1	24069.29	36.50	1.392	0.30 (0.25)	0.85	7538.6	410.00
1	26692.17	48.53	1.184	0.30 (0.26)	0.86	12071.1	10100.00
1	27618.33	53.22	1.122	0.30 (0.26)	0.87	13798.1	150.00
1	29351.70	61.40	1.035	0.30 (0.26)	0.88	16984.9	600.00
1	30009.15	66.10	1.008	0.30 (0.27)	0.89	19080.4	31100.00
1	31797.56	77.79	0.942	0.30 (0.27)	0.91	24262.2	40100.00
1	33220.91	85.24	0.900	0.30 (0.27)	0.91	27608.6	11801.00
1	35471.23	95.52	0.852	0.30 (0.28)	0.92	32928.8	11530.00
1	36712.33	103.96	0.821	0.30 (0.28)	0.93	38167.0	11910.00
1	38560.09	113.63	0.785	0.30 (0.28)	0.94	44824.9	11350.00
1	38994.73	118.27	0.767	0.30 (0.28)	0.94	47999.1	11130.00
1	38640.29	124.36	0.752	0.30 (0.28)	0.95	50925.7	12300.00
1	37947.66	133.18	0.733	0.30 (0.28)	0.95	55186.3	12400.00
1	36973.69	142.76	0.712	0.30 (0.29)	0.95	58587.8	12201.00
1	36047.20	150.32	0.696	0.30 (0.29)	0.95	60480.9	12231.00
1	35078.72	157.89	0.680	0.30 (0.29)	0.95	62033.6	10400.00
1	33556.26	167.47	0.659	0.30 (0.29)	0.95	63480.0	12010.00
1	32533.79	172.96	0.647	0.30 (0.29)	0.95	63742.6	10210.00
1	28315.52	203.82	0.610	0.30 (0.29)	0.96	64502.4	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	20030.07	18.96	2.065	0.30 (0.25)	0.84	3684.5	10600.00
2	20594.65	21.26	1.918	0.30 (0.25)	0.84	4222.5	13810.00
3	24227.84	36.50	1.392	0.30 (0.25)	0.84	7688.9	410.00
4	26822.49	48.53	1.184	0.30 (0.26)	0.86	12221.4	10100.00
5	27740.35	53.22	1.122	0.30 (0.26)	0.86	13948.4	150.00
6	29461.91	61.40	1.035	0.30 (0.26)	0.88	17135.2	600.00
7	30115.76	66.10	1.008	0.30 (0.27)	0.89	19230.7	31100.00
8	31895.21	77.79	0.942	0.30 (0.27)	0.91	24412.5	40100.00
9	33312.85	85.24	0.900	0.30 (0.27)	0.91	27758.9	11801.00
10	35556.73	95.52	0.852	0.30 (0.28)	0.92	33079.1	11530.00
11	36793.57	103.96	0.821	0.30 (0.28)	0.93	38317.3	11910.00
12	38636.45	113.63	0.785	0.30 (0.28)	0.94	44975.2	11350.00
13	39068.74	118.27	0.767	0.30 (0.28)	0.94	48149.4	11130.00
14	38712.16	124.36	0.752	0.30 (0.28)	0.95	51076.0	12300.00
15	38016.97	133.18	0.733	0.30 (0.28)	0.95	55336.6	12400.00
16	37040.21	142.76	0.712	0.30 (0.29)	0.95	58738.1	12201.00
17	36111.52	150.32	0.696	0.30 (0.29)	0.95	60631.2	12231.00
18	35140.85	157.89	0.680	0.30 (0.29)	0.95	62183.9	10400.00
19	33615.59	167.47	0.659	0.30 (0.29)	0.95	63630.3	12010.00
20	32591.54	172.96	0.647	0.30 (0.29)	0.95	63892.9	10210.00
21	28368.17	203.82	0.610	0.30 (0.29)	0.95	64652.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 39068.74 Tc(MIN.) = 118.27

EFFECTIVE AREA(ACRES) = 48149.38 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 64652.6
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) = 16.48

* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.762

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) = 39076.66

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.29

AVERAGE FLOW DEPTH(FEET) = 16.48 TRAVEL TIME(MIN.) = 1.47

Tc(MIN.) = 119.74

SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 15.84

EFFECTIVE AREA(ACRES) = 48180.98 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 64684.2 PEAK FLOW RATE(CFS) = 39068.74

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) = 16.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 16.48 FLOW VELOCITY(FEET/SEC.) = 14.29

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.) = 119.74

RAINFALL INTENSITY(INCH/HR) = 0.76

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 48180.98

TOTAL STREAM AREA(ACRES) = 64684.25

PEAK FLOW RATE(CFS) AT CONFLUENCE = 39068.74

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 56 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

>>>>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<<<<<

=====

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	20030.07	20.75	1.944	0.30 (0.25)	0.84	3716.1	10600.00
1	20594.65	23.03	1.829	0.30 (0.25)	0.84	4254.1	13810.00
1	24227.84	38.18	1.359	0.30 (0.25)	0.84	7720.5	410.00
1	26822.49	50.17	1.158	0.30 (0.26)	0.86	12253.0	10100.00
1	27740.35	54.84	1.103	0.30 (0.26)	0.86	13980.0	150.00
1	29461.91	62.99	1.026	0.30 (0.26)	0.88	17166.8	600.00
1	30115.76	67.68	0.999	0.30 (0.27)	0.89	19262.3	31100.00
1	31895.21	79.35	0.933	0.30 (0.27)	0.91	24444.1	40100.00
1	33312.85	86.78	0.891	0.30 (0.27)	0.91	27790.5	11801.00
1	35556.73	97.03	0.847	0.30 (0.28)	0.92	33110.7	11530.00
1	36793.57	105.46	0.815	0.30 (0.28)	0.93	38348.9	11910.00
1	38636.45	115.10	0.779	0.30 (0.28)	0.94	45006.8	11350.00
1	39068.74	119.74	0.762	0.30 (0.28)	0.94	48181.0	11130.00

1	38712.16	125.84	0.748	0.30 (0.28)	0.95	51107.6	12300.00
1	38016.97	134.66	0.729	0.30 (0.28)	0.95	55368.2	12400.00
1	37040.21	144.25	0.709	0.30 (0.29)	0.95	58769.7	12201.00
1	36111.52	151.83	0.693	0.30 (0.29)	0.95	60662.8	12231.00
1	35140.85	159.40	0.676	0.30 (0.29)	0.95	62215.5	10400.00
1	33615.59	169.00	0.656	0.30 (0.29)	0.95	63661.9	12010.00
1	32591.54	174.51	0.644	0.30 (0.29)	0.95	63924.5	10210.00
1	28368.17	205.43	0.608	0.30 (0.29)	0.95	64684.2	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	20519.72	20.75	1.944	0.30 (0.25)	0.85	4045.2	10600.00
2	21100.49	23.03	1.829	0.30 (0.25)	0.85	4619.3	13810.00
3	24191.17	35.65	1.409	0.30 (0.26)	0.85	7707.5	13830.00
4	24771.59	38.18	1.359	0.30 (0.26)	0.85	8286.0	410.00
5	27264.17	50.17	1.158	0.30 (0.26)	0.86	12818.5	10100.00
6	28154.22	54.84	1.103	0.30 (0.26)	0.87	14545.5	150.00
7	29836.43	62.99	1.026	0.30 (0.26)	0.88	17732.3	600.00
8	30476.77	67.68	0.999	0.30 (0.27)	0.89	19827.8	31100.00
9	32222.57	79.35	0.933	0.30 (0.27)	0.91	25009.6	40100.00
10	33618.77	86.78	0.891	0.30 (0.27)	0.91	28356.0	11801.00
11	35840.02	97.03	0.847	0.30 (0.28)	0.92	33676.2	11530.00
12	37060.83	105.46	0.815	0.30 (0.28)	0.93	38914.4	11910.00
13	38885.39	115.10	0.779	0.30 (0.28)	0.94	45572.3	11350.00
14	39308.86	119.74	0.762	0.30 (0.28)	0.94	48746.5	11130.00
15	38945.41	125.84	0.748	0.30 (0.28)	0.95	51673.1	12300.00
16	38240.57	134.66	0.729	0.30 (0.28)	0.95	55933.7	12400.00
17	37253.31	144.25	0.709	0.30 (0.29)	0.95	59335.2	12201.00
18	36316.33	151.83	0.693	0.30 (0.29)	0.95	61228.3	12231.00
19	35337.36	159.40	0.676	0.30 (0.29)	0.95	62781.0	10400.00
20	33801.61	169.00	0.656	0.30 (0.29)	0.95	64227.4	12010.00
21	32771.52	174.51	0.644	0.30 (0.29)	0.95	64490.0	10210.00
22	28529.92	205.43	0.608	0.30 (0.29)	0.95	65249.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 39308.86 Tc (MIN.) = 119.74
 EFFECTIVE AREA (ACRES) = 48746.48 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65249.7
 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) = 15.03
 * 25 YEAR RAINFALL INTENSITY (INCH/HR) = 0.760

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) = 39310.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 16.33
AVERAGE FLOW DEPTH(FEET) = 15.03 TRAVEL TIME(MIN.) = 0.67
Tc(MIN.) = 120.41
SUBAREA AREA(ACRES) = 6.61 SUBAREA RUNOFF(CFS) = 2.78
EFFECTIVE AREA(ACRES) = 48753.09 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65256.4 PEAK FLOW RATE(CFS) = 39308.86
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 15.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 15.03 FLOW VELOCITY(FEET/SEC.) = 16.33
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.) = 120.41
RAINFALL INTENSITY(INCH/HR) = 0.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48753.09
TOTAL STREAM AREA(ACRES) = 65256.36
PEAK FLOW RATE(CFS) AT CONFLUENCE = 39308.86

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	56	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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 13855.00 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	20519.72	21.55	1.903	0.30(0.25)	0.85	4051.8	10600.00
1	21100.49	23.83	1.789	0.30(0.25)	0.85	4625.9	13810.00
1	24191.17	36.42	1.394	0.30(0.26)	0.85	7714.1	13830.00
1	24771.59	38.95	1.343	0.30(0.26)	0.85	8292.6	410.00
1	27264.17	50.91	1.149	0.30(0.26)	0.86	12825.1	10100.00
1	28154.22	55.58	1.095	0.30(0.26)	0.87	14552.1	150.00

1	29836.43	63.72	1.022	0.30(0.26)	0.88	17738.9	600.00
1	30476.77	68.40	0.995	0.30(0.27)	0.89	19834.4	31100.00
1	32222.57	80.05	0.929	0.30(0.27)	0.91	25016.2	40100.00
1	33618.77	87.48	0.887	0.30(0.27)	0.91	28362.6	11801.00
1	35840.02	97.71	0.844	0.30(0.28)	0.92	33682.8	11530.00
1	37060.83	106.14	0.813	0.30(0.28)	0.93	38921.0	11910.00
1	38885.39	115.77	0.777	0.30(0.28)	0.94	45578.9	11350.00
1	39308.86	120.41	0.760	0.30(0.28)	0.94	48753.1	11130.00
1	38945.41	126.51	0.747	0.30(0.28)	0.95	51679.7	12300.00
1	38240.57	135.33	0.728	0.30(0.28)	0.95	55940.3	12400.00
1	37253.31	144.93	0.707	0.30(0.29)	0.95	59341.8	12201.00
1	36316.33	152.51	0.691	0.30(0.29)	0.95	61234.9	12231.00
1	35337.36	160.09	0.675	0.30(0.29)	0.95	62787.6	10400.00
1	33801.61	169.70	0.654	0.30(0.29)	0.95	64234.0	12010.00
1	32771.52	175.21	0.642	0.30(0.29)	0.95	64496.6	10210.00
1	28529.92	206.17	0.607	0.30(0.29)	0.95	65256.4	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	20676.92	21.55	1.903	0.30(0.25)	0.85	4157.9	10600.00
2	21262.21	23.83	1.789	0.30(0.25)	0.85	4743.2	13810.00
3	21556.67	25.02	1.729	0.30(0.25)	0.85	5041.9	13850.00
4	24317.19	36.42	1.394	0.30(0.26)	0.85	7837.3	13830.00
5	24891.98	38.95	1.343	0.30(0.26)	0.85	8415.8	410.00
6	27363.07	50.91	1.149	0.30(0.26)	0.86	12948.3	10100.00
7	28247.06	55.58	1.095	0.30(0.26)	0.87	14675.3	150.00
8	29921.20	63.72	1.022	0.30(0.26)	0.88	17862.1	600.00
9	30558.59	68.40	0.995	0.30(0.27)	0.89	19957.7	31100.00
10	32297.07	80.05	0.929	0.30(0.27)	0.91	25139.4	40100.00
11	33688.61	87.48	0.887	0.30(0.27)	0.91	28485.8	11801.00
12	35905.07	97.71	0.844	0.30(0.28)	0.92	33806.0	11530.00
13	37122.40	106.14	0.813	0.30(0.28)	0.93	39044.2	11910.00
14	38942.97	115.77	0.777	0.30(0.28)	0.94	45702.1	11350.00
15	39364.60	120.41	0.760	0.30(0.28)	0.94	48876.3	11130.00
16	38999.68	126.51	0.747	0.30(0.28)	0.95	51802.9	12300.00
17	38292.74	135.33	0.728	0.30(0.28)	0.95	56063.5	12400.00
18	37303.20	144.93	0.707	0.30(0.29)	0.95	59465.1	12201.00
19	36364.41	152.51	0.691	0.30(0.29)	0.95	61358.1	12231.00
20	35383.64	160.09	0.675	0.30(0.29)	0.95	62910.8	10400.00
21	33845.59	169.70	0.654	0.30(0.29)	0.95	64357.2	12010.00
22	32814.19	175.21	0.642	0.30(0.29)	0.95	64619.8	10210.00
23	28568.71	206.17	0.607	0.30(0.29)	0.95	65379.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 39364.60 Tc(MIN.) = 120.41
 EFFECTIVE AREA(ACRES) = 48876.30 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65379.6
 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) = 10.91
* 25 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 - 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) = 39365.61
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 25.13
AVERAGE FLOW DEPTH(FEET) = 10.91 TRAVEL TIME(MIN.) = 0.41
Tc(MIN.) = 120.82
SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 2.02
EFFECTIVE AREA(ACRES) = 48881.20 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65384.5 PEAK FLOW RATE(CFS) = 39364.60
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) = 10.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 10.91 FLOW VELOCITY(FEET/SEC.) = 25.13
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.) = 120.82
RAINFALL INTENSITY(INCH/HR) = 0.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 48881.20
TOTAL STREAM AREA(ACRES) = 65384.46
PEAK FLOW RATE(CFS) AT CONFLUENCE = 39364.60

*****
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 56 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

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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	-	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	20676.92	22.05	1.878	0.30(0.25)	0.85	4162.8	10600.00
1	21262.21	24.32	1.764	0.30(0.25)	0.85	4748.1	13810.00
1	21556.67	25.51	1.709	0.30(0.25)	0.85	5046.7	13850.00
1	24317.19	36.89	1.384	0.30(0.26)	0.85	7842.2	13830.00
1	24891.98	39.41	1.334	0.30(0.26)	0.85	8420.7	410.00
1	27363.07	51.37	1.144	0.30(0.26)	0.86	12953.2	10100.00
1	28247.06	56.02	1.090	0.30(0.26)	0.87	14680.2	150.00
1	29921.20	64.16	1.019	0.30(0.26)	0.88	17867.0	600.00
1	30558.59	68.84	0.993	0.30(0.27)	0.89	19962.6	31100.00
1	32297.07	80.48	0.927	0.30(0.27)	0.91	25144.3	40100.00
1	33688.61	87.90	0.885	0.30(0.27)	0.91	28490.7	11801.00
1	35905.07	98.13	0.843	0.30(0.28)	0.92	33810.9	11530.00
1	37122.40	106.55	0.811	0.30(0.28)	0.93	39049.1	11910.00
1	38942.97	116.18	0.775	0.30(0.28)	0.94	45707.0	11350.00
1	39364.60	120.82	0.759	0.30(0.28)	0.94	48881.2	11130.00
1	38999.68	126.92	0.746	0.30(0.28)	0.95	51807.8	12300.00
1	38292.74	135.74	0.727	0.30(0.28)	0.95	56068.4	12400.00
1	37303.20	145.34	0.707	0.30(0.29)	0.95	59470.0	12201.00
1	36364.41	152.92	0.690	0.30(0.29)	0.95	61363.0	12231.00
1	35383.64	160.51	0.674	0.30(0.29)	0.95	62915.7	10400.00
1	33845.59	170.12	0.653	0.30(0.29)	0.95	64362.1	12010.00
1	32814.19	175.64	0.641	0.30(0.29)	0.95	64624.7	10210.00
1	28568.71	206.61	0.607	0.30(0.29)	0.95	65384.5	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	20676.92	22.05	1.878	0.30(0.25)	0.85	4162.8	10600.00
2	223.63	29.16	1.558	0.30(0.27)	0.90	192.8	13870.00

1	20888.04	22.05	1.878	0.30(0.26)	0.85	4308.6	10600.00
2	21478.58	24.32	1.764	0.30(0.26)	0.85	4908.9	13810.00
3	21775.24	25.51	1.709	0.30(0.26)	0.85	5215.4	13850.00
4	22666.07	29.16	1.558	0.30(0.26)	0.85	6136.6	13870.00
5	24510.74	36.89	1.384	0.30(0.26)	0.85	8035.1	13830.00
6	25076.74	39.41	1.334	0.30(0.26)	0.85	8613.5	410.00
7	27514.89	51.37	1.144	0.30(0.26)	0.86	13146.0	10100.00
8	28389.42	56.02	1.090	0.30(0.26)	0.87	14873.0	150.00
9	30051.41	64.16	1.019	0.30(0.26)	0.88	18059.8	600.00
10	30684.20	68.84	0.993	0.30(0.27)	0.89	20155.4	31100.00
11	32411.22	80.48	0.927	0.30(0.27)	0.91	25337.2	40100.00
12	33795.46	87.90	0.885	0.30(0.27)	0.91	28683.6	11801.00
13	36004.59	98.13	0.843	0.30(0.28)	0.92	34003.7	11530.00
14	37216.47	106.55	0.811	0.30(0.28)	0.93	39242.0	11910.00
15	39030.80	116.18	0.775	0.30(0.28)	0.94	45899.8	11350.00
16	39449.64	120.82	0.759	0.30(0.28)	0.94	49074.0	11130.00
17	39082.45	126.92	0.746	0.30(0.28)	0.95	52000.6	12300.00
18	38372.22	135.74	0.727	0.30(0.28)	0.95	56261.2	12400.00
19	37379.09	145.34	0.707	0.30(0.29)	0.95	59662.8	12201.00
20	36437.47	152.92	0.690	0.30(0.29)	0.95	61555.8	12231.00
21	35453.87	160.51	0.674	0.30(0.29)	0.95	63108.5	10400.00
22	33912.23	170.12	0.653	0.30(0.29)	0.95	64555.0	12010.00
23	32878.78	175.64	0.641	0.30(0.29)	0.95	64817.5	10210.00
24	28627.31	206.61	0.607	0.30(0.29)	0.95	65577.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 39449.64 Tc(MIN.) = 120.82
 EFFECTIVE AREA(ACRES) = 49074.02 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65577.3
 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<<<<<

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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) = 23.95
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.754

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) = 39478.09
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.42
 AVERAGE FLOW DEPTH(FEET) = 23.95 TRAVEL TIME(MIN.) = 2.36
 Tc(MIN.) = 123.17

SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 56.88
 EFFECTIVE AREA(ACRES) = 49191.71 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65695.0 PEAK FLOW RATE(CFS) = 39449.64

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) = 23.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 23.94 FLOW VELOCITY (FEET/SEC.) = 8.42
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.) = 123.17
RAINFALL INTENSITY (INCH/HR) = 0.75
AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA (ACRES) = 49191.71
TOTAL STREAM AREA (ACRES) = 65694.98
PEAK FLOW RATE (CFS) AT CONFLUENCE = 39449.64

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	56	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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 78.96
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.46
AVERAGE FLOW DEPTH(FEET) = 0.80 TRAVEL TIME(MIN.) = 1.93
Tc(MIN.) = 11.79
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 36.39
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 90.68
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.87 FLOW VELOCITY(FEET/SEC.) = 8.85
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.

FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 240.82 DOWNSTREAM(FEET) = 163.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1144.35 CHANNEL SLOPE = 0.0680
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.11
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.542
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 28.41 0.30 0.985 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 119.45
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.96
AVERAGE FLOW DEPTH(FEET) = 1.09 TRAVEL TIME(MIN.) = 2.13
Tc(MIN.) = 13.91
SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 57.44
EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 137.24

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.18 FLOW VELOCITY(FEET/SEC.) = 9.41
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.

FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013
DEPTH OF FLOW IN 42.0 INCH PIPE IS 32.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 17.06
ESTIMATED PIPE DIAMETER(INCH) = 42.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 137.24
PIPE TRAVEL TIME(MIN.) = 1.86 Tc(MIN.) = 15.77
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.

FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 15.77
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.324
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 11.69 0.30 0.634 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.634
SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 22.45
EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 146.34

FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 15.77
RAINFALL INTENSITY(INCH/HR) = 2.32
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 79.62
TOTAL STREAM AREA(ACRES) = 79.62
PEAK FLOW RATE(CFS) AT CONFLUENCE = 146.34

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	20888.04	24.85	1.737	0.30 (0.25)	0.85	4426.3	10600.00
1	21478.58	27.10	1.643	0.30 (0.25)	0.85	5026.6	13810.00
1	21775.24	28.28	1.594	0.30 (0.25)	0.85	5333.1	13850.00
1	22666.07	31.90	1.485	0.30 (0.25)	0.85	6254.3	13870.00
1	24510.74	39.57	1.331	0.30 (0.26)	0.85	8152.7	13830.00
1	25076.74	42.08	1.288	0.30 (0.26)	0.85	8731.2	410.00
1	27514.89	53.96	1.114	0.30 (0.26)	0.86	13263.7	10100.00
1	28389.42	58.60	1.059	0.30 (0.26)	0.87	14990.7	150.00
1	30051.41	66.69	1.005	0.30 (0.26)	0.88	18177.5	600.00
1	30684.20	71.36	0.979	0.30 (0.27)	0.89	20273.1	31100.00
1	32411.22	82.97	0.913	0.30 (0.27)	0.91	25454.8	40100.00
1	33795.46	90.36	0.872	0.30 (0.27)	0.91	28801.3	11801.00
1	36004.59	100.55	0.834	0.30 (0.28)	0.92	34121.4	11530.00
1	37216.47	108.94	0.802	0.30 (0.28)	0.93	39359.7	11910.00
1	39030.80	118.54	0.766	0.30 (0.28)	0.94	46017.5	11350.00
1	39449.64	123.17	0.754	0.30 (0.28)	0.94	49191.7	11130.00
1	39082.45	129.28	0.741	0.30 (0.28)	0.95	52118.3	12300.00
1	38372.22	138.12	0.722	0.30 (0.28)	0.95	56378.9	12400.00
1	37379.09	147.73	0.701	0.30 (0.29)	0.95	59780.5	12201.00
1	36437.47	155.33	0.685	0.30 (0.29)	0.95	61673.5	12231.00
1	35453.87	162.93	0.669	0.30 (0.29)	0.95	63226.2	10400.00
1	33912.23	172.58	0.648	0.30 (0.29)	0.95	64672.7	12010.00
1	32878.78	178.12	0.636	0.30 (0.29)	0.95	64935.2	10210.00
1	28627.31	209.18	0.604	0.30 (0.29)	0.95	65695.0	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	18639.75	15.77	2.324	0.30 (0.25)	0.85	2888.6	13889.00
2	20992.39	24.85	1.737	0.30 (0.25)	0.85	4505.9	10600.00
3	21576.17	27.10	1.643	0.30 (0.25)	0.85	5106.2	13810.00
4	21869.32	28.28	1.594	0.30 (0.25)	0.85	5412.7	13850.00
5	22752.31	31.90	1.485	0.30 (0.26)	0.85	6333.9	13870.00
6	24585.93	39.57	1.331	0.30 (0.26)	0.85	8232.4	13830.00
7	25148.91	42.08	1.288	0.30 (0.26)	0.85	8810.8	410.00
8	27574.53	53.96	1.114	0.30 (0.26)	0.86	13343.3	10100.00
9	28445.18	58.60	1.059	0.30 (0.26)	0.87	15070.3	150.00
10	30103.27	66.69	1.005	0.30 (0.26)	0.88	18257.1	600.00
11	30734.16	71.36	0.979	0.30 (0.27)	0.89	20352.7	31100.00
12	32456.48	82.97	0.913	0.30 (0.27)	0.91	25534.5	40100.00
13	33837.76	90.36	0.872	0.30 (0.27)	0.91	28880.9	11801.00
14	36044.17	100.55	0.834	0.30 (0.28)	0.92	34201.1	11530.00
15	37253.80	108.94	0.802	0.30 (0.28)	0.93	39439.3	11910.00
16	39065.56	118.54	0.766	0.30 (0.28)	0.94	46097.1	11350.00
17	39483.53	123.17	0.754	0.30 (0.28)	0.94	49271.3	11130.00
18	39115.39	129.28	0.741	0.30 (0.28)	0.95	52197.9	12300.00
19	38403.80	138.12	0.722	0.30 (0.28)	0.95	56458.5	12400.00
20	37409.19	147.73	0.701	0.30 (0.29)	0.95	59860.1	12201.00
21	36466.40	155.33	0.685	0.30 (0.29)	0.95	61753.1	12231.00
22	35481.63	162.93	0.669	0.30 (0.29)	0.95	63305.8	10400.00
23	33938.51	172.58	0.648	0.30 (0.29)	0.95	64752.3	12010.00

24	32904.20	178.12	0.636	0.30 (0.29)	0.95	65014.8	10210.00
25	28650.46	209.18	0.604	0.30 (0.29)	0.95	65774.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 39483.53 Tc(MIN.) = 123.17
 EFFECTIVE AREA(ACRES) = 49271.34 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65774.6
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

=====
 END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 65774.6 TC(MIN.) = 123.17
 EFFECTIVE AREA(ACRES) = 49271.34 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 PEAK FLOW RATE(CFS) = 39483.53

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18639.75	15.77	2.324	0.30 (0.25)	0.85	2888.6	13889.00
2	20992.39	24.85	1.737	0.30 (0.25)	0.85	4505.9	10600.00
3	21576.17	27.10	1.643	0.30 (0.25)	0.85	5106.2	13810.00
4	21869.32	28.28	1.594	0.30 (0.25)	0.85	5412.7	13850.00
5	22752.31	31.90	1.485	0.30 (0.26)	0.85	6333.9	13870.00
6	24585.93	39.57	1.331	0.30 (0.26)	0.85	8232.4	13830.00
7	25148.91	42.08	1.288	0.30 (0.26)	0.85	8810.8	410.00
8	27574.53	53.96	1.114	0.30 (0.26)	0.86	13343.3	10100.00
9	28445.18	58.60	1.059	0.30 (0.26)	0.87	15070.3	150.00
10	30103.27	66.69	1.005	0.30 (0.26)	0.88	18257.1	600.00
11	30734.16	71.36	0.979	0.30 (0.27)	0.89	20352.7	31100.00
12	32456.48	82.97	0.913	0.30 (0.27)	0.91	25534.5	40100.00
13	33837.76	90.36	0.872	0.30 (0.27)	0.91	28880.9	11801.00
14	36044.17	100.55	0.834	0.30 (0.28)	0.92	34201.1	11530.00
15	37253.80	108.94	0.802	0.30 (0.28)	0.93	39439.3	11910.00
16	39065.56	118.54	0.766	0.30 (0.28)	0.94	46097.1	11350.00
17	39483.53	123.17	0.754	0.30 (0.28)	0.94	49271.3	11130.00
18	39115.39	129.28	0.741	0.30 (0.28)	0.95	52197.9	12300.00
19	38403.80	138.12	0.722	0.30 (0.28)	0.95	56458.5	12400.00
20	37409.19	147.73	0.701	0.30 (0.29)	0.95	59860.1	12201.00
21	36466.40	155.33	0.685	0.30 (0.29)	0.95	61753.1	12231.00
22	35481.63	162.93	0.669	0.30 (0.29)	0.95	63305.8	10400.00
23	33938.51	172.58	0.648	0.30 (0.29)	0.95	64752.3	12010.00
24	32904.20	178.12	0.636	0.30 (0.29)	0.95	65014.8	10210.00
25	28650.46	209.18	0.604	0.30 (0.29)	0.95	65774.6	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S39- COMPLEX - PHASE CONDITION NO PA5 *
* 25-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI25EV39.DAT
TIME/DATE OF STUDY: 09:46 06/14/2019

=====

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; 4.737
- 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- / 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 13900.00 TO NODE 13901.00 IS CODE = 21

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

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 600.65
ELEVATION DATA: UPSTREAM(FEET) = 442.40 DOWNSTREAM(FEET) = 385.16

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 10.859
* 25 YEAR RAINFALL INTENSITY(INCH/HR) = 2.979
SUBAREA Tc AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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	56	10.86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 9.64
TOTAL AREA(ACRES) = 4.00 PEAK FLOW RATE(CFS) = 9.64

FLOW PROCESS FROM NODE 13901.00 TO NODE 13902.00 IS CODE = 56

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

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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<<<<

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

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

PEAK FLOWRATE TABLE FILE NAME: RI25EV38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18639.75	15.77	0.30 (0.25)	0.85	2888.6	13889.00
2	22752.31	31.90	0.30 (0.26)	0.85	6333.9	13870.00
3	25148.91	42.08	0.30 (0.26)	0.85	8810.8	410.00
4	28445.18	58.60	0.30 (0.26)	0.87	15070.3	150.00
5	30103.27	66.69	0.30 (0.26)	0.88	18257.1	600.00
6	30734.16	71.36	0.30 (0.27)	0.89	20352.7	31100.00
7	32456.48	82.97	0.30 (0.27)	0.91	25534.5	40100.00
8	33837.76	90.36	0.30 (0.27)	0.91	28880.9	11801.00
9	36044.17	100.55	0.30 (0.28)	0.92	34201.1	11530.00
10	37253.80	108.94	0.30 (0.28)	0.93	39439.3	11910.00
11	39065.56	118.54	0.30 (0.28)	0.94	46097.1	11350.00
12	39483.53	123.17	0.30 (0.28)	0.94	49271.3	11130.00
13	39115.39	129.28	0.30 (0.28)	0.95	52197.9	12300.00
14	38403.80	138.12	0.30 (0.28)	0.95	56458.5	12400.00
15	37409.19	147.73	0.30 (0.29)	0.95	59860.1	12201.00
16	36466.40	155.33	0.30 (0.29)	0.95	61753.1	12231.00
17	35481.63	162.93	0.30 (0.29)	0.95	63305.8	10400.00
18	33938.51	172.58	0.30 (0.29)	0.95	64752.3	12010.00
19	32904.20	178.12	0.30 (0.29)	0.95	65014.8	10210.00
20	28650.46	209.18	0.30 (0.29)	0.95	65774.6	10100.00
TOTAL AREA (ACRES) =						65774.6

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	18639.75	15.77	0.30 (0.25)	0.85	2888.6	13889.00
2	22752.31	31.90	0.30 (0.26)	0.85	6333.9	13870.00
3	25148.91	42.08	0.30 (0.26)	0.85	8810.8	410.00
4	28445.18	58.60	0.30 (0.26)	0.87	15070.3	150.00
5	30103.27	66.69	0.30 (0.26)	0.88	18257.1	600.00
6	30734.16	71.36	0.30 (0.27)	0.89	20352.7	31100.00
7	32456.48	82.97	0.30 (0.27)	0.91	25534.5	40100.00
8	33837.76	90.36	0.30 (0.27)	0.91	28880.9	11801.00
9	36044.17	100.55	0.30 (0.28)	0.92	34201.1	11530.00
10	37253.80	108.94	0.30 (0.28)	0.93	39439.3	11910.00
11	39065.56	118.54	0.30 (0.28)	0.94	46097.1	11350.00
12	39483.53	123.17	0.30 (0.28)	0.94	49271.3	11130.00
13	39115.39	129.28	0.30 (0.28)	0.95	52197.9	12300.00
14	38403.80	138.12	0.30 (0.28)	0.95	56458.5	12400.00
15	37409.19	147.73	0.30 (0.29)	0.95	59860.1	12201.00
16	36466.40	155.33	0.30 (0.29)	0.95	61753.1	12231.00
17	35481.63	162.93	0.30 (0.29)	0.95	63305.8	10400.00
18	33938.51	172.58	0.30 (0.29)	0.95	64752.3	12010.00
19	32904.20	178.12	0.30 (0.29)	0.95	65014.8	10210.00
20	28650.46	209.18	0.30 (0.29)	0.95	65774.6	10100.00
TOTAL AREA (ACRES) =						65774.6

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) = 21.05
* 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	-	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) = 39508.99
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.19
AVERAGE FLOW DEPTH(FEET) = 21.04 TRAVEL TIME(MIN.) = 2.25
Tc(MIN.) = 125.42
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 50.92
EFFECTIVE AREA(ACRES) = 49367.43 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65870.7 PEAK FLOW RATE(CFS) = 39483.53
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) = 21.04

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 21.04 FLOW VELOCITY(FEET/SEC.) = 10.19

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	18639.75	18.54	2.098	0.30 (0.25)	0.84	2984.6	13889.00
2	22752.31	34.52	1.431	0.30 (0.25)	0.85	6430.0	13870.00
3	25148.91	44.63	1.251	0.30 (0.25)	0.85	8906.9	410.00
4	28445.18	61.06	1.036	0.30 (0.26)	0.87	15166.4	150.00
5	30103.27	69.12	0.990	0.30 (0.26)	0.88	18353.2	600.00
6	30734.16	73.77	0.964	0.30 (0.27)	0.89	20448.8	31100.00
7	32456.48	85.34	0.898	0.30 (0.27)	0.90	25630.6	40100.00
8	33837.76	92.71	0.862	0.30 (0.27)	0.91	28977.0	11801.00
9	36044.17	102.85	0.824	0.30 (0.28)	0.92	34297.1	11530.00
10	37253.80	111.23	0.793	0.30 (0.28)	0.93	39535.4	11910.00
11	39065.56	120.80	0.759	0.30 (0.28)	0.94	46193.2	11350.00
12	39483.53	125.42	0.749	0.30 (0.28)	0.94	49367.4	11130.00
13	39115.39	131.53	0.736	0.30 (0.28)	0.94	52294.0	12300.00
14	38403.80	140.38	0.717	0.30 (0.28)	0.95	56554.6	12400.00
15	37409.19	150.02	0.696	0.30 (0.28)	0.95	59956.2	12201.00
16	36466.40	157.63	0.679	0.30 (0.29)	0.95	61849.2	12231.00

17 35481.63 165.25 0.663 0.30(0.29) 0.95 63401.9 10400.00
 18 33938.51 174.92 0.642 0.30(0.29) 0.95 64848.4 12010.00
 19 32904.20 180.48 0.631 0.30(0.29) 0.95 65110.9 10210.00
 20 28650.46 211.64 0.601 0.30(0.29) 0.95 65870.7 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	18377.06	16.86	2.234	0.30(0.25)	0.84	2815.0	13900.00
2	18807.65	18.54	2.098	0.30(0.25)	0.84	3085.8	13889.00
3	22859.54	34.52	1.431	0.30(0.25)	0.85	6531.1	13870.00
4	25239.71	44.63	1.251	0.30(0.25)	0.85	9008.1	410.00
5	28516.44	61.06	1.036	0.30(0.26)	0.87	15267.6	150.00
6	30170.38	69.12	0.990	0.30(0.26)	0.88	18454.3	600.00
7	30798.87	73.77	0.964	0.30(0.27)	0.89	20549.9	31100.00
8	32515.21	85.34	0.898	0.30(0.27)	0.90	25731.7	40100.00
9	33893.18	92.71	0.862	0.30(0.27)	0.91	29078.1	11801.00
10	36096.18	102.85	0.824	0.30(0.28)	0.92	34398.3	11530.00
11	37302.99	111.23	0.793	0.30(0.28)	0.93	39636.5	11910.00
12	39111.63	120.80	0.759	0.30(0.28)	0.94	46294.4	11350.00
13	39528.69	125.42	0.749	0.30(0.28)	0.94	49468.6	11130.00
14	39159.35	131.53	0.736	0.30(0.28)	0.94	52395.1	12300.00
15	38446.01	140.38	0.717	0.30(0.28)	0.95	56655.7	12400.00
16	37449.50	150.02	0.696	0.30(0.28)	0.95	60057.3	12201.00
17	36505.21	157.63	0.679	0.30(0.29)	0.95	61950.4	12231.00
18	35518.94	165.25	0.663	0.30(0.29)	0.95	63503.1	10400.00
19	33973.91	174.92	0.642	0.30(0.29)	0.95	64949.5	12010.00
20	32938.56	180.48	0.631	0.30(0.29)	0.95	65212.1	10210.00
21	28682.16	211.64	0.601	0.30(0.29)	0.95	65971.8	10100.00

TOTAL AREA (ACRES) = 65971.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 39528.69 Tc(MIN.) = 125.422
 EFFECTIVE AREA(ACRES) = 49468.57 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 65971.8
 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

>>>>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) = 12.99
 * 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) = 39562.01
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 20.05
 AVERAGE FLOW DEPTH(FEET) = 12.99 TRAVEL TIME(MIN.) = 0.28
 Tc(MIN.) = 125.70
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 66.63
 EFFECTIVE AREA(ACRES) = 49602.87 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66106.1 PEAK FLOW RATE(CFS) = 39528.69
 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) = 12.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 12.98 FLOW VELOCITY(FEET/SEC.) = 20.04
 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) = 12.00
 * 25 YEAR RAINFALL INTENSITY(INCH/HR) = 0.746
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
USER-DEFINED	-	96.27	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) = 39551.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 22.29
 AVERAGE FLOW DEPTH(FEET) = 11.99 TRAVEL TIME(MIN.) = 1.04
 Tc(MIN.) = 126.74
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 45.88
 EFFECTIVE AREA(ACRES) = 49699.14 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66202.4 PEAK FLOW RATE(CFS) = 39528.69
 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) = 11.99

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 11.99 FLOW VELOCITY(FEET/SEC.) = 22.29
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 66202.4 TC (MIN.) = 126.74
 EFFECTIVE AREA (ACRES) = 49699.14 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.940
 PEAK FLOW RATE (CFS) = 39528.69

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	18377.06	18.53	2.099	0.30 (0.25)	0.83	3045.6	13900.00
2	18807.65	20.20	1.970	0.30 (0.25)	0.83	3316.4	13889.00
3	22859.54	36.08	1.400	0.30 (0.25)	0.84	6761.7	13870.00
4	25239.71	46.14	1.228	0.30 (0.25)	0.84	9238.6	410.00
5	28516.44	62.52	1.028	0.30 (0.26)	0.86	15498.1	150.00
6	30170.38	70.55	0.982	0.30 (0.26)	0.87	18684.9	600.00
7	30798.87	75.19	0.956	0.30 (0.27)	0.88	20780.5	31100.00
8	32515.21	86.74	0.890	0.30 (0.27)	0.90	25962.3	40100.00
9	33893.18	94.09	0.857	0.30 (0.27)	0.91	29308.7	11801.00
10	36096.18	104.21	0.819	0.30 (0.28)	0.92	34628.9	11530.00
11	37302.99	112.58	0.788	0.30 (0.28)	0.93	39867.1	11910.00
12	39111.63	122.13	0.756	0.30 (0.28)	0.94	46524.9	11350.00
13	39528.69	126.74	0.746	0.30 (0.28)	0.94	49699.1	11130.00
14	39159.35	132.86	0.733	0.30 (0.28)	0.94	52625.7	12300.00
15	38446.01	141.72	0.714	0.30 (0.28)	0.95	56886.3	12400.00
16	37449.50	151.36	0.693	0.30 (0.28)	0.95	60287.9	12201.00
17	36505.21	158.98	0.677	0.30 (0.28)	0.95	62180.9	12231.00
18	35518.94	166.62	0.660	0.30 (0.29)	0.95	63733.6	10400.00
19	33973.91	176.31	0.639	0.30 (0.29)	0.95	65180.1	12010.00
20	32938.56	181.88	0.629	0.30 (0.29)	0.95	65442.6	10210.00
21	28682.16	213.10	0.600	0.30 (0.29)	0.95	66202.4	10100.00

=====
 END OF RATIONAL METHOD ANALYSIS
 =====

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S19- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV19.DAT
TIME/DATE OF STUDY: 09:56 06/14/2019

=====

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; 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 (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
* 10 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<<<<<
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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
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
* 10 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
* 10 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
* 10 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
* 10 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

* 10 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
 * 10 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
 * 10 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
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.913
 SUBAREA Tc AND LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL,BROADLEAF" - 3.46 0.30 1.000 0 12.19
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA RUNOFF(CFS) = 8.14
 TOTAL AREA(ACRES) = 3.46 PEAK FLOW RATE(CFS) = 8.14

 FLOW PROCESS FROM NODE 11911.00 TO NODE 11912.00 IS CODE = 56

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

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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
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.669
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 5.79 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.32
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.24
 AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 1.56
 Tc(MIN.) = 13.75
 SUBAREA AREA(ACRES) = 5.79 SUBAREA RUNOFF(CFS) = 12.35
 EFFECTIVE AREA(ACRES) = 9.25 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 9.2 PEAK FLOW RATE(CFS) = 19.72
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 0.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.38 FLOW VELOCITY(FEET/SEC.) = 4.77
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11912.00 = 914.92 FEET.

 FLOW PROCESS FROM NODE 11912.00 TO NODE 11913.00 IS CODE = 56

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

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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

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.076
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 54.30 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 63.91
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.41
 AVERAGE FLOW DEPTH(FEET) = 0.99 TRAVEL TIME(MIN.) = 5.83
 Tc(MIN.) = 19.58
 SUBAREA AREA(ACRES) = 54.30 SUBAREA RUNOFF(CFS) = 86.79
 EFFECTIVE AREA(ACRES) = 63.55 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 63.5 PEAK FLOW RATE(CFS) = 101.57
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 1.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.28 FLOW VELOCITY(FEET/SEC.) = 6.29
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11913.00 = 2806.39 FEET.

 FLOW PROCESS FROM NODE 11913.00 TO NODE 11914.00 IS CODE = 56

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

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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
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.902
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 65.14 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 148.58
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.79
 AVERAGE FLOW DEPTH(FEET) = 1.12 TRAVEL TIME(MIN.) = 3.02
 Tc(MIN.) = 22.60
 SUBAREA AREA(ACRES) = 65.14 SUBAREA RUNOFF(CFS) = 93.93
 EFFECTIVE AREA(ACRES) = 128.69 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 128.7 PEAK FLOW RATE(CFS) = 185.57
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 1.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.28 FLOW VELOCITY(FEET/SEC.) = 11.58
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11914.00 = 4763.70 FEET.

FLOW PROCESS FROM NODE 11914.00 TO NODE 11915.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1845.23 DOWNSTREAM(FEET) = 1557.21
CHANNEL LENGTH THRU SUBAREA(FEET) = 1686.78 CHANNEL SLOPE = 0.1708
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.58
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.775

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 78.52 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 237.72

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.60

AVERAGE FLOW DEPTH(FEET) = 1.56 TRAVEL TIME(MIN.) = 2.42

Tc(MIN.) = 25.02

SUBAREA AREA(ACRES) = 78.52 SUBAREA RUNOFF(CFS) = 104.24

EFFECTIVE AREA(ACRES) = 207.21 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 207.2 PEAK FLOW RATE(CFS) = 275.07

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 12.11

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11915.00 = 6450.48 FEET.

FLOW PROCESS FROM NODE 11915.00 TO NODE 11916.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1557.21 DOWNSTREAM(FEET) = 1403.38
CHANNEL LENGTH THRU SUBAREA(FEET) = 1909.39 CHANNEL SLOPE = 0.0806
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.27
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.630

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 70.48 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 317.28

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.74

AVERAGE FLOW DEPTH(FEET) = 2.25 TRAVEL TIME(MIN.) = 3.27

Tc(MIN.) = 28.29

SUBAREA AREA(ACRES) = 70.48 SUBAREA RUNOFF(CFS) = 84.40

EFFECTIVE AREA(ACRES) = 277.69 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 277.7 PEAK FLOW RATE(CFS) = 332.54
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.31 FLOW VELOCITY(FEET/SEC.) = 9.85

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11916.00 = 8359.87 FEET.

FLOW PROCESS FROM NODE 11916.00 TO NODE 11917.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1403.38 DOWNSTREAM(FEET) = 1079.99
CHANNEL LENGTH THRU SUBAREA(FEET) = 1945.82 CHANNEL SLOPE = 0.1662
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.29
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.543

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 232.20 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 462.46

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.02

AVERAGE FLOW DEPTH(FEET) = 2.27 TRAVEL TIME(MIN.) = 2.31

Tc(MIN.) = 30.60

SUBAREA AREA(ACRES) = 232.20 SUBAREA RUNOFF(CFS) = 259.78

EFFECTIVE AREA(ACRES) = 509.89 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 509.9 PEAK FLOW RATE(CFS) = 570.46

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.54 FLOW VELOCITY(FEET/SEC.) = 14.91

LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11917.00 = 10305.69 FEET.

FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 1079.99 DOWNSTREAM(FEET) = 873.95
CHANNEL LENGTH THRU SUBAREA(FEET) = 2563.91 CHANNEL SLOPE = 0.0804
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 3.25
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.471

SUBAREA LOSS RATE DATA(AMC II):

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

USER-DEFINED - 110.82 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 628.88
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.79
 AVERAGE FLOW DEPTH(FEET) = 3.24 TRAVEL TIME(MIN.) = 3.62
 Tc(MIN.) = 34.23
 SUBAREA AREA(ACRES) = 110.82 SUBAREA RUNOFF(CFS) = 116.83
 EFFECTIVE AREA(ACRES) = 620.71 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA(ACRES) = 620.7 PEAK FLOW RATE(CFS) = 654.35
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 3.30

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 3.30 FLOW VELOCITY(FEET/SEC.) = 11.94
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11920.00 = 12869.60 FEET.

 FLOW PROCESS FROM NODE 11917.00 TO NODE 11920.00 IS CODE = 1

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

 TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 34.23
 RAINFALL INTENSITY(INCH/HR) = 1.47
 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 1.00
 EFFECTIVE STREAM AREA(ACRES) = 620.71
 TOTAL STREAM AREA(ACRES) = 620.71
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 654.35

** CONFLUENCE DATA **

STREAM 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
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.428

SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 107.47 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1221.40
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.13
 AVERAGE FLOW DEPTH(FEET) = 5.66 TRAVEL TIME(MIN.) = 2.33
 Tc(MIN.) = 36.41
 SUBAREA AREA(ACRES) = 107.47 SUBAREA RUNOFF(CFS) = 109.12
 EFFECTIVE AREA(ACRES) = 1209.44 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA(ACRES) = 1212.3 PEAK FLOW RATE(CFS) = 1230.16
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 5.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 5.68 FLOW VELOCITY(FEET/SEC.) = 10.14
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11921.00 = 14286.85 FEET.

 FLOW PROCESS FROM NODE 11921.00 TO NODE 11922.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 827.94 DOWNSTREAM(FEET) = 753.55
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1886.43 CHANNEL SLOPE = 0.0394
 GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT(FEET) = 5.78
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.373

SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 344.27 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1396.39
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.27
 AVERAGE FLOW DEPTH(FEET) = 5.76 TRAVEL TIME(MIN.) = 2.79
 Tc(MIN.) = 39.20
 SUBAREA AREA(ACRES) = 344.27 SUBAREA RUNOFF(CFS) = 332.46
 EFFECTIVE AREA(ACRES) = 1553.71 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 1556.5 PEAK FLOW RATE(CFS) = 1502.51
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 5.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 5.96 FLOW VELOCITY(FEET/SEC.) = 11.49
LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11922.00 = 16173.28 FEET.

FLOW PROCESS FROM NODE 11922.00 TO NODE 11923.00 IS CODE = 56

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

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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
* 10 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<<<<<

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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
* 10 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
* 10 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
* 10 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
* 10 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 <<<<

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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	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	539.61	27.74	1.655	0.30(0.30)	1.00	625.8	40130.00
2	534.97	29.62	1.572	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	2124.99	27.74	1.655	0.30(0.30)	1.00	1878.7	40130.00
2	2124.05	29.62	1.572	0.30(0.30)	1.00	1991.8	40100.00
3	2308.66	56.89	1.118	0.30(0.30)	1.00	3223.5	11900.00
4	2305.63	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) = 2308.66 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) = 9.10
CHANNEL FLOW THRU SUBAREA(CFS) = 2308.66
FLOW VELOCITY(FEET/SEC.) = 9.00 FLOW DEPTH(FEET) = 9.10
TRAVEL TIME(MIN.) = 1.83 Tc(MIN.) = 58.71
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.) = 58.71
* 10 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) = 2317.07

FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

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

MAINLINE Tc(MIN.) = 58.71
* 10 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) = 2317.43

FLOW PROCESS FROM NODE 11927.50 TO NODE 11927.50 IS CODE = 81

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

MAINLINE Tc(MIN.) = 58.71
* 10 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) = 2318.86

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) = 7.40
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.085
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 78.01 0.30 0.984 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.984
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2346.60
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 12.79
 AVERAGE FLOW DEPTH (FEET) = 7.40 TRAVEL TIME (MIN.) = 0.84
 Tc (MIN.) = 59.56
 SUBAREA AREA (ACRES) = 78.01 SUBAREA RUNOFF (CFS) = 55.49
 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) = 2344.16
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 7.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 7.40 FLOW VELOCITY (FEET/SEC.) = 12.79
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11928.00 = 29360.61 FEET.

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

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

MAINLINE Tc (MIN.) = 59.56
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.085
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 1.10 0.30 1.000 65
 NATURAL FAIR COVER
 "OPEN BRUSH" B 0.60 0.30 1.000 66
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 1.70 SUBAREA RUNOFF (CFS) = 1.20
 EFFECTIVE AREA (ACRES) = 3314.14 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 3317.0 PEAK FLOW RATE (CFS) = 2345.36

 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) = 9.47
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.068
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 8.18 0.30 0.890 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.890
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 2348.31
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 8.56
 AVERAGE FLOW DEPTH (FEET) = 9.47 TRAVEL TIME (MIN.) = 2.57
 Tc (MIN.) = 62.13
 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) = 2345.36
 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) = 9.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 9.47 FLOW VELOCITY (FEET/SEC.) = 8.56
 LONGEST FLOWPATH FROM NODE 11910.00 TO NODE 11929.00 = 30683.27 FEET.

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

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

MAINLINE Tc (MIN.) = 62.13
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.068
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 NATURAL FAIR COVER
 "OPEN BRUSH" B 1.90 0.30 1.000 66
 NATURAL FAIR COVER
 "WOODLAND, GRASS" B 0.60 0.30 1.000 65
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 2.50 SUBAREA RUNOFF (CFS) = 1.73
 EFFECTIVE AREA (ACRES) = 3324.82 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 3327.6 PEAK FLOW RATE (CFS) = 2345.36
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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

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

PEAK FLOWRATE TABLE FILE NAME: S18X10.DNA
 MEMORY BANK # 1 DEFINED AS FOLLOWS:
 STREAM Q Tc Fp (Fm) Ap Ae HEADWATER

NUMBER	(CFS)	(MIN.)	(INCH/HR)	(ACRES)	NODE	
1	11616.90	44.00	0.30 (0.30)	1.00	7599.6	11801.00
2	12892.03	58.27	0.30 (0.30)	1.00	10804.1	11530.00
3	13438.67	64.50	0.30 (0.30)	1.00	12758.4	11701.00
4	13628.71	66.49	0.30 (0.30)	1.00	13434.8	11000.00
5	15265.02	77.21	0.30 (0.30)	1.00	18437.6	11330.00
6	15528.32	79.96	0.30 (0.30)	1.00	19719.4	10800.00
7	15902.78	82.44	0.30 (0.30)	1.00	21039.3	11300.00
8	16140.10	85.75	0.30 (0.30)	1.00	22434.4	10630.00
9	15918.65	96.09	0.30 (0.30)	1.00	25763.3	11620.00
10	15868.02	97.88	0.30 (0.30)	1.00	26303.3	11600.00
11	15636.46	103.56	0.30 (0.30)	1.00	27777.9	11111.00
12	15531.21	106.40	0.30 (0.30)	1.00	28370.9	10500.00
13	15352.00	110.70	0.30 (0.30)	1.00	29161.8	10710.00
14	15201.33	113.32	0.30 (0.30)	1.00	29547.2	10410.00
15	14857.39	118.86	0.30 (0.30)	1.00	30260.6	10700.00
16	14446.26	125.40	0.30 (0.30)	1.00	31040.6	10400.00
17	14178.55	129.18	0.30 (0.30)	1.00	31414.4	10200.00
18	13775.63	136.31	0.30 (0.30)	1.00	32035.9	10320.00
19	13411.70	140.89	0.30 (0.30)	1.00	32196.8	10210.00
20	11422.66	173.20	0.30 (0.30)	1.00	32916.6	10100.00

TOTAL AREA (ACRES) = 32916.6

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: S25X10.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.30 (0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.30 (0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.30 (0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.30 (0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.30 (0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.30 (0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.30 (0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.30 (0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.30 (0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.30 (0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.30 (0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.30 (0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.30 (0.29)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

FLOW PROCESS FROM NODE 12526.00 TO NODE 12527.00 IS CODE = 14.0

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

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	0.30 (0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.30 (0.30)	0.99	8185.8	12300.00

3	4886.59	91.31	0.30 (0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.30 (0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.30 (0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.30 (0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.30 (0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.30 (0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.30 (0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.30 (0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.30 (0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.30 (0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.30 (0.29)	0.98	13237.1	12000.00

TOTAL AREA (ACRES) = 13237.1

FLOW PROCESS FROM NODE 11841.00 TO NODE 12527.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	4457.80	74.17	1.001	0.30 (0.30)	0.99	6215.9	12500.00
2	4830.00	89.61	0.914	0.30 (0.30)	0.99	8185.8	12300.00
3	4886.59	91.31	0.907	0.30 (0.30)	0.99	8494.7	12330.00
4	4976.75	94.56	0.895	0.30 (0.30)	0.98	9045.8	12410.00
5	5066.75	99.26	0.878	0.30 (0.29)	0.98	9767.7	12400.00
6	5124.87	104.67	0.859	0.30 (0.29)	0.98	10457.3	12211.00
7	5154.35	109.58	0.841	0.30 (0.29)	0.98	11071.5	12201.00
8	5066.62	114.70	0.822	0.30 (0.29)	0.98	11560.6	12111.00
9	5049.30	118.21	0.809	0.30 (0.29)	0.98	11939.4	12231.00
10	5009.12	121.09	0.801	0.30 (0.29)	0.98	12207.1	12101.10
11	4983.48	122.44	0.798	0.30 (0.29)	0.98	12317.7	12261.00
12	4583.59	136.43	0.767	0.30 (0.29)	0.98	13120.1	12010.00
13	4254.50	145.50	0.748	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	1.295	0.30 (0.30)	1.00	7599.6	11801.00
2	12892.03	58.27	1.101	0.30 (0.30)	1.00	10804.1	11530.00
3	13438.67	64.50	1.055	0.30 (0.30)	1.00	12758.4	11701.00
4	13628.71	66.49	1.044	0.30 (0.30)	1.00	13434.8	11000.00
5	15265.02	77.21	0.984	0.30 (0.30)	1.00	18437.6	11330.00
6	15528.32	79.96	0.968	0.30 (0.30)	1.00	19719.4	10800.00
7	15902.78	82.44	0.954	0.30 (0.30)	1.00	21039.3	11300.00
8	16140.10	85.75	0.936	0.30 (0.30)	1.00	22434.4	10630.00
9	15918.65	96.09	0.890	0.30 (0.30)	1.00	25763.3	11620.00
10	15868.02	97.88	0.883	0.30 (0.30)	1.00	26303.3	11600.00
11	15636.46	103.56	0.863	0.30 (0.30)	1.00	27777.9	11111.00
12	15531.21	106.40	0.852	0.30 (0.30)	1.00	28370.9	10500.00
13	15352.00	110.70	0.837	0.30 (0.30)	1.00	29161.8	10710.00
14	15201.33	113.32	0.827	0.30 (0.30)	1.00	29547.2	10410.00
15	14857.39	118.86	0.807	0.30 (0.30)	1.00	30260.6	10700.00
16	14446.26	125.40	0.791	0.30 (0.30)	1.00	31040.6	10400.00
17	14178.55	129.18	0.783	0.30 (0.30)	1.00	31414.4	10200.00
18	13775.63	136.31	0.768	0.30 (0.30)	1.00	32035.9	10320.00

19 13411.70 140.89 0.758 0.30(0.30) 1.00 32196.8 10210.00
 20 11422.66 173.20 0.688 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	15367.69	44.00	1.295	0.30(0.30)	0.99	11287.3	11801.00
2	16894.33	58.27	1.101	0.30(0.30)	0.99	15687.3	11530.00
3	17613.15	64.50	1.055	0.30(0.30)	0.99	18163.7	11701.00
4	17868.85	66.49	1.044	0.30(0.30)	0.99	19007.1	11000.00
5	19259.36	74.17	1.001	0.30(0.30)	0.99	23236.5	12500.00
6	19795.97	77.21	0.984	0.30(0.30)	0.99	25040.6	11330.00
7	20125.68	79.96	0.968	0.30(0.30)	0.99	26674.0	10800.00
8	20559.80	82.44	0.954	0.30(0.30)	0.99	28309.7	11300.00
9	20877.05	85.75	0.936	0.30(0.30)	0.99	30127.8	10630.00
10	20887.39	89.61	0.914	0.30(0.30)	0.99	31863.6	12300.00
11	20907.71	91.31	0.907	0.30(0.30)	0.99	32717.7	12330.00
12	20928.11	94.56	0.895	0.30(0.30)	0.99	34317.4	12410.00
13	20924.67	96.09	0.890	0.30(0.30)	0.99	35043.8	11620.00
14	20908.49	97.88	0.883	0.30(0.30)	0.99	35860.1	11600.00
15	20878.88	99.26	0.878	0.30(0.30)	0.99	36427.0	12400.00
16	20749.46	103.56	0.863	0.30(0.30)	0.99	38094.4	11111.00
17	20720.29	104.67	0.859	0.30(0.30)	0.99	38466.4	12211.00
18	20666.45	106.40	0.852	0.30(0.30)	0.99	39044.4	10500.00
19	20552.81	109.58	0.841	0.30(0.30)	0.99	40028.3	12201.00
20	20487.24	110.70	0.837	0.30(0.30)	0.99	40339.9	10710.00
21	20291.57	113.32	0.827	0.30(0.30)	0.99	40976.1	10410.00
22	20182.47	114.70	0.822	0.30(0.30)	0.99	41285.1	12111.00
23	19946.92	118.21	0.809	0.30(0.30)	0.99	42116.5	12231.00
24	19897.64	118.86	0.807	0.30(0.30)	0.99	42260.3	10700.00
25	19726.52	121.09	0.801	0.30(0.30)	0.99	42733.2	12101.10
26	19615.75	122.44	0.798	0.30(0.30)	0.99	43005.4	12261.00
27	19345.12	125.40	0.791	0.30(0.30)	0.99	43528.1	10400.00
28	18969.58	129.18	0.783	0.30(0.30)	0.99	44118.3	10200.00
29	18362.79	136.31	0.768	0.30(0.30)	0.99	45148.8	10320.00
30	18349.32	136.43	0.767	0.30(0.30)	0.99	45160.4	12010.00
31	17833.67	140.89	0.758	0.30(0.30)	0.99	45374.3	10210.00
32	17382.11	145.50	0.748	0.30(0.30)	0.99	45536.7	12000.00
33	15114.90	173.20	0.688	0.30(0.30)	0.99	46153.7	10100.00

TOTAL AREA (ACRES) = 46153.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 20928.11 Tc (MIN.) = 94.562
 EFFECTIVE AREA (ACRES) = 34317.40 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA (ACRES) = 46153.7
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12527.00 = 97868.13 FEET.

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

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM (FEET) = 347.47 DOWNSTREAM (FEET) = 341.63
 CHANNEL LENGTH THRU SUBAREA (FEET) = 532.38 CHANNEL SLOPE = 0.0110
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT (FEET) = 6.93

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.893

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) = 20931.96
 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) = 7.72
 EFFECTIVE AREA (ACRES) = 34331.77 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
 TOTAL AREA (ACRES) = 46168.0 PEAK FLOW RATE (CFS) = 20928.11
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
 GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 6.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 6.93 FLOW VELOCITY (FEET/SEC.) = 12.87

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

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

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15367.69	44.77	1.284	0.30(0.30)	0.99	11301.7	11801.00
2	16894.33	59.01	1.092	0.30(0.30)	0.99	15701.7	11530.00
3	17613.15	65.23	1.051	0.30(0.30)	0.99	18178.1	11701.00
4	17868.85	67.22	1.040	0.30(0.30)	0.99	19021.5	11000.00
5	19259.36	74.88	0.997	0.30(0.30)	0.99	23250.9	12500.00
6	19795.97	77.91	0.980	0.30(0.30)	0.99	25055.0	11330.00
7	20125.68	80.66	0.964	0.30(0.30)	0.99	26688.3	10800.00
8	20559.80	83.13	0.950	0.30(0.30)	0.99	28324.0	11300.00
9	20877.05	86.44	0.932	0.30(0.30)	0.99	30142.2	10630.00
10	20887.39	90.30	0.911	0.30(0.30)	0.99	31878.0	12300.00
11	20907.71	92.00	0.905	0.30(0.30)	0.99	32732.0	12330.00
12	20928.11	95.25	0.893	0.30(0.30)	0.99	34331.8	12410.00
13	20924.67	96.78	0.887	0.30(0.30)	0.99	35058.2	11620.00
14	20908.49	98.57	0.881	0.30(0.30)	0.99	35874.5	11600.00
15	20878.88	99.95	0.876	0.30(0.30)	0.99	36441.4	12400.00
16	20749.46	104.26	0.860	0.30(0.30)	0.99	38108.8	11111.00
17	20720.29	105.36	0.856	0.30(0.30)	0.99	38480.8	12211.00
18	20666.45	107.09	0.850	0.30(0.30)	0.99	39058.8	10500.00
19	20552.81	110.28	0.838	0.30(0.30)	0.99	40042.7	12201.00
20	20487.24	111.39	0.834	0.30(0.30)	0.99	40354.2	10710.00
21	20291.57	114.02	0.825	0.30(0.30)	0.99	40990.5	10410.00
22	20182.47	115.39	0.820	0.30(0.30)	0.99	41299.5	12111.00
23	19946.92	118.91	0.807	0.30(0.30)	0.99	42130.9	12231.00

24 19897.64 119.56 0.805 0.30(0.30) 0.99 42274.7 10700.00
 25 19726.52 121.79 0.799 0.30(0.30) 0.99 42747.6 12101.10
 26 19615.75 123.15 0.796 0.30(0.30) 0.99 43019.8 12261.00
 27 19345.12 126.11 0.790 0.30(0.30) 0.99 43542.5 10400.00
 28 19228.19 129.89 0.782 0.30(0.30) 0.99 44132.7 10200.00
 29 19046.46 137.03 0.766 0.30(0.30) 0.99 45163.2 10320.00
 30 19040.27 137.15 0.766 0.30(0.30) 0.99 45174.8 12010.00
 31 18735.21 141.62 0.756 0.30(0.30) 0.99 45388.7 10210.00
 32 18391.39 146.24 0.746 0.30(0.30) 0.99 45551.1 12000.00
 33 16142.62 173.97 0.686 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	2209.55	33.08	1.494	0.30(0.30)	1.00	1979.9	40130.00
2	2267.06	34.93	1.457	0.30(0.30)	1.00	2093.1	40100.00
3	2345.36	62.13	1.068	0.30(0.30)	1.00	3324.8	11900.00
4	2341.11	62.30	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	15987.88	33.08	1.494	0.30(0.30)	0.99	10329.4	40130.00
2	16371.42	34.93	1.457	0.30(0.30)	0.99	10910.8	40100.00
3	17663.07	44.77	1.284	0.30(0.30)	0.99	13840.3	11801.00
4	19230.71	59.01	1.092	0.30(0.30)	0.99	18885.3	11530.00
5	19600.31	62.13	1.068	0.30(0.30)	0.99	20268.9	11900.00
6	19615.86	62.30	1.067	0.30(0.30)	0.99	20339.9	11910.00
7	19904.29	65.23	1.051	0.30(0.30)	0.99	21505.7	11701.00
8	20126.04	67.22	1.040	0.30(0.30)	0.99	22349.2	11000.00
9	21385.77	74.88	0.997	0.30(0.30)	0.99	26578.5	12500.00
10	21870.69	77.91	0.980	0.30(0.30)	0.99	28382.6	11330.00
11	22153.44	80.66	0.964	0.30(0.30)	0.99	30016.0	10800.00
12	22545.40	83.13	0.950	0.30(0.30)	0.99	31651.7	11300.00
13	22806.11	86.44	0.932	0.30(0.30)	0.99	33469.8	10630.00
14	22752.37	90.30	0.911	0.30(0.30)	0.99	35205.6	12300.00
15	22753.96	92.00	0.905	0.30(0.30)	0.99	36059.7	12330.00
16	22738.29	95.25	0.893	0.30(0.30)	0.99	37659.4	12410.00
17	22717.95	96.78	0.887	0.30(0.30)	0.99	38385.8	11620.00
18	22681.88	98.57	0.881	0.30(0.30)	0.99	39202.1	11600.00
19	22637.08	99.95	0.876	0.30(0.30)	0.99	39769.0	12400.00
20	22459.94	104.26	0.860	0.30(0.30)	0.99	41436.4	11111.00
21	22418.53	105.36	0.856	0.30(0.30)	0.99	41808.4	12211.00
22	22345.53	107.09	0.850	0.30(0.30)	0.99	42386.4	10500.00
23	22196.61	110.28	0.838	0.30(0.30)	0.99	43370.3	12201.00
24	22118.70	111.39	0.834	0.30(0.30)	0.99	43681.9	10710.00
25	21893.96	114.02	0.825	0.30(0.30)	0.99	44318.1	10410.00
26	21769.58	115.39	0.820	0.30(0.30)	0.99	44627.1	12111.00
27	21495.05	118.91	0.807	0.30(0.30)	0.99	45458.5	12231.00
28	21438.59	119.56	0.805	0.30(0.30)	0.99	45602.3	10700.00
29	21250.78	121.79	0.799	0.30(0.30)	0.99	46075.2	12101.10
30	21131.05	123.15	0.796	0.30(0.30)	0.99	46347.4	12261.00
31	20840.85	126.11	0.790	0.30(0.30)	0.99	46870.1	10400.00
32	20698.98	129.89	0.782	0.30(0.30)	0.99	47460.3	10200.00
33	20470.10	137.03	0.766	0.30(0.30)	0.99	48490.9	10320.00
34	20463.08	137.15	0.766	0.30(0.30)	0.99	48502.4	12010.00

35 20128.57 141.62 0.756 0.30(0.30) 0.99 48716.3 10210.00
 36 19754.23 146.24 0.746 0.30(0.30) 0.99 48878.7 12000.00
 37 17322.31 173.97 0.686 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) = 22806.11 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) = 22806.11

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	15987.88	33.08	1.494	0.30(0.30)	0.99	10329.4	40130.00
2	16371.42	34.93	1.457	0.30(0.30)	0.99	10910.8	40100.00
3	17663.07	44.77	1.284	0.30(0.30)	0.99	13840.3	11801.00
4	19230.71	59.01	1.092	0.30(0.30)	0.99	18885.3	11530.00
5	19600.31	62.13	1.068	0.30(0.30)	0.99	20268.9	11900.00
6	19615.86	62.30	1.067	0.30(0.30)	0.99	20339.9	11910.00
7	19904.29	65.23	1.051	0.30(0.30)	0.99	21505.7	11701.00
8	20126.04	67.22	1.040	0.30(0.30)	0.99	22349.2	11000.00
9	21385.77	74.88	0.997	0.30(0.30)	0.99	26578.5	12500.00
10	21870.69	77.91	0.980	0.30(0.30)	0.99	28382.6	11330.00
11	22153.44	80.66	0.964	0.30(0.30)	0.99	30016.0	10800.00
12	22545.40	83.13	0.950	0.30(0.30)	0.99	31651.7	11300.00
13	22806.11	86.44	0.932	0.30(0.30)	0.99	33469.8	10630.00
14	22752.37	90.30	0.911	0.30(0.30)	0.99	35205.6	12300.00
15	22753.96	92.00	0.905	0.30(0.30)	0.99	36059.7	12330.00
16	22738.29	95.25	0.893	0.30(0.30)	0.99	37659.4	12410.00
17	22717.95	96.78	0.887	0.30(0.30)	0.99	38385.8	11620.00
18	22681.88	98.57	0.881	0.30(0.30)	0.99	39202.1	11600.00
19	22637.08	99.95	0.876	0.30(0.30)	0.99	39769.0	12400.00
20	22459.94	104.26	0.860	0.30(0.30)	0.99	41436.4	11111.00
21	22418.53	105.36	0.856	0.30(0.30)	0.99	41808.4	12211.00
22	22345.53	107.09	0.850	0.30(0.30)	0.99	42386.4	10500.00
23	22196.61	110.28	0.838	0.30(0.30)	0.99	43370.3	12201.00
24	22118.70	111.39	0.834	0.30(0.30)	0.99	43681.9	10710.00
25	21893.96	114.02	0.825	0.30(0.30)	0.99	44318.1	10410.00
26	21769.58	115.39	0.820	0.30(0.30)	0.99	44627.1	12111.00
27	21495.05	118.91	0.807	0.30(0.30)	0.99	45458.5	12231.00
28	21438.59	119.56	0.805	0.30(0.30)	0.99	45602.3	10700.00
29	21250.78	121.79	0.799	0.30(0.30)	0.99	46075.2	12101.10
30	21131.05	123.15	0.796	0.30(0.30)	0.99	46347.4	12261.00
31	20840.85	126.11	0.790	0.30(0.30)	0.99	46870.1	10400.00
32	20698.98	129.89	0.782	0.30(0.30)	0.99	47460.3	10200.00
33	20470.10	137.03	0.766	0.30(0.30)	0.99	48490.9	10320.00
34	20463.08	137.15	0.766	0.30(0.30)	0.99	48502.4	12010.00
35	20128.57	141.62	0.756	0.30(0.30)	0.99	48716.3	10210.00
36	19754.23	146.24	0.746	0.30(0.30)	0.99	48878.7	12000.00
37	17322.31	173.97	0.686	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
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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S26- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV26.DAT
TIME/DATE OF STUDY: 09:57 06/14/2019

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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-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

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

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PEAK FLOWRATE TABLE FILE NAME: RI10EV19.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16371.42	34.93	0.30 (0.30)	0.99	10910.8	40100.00
2	17663.07	44.77	0.30 (0.30)	0.99	13840.3	11801.00
3	19615.86	62.30	0.30 (0.30)	0.99	20339.9	11910.00
4	20126.04	67.22	0.30 (0.30)	0.99	22349.2	11000.00
5	21870.69	77.91	0.30 (0.30)	0.99	28382.6	11330.00
6	22545.40	83.13	0.30 (0.30)	0.99	31651.7	11300.00
7	22806.11	86.44	0.30 (0.30)	0.99	33469.8	10630.00
8	22753.96	92.00	0.30 (0.30)	0.99	36059.7	12330.00
9	22738.29	95.25	0.30 (0.30)	0.99	37659.4	12410.00
10	22681.88	98.57	0.30 (0.30)	0.99	39202.1	11600.00
11	22459.94	104.26	0.30 (0.30)	0.99	41436.4	11111.00
12	22196.61	110.28	0.30 (0.30)	0.99	43370.3	12201.00
13	21893.96	114.02	0.30 (0.30)	0.99	44318.1	10410.00
14	21495.05	118.91	0.30 (0.30)	0.99	45458.5	12231.00
15	20840.85	126.11	0.30 (0.30)	0.99	46870.1	10400.00
16	20698.98	129.89	0.30 (0.30)	0.99	47460.3	10200.00
17	20470.10	137.03	0.30 (0.30)	0.99	48490.9	10320.00
18	20128.57	141.62	0.30 (0.30)	0.99	48716.3	10210.00
19	19754.23	146.24	0.30 (0.30)	0.99	48878.7	12000.00
20	17322.31	173.97	0.30 (0.30)	0.99	49495.7	10100.00
TOTAL AREA (ACRES) =						49495.7

FLOW PROCESS FROM NODE 11929.00 TO NODE 11929.00 IS CODE = 14.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16371.42	34.93	0.30 (0.30)	0.99	10910.8	40100.00
2	17663.07	44.77	0.30 (0.30)	0.99	13840.3	11801.00
3	19615.86	62.30	0.30 (0.30)	0.99	20339.9	11910.00
4	20126.04	67.22	0.30 (0.30)	0.99	22349.2	11000.00
5	21870.69	77.91	0.30 (0.30)	0.99	28382.6	11330.00
6	22545.40	83.13	0.30 (0.30)	0.99	31651.7	11300.00
7	22806.11	86.44	0.30 (0.30)	0.99	33469.8	10630.00
8	22753.96	92.00	0.30 (0.30)	0.99	36059.7	12330.00
9	22738.29	95.25	0.30 (0.30)	0.99	37659.4	12410.00
10	22681.88	98.57	0.30 (0.30)	0.99	39202.1	11600.00
11	22459.94	104.26	0.30 (0.30)	0.99	41436.4	11111.00
12	22196.61	110.28	0.30 (0.30)	0.99	43370.3	12201.00
13	21893.96	114.02	0.30 (0.30)	0.99	44318.1	10410.00

14	21495.05	118.91	0.30	(0.30)	0.99	45458.5	12231.00
15	20840.85	126.11	0.30	(0.30)	0.99	46870.1	10400.00
16	20698.98	129.89	0.30	(0.30)	0.99	47460.3	10200.00
17	20470.10	137.03	0.30	(0.30)	0.99	48490.9	10320.00
18	20128.57	141.62	0.30	(0.30)	0.99	48716.3	10210.00
19	19754.23	146.24	0.30	(0.30)	0.99	48878.7	12000.00
20	17322.31	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) = 6.12

* 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) = 22809.49

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 16.17

AVERAGE FLOW DEPTH (FEET) = 6.12 TRAVEL TIME (MIN.) = 1.51

Tc (MIN.) = 87.96

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) = 22806.11

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) = 6.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 6.11 FLOW VELOCITY (FEET/SEC.) = 16.18

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<<<<<

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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	16371.42	36.63	1.145	0.30 (0.30)	0.99	10924.9	40100.00
2	17663.07	46.42	1.008	0.30 (0.30)	0.99	13854.4	11801.00
3	19615.86	63.90	0.860	0.30 (0.30)	0.99	20354.0	11910.00
4	20126.04	68.80	0.836	0.30 (0.30)	0.99	22363.3	11000.00
5	21870.69	79.44	0.784	0.30 (0.30)	0.99	28396.8	11330.00
6	22545.40	84.65	0.759	0.30 (0.30)	0.99	31665.8	11300.00
7	22806.11	87.96	0.743	0.30 (0.30)	0.99	33483.9	10630.00
8	22753.96	93.51	0.723	0.30 (0.30)	0.99	36073.8	12330.00
9	22738.29	96.77	0.714	0.30 (0.30)	0.99	37673.5	12410.00
10	22681.88	100.09	0.705	0.30 (0.30)	0.99	39216.2	11600.00
11	22459.94	105.78	0.689	0.30 (0.30)	0.99	41450.6	11111.00
12	22196.61	111.80	0.673	0.30 (0.30)	0.99	43384.4	12201.00
13	21893.96	115.55	0.662	0.30 (0.30)	0.99	44332.2	10410.00
14	21495.05	120.46	0.649	0.30 (0.30)	0.99	45472.7	12231.00
15	20840.85	127.67	0.637	0.30 (0.30)	0.99	46884.2	10400.00
16	20698.98	131.45	0.630	0.30 (0.30)	0.99	47474.4	10200.00
17	20470.10	138.60	0.618	0.30 (0.30)	0.99	48505.0	10320.00
18	20128.57	143.19	0.610	0.30 (0.30)	0.99	48730.4	10210.00
19	19754.23	147.83	0.602	0.30 (0.30)	0.99	48892.8	12000.00
20	17322.31	175.63	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	13483.99	17.31	1.767	0.30 (0.30)	0.99	5211.1	600.00
2	16408.44	36.63	1.145	0.30 (0.30)	0.99	10973.3	40100.00
3	17694.13	46.42	1.008	0.30 (0.30)	0.99	13902.8	11801.00
4	19640.46	63.90	0.860	0.30 (0.30)	0.99	20402.4	11910.00
5	20149.61	68.80	0.836	0.30 (0.30)	0.99	22411.7	11000.00
6	21892.00	79.44	0.784	0.30 (0.30)	0.99	28445.2	11330.00
7	22565.60	84.65	0.759	0.30 (0.30)	0.99	31714.2	11300.00
8	22825.62	87.96	0.743	0.30 (0.30)	0.99	33532.3	10630.00
9	22772.61	93.51	0.723	0.30 (0.30)	0.99	36122.2	12330.00
10	22756.55	96.77	0.714	0.30 (0.30)	0.99	37721.9	12410.00
11	22699.73	100.09	0.705	0.30 (0.30)	0.99	39264.6	11600.00
12	22477.11	105.78	0.689	0.30 (0.30)	0.99	41499.0	11111.00
13	22213.06	111.80	0.673	0.30 (0.30)	0.99	43432.8	12201.00
14	21909.95	115.55	0.662	0.30 (0.30)	0.99	44380.6	10410.00
15	21510.47	120.46	0.649	0.30 (0.30)	0.99	45521.1	12231.00
16	20855.73	127.67	0.637	0.30 (0.30)	0.99	46932.6	10400.00
17	20713.58	131.45	0.630	0.30 (0.30)	0.99	47522.8	10200.00
18	20484.16	138.60	0.618	0.30 (0.30)	0.99	48553.4	10320.00
19	20142.29	143.19	0.610	0.30 (0.30)	0.99	48778.8	10210.00
20	19767.60	147.83	0.602	0.30 (0.30)	0.99	48941.2	12000.00

21 17333.61 175.63 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) = 22825.62 Tc(MIN.) = 87.956
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) = 6.60
CHANNEL FLOW THRU SUBAREA(CFS) = 22825.62
FLOW VELOCITY(FEET/SEC.) = 14.84 FLOW DEPTH(FEET) = 6.60
TRAVEL TIME(MIN.) = 1.55 Tc(MIN.) = 89.50
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) = 6.42
CHANNEL FLOW THRU SUBAREA(CFS) = 22825.62
FLOW VELOCITY(FEET/SEC.) = 15.32 FLOW DEPTH(FEET) = 6.42
TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 89.84
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 = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 89.84
RAINFALL INTENSITY(INCH/HR) = 0.73
AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 33532.31
TOTAL STREAM AREA(ACRES) = 49558.19
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22825.62

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

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USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 9.86 RAINFALL INTENSITY(INCH/HR) = 2.63
EFFECTIVE AREA(ACRES) = 71.80
TOTAL AREA(ACRES) = 171.00 PEAK FLOW RATE(CFS) = 101.30
AREA-AVERAGED Fm(INCH/HR) = 0.17 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.58
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12603.00 TO NODE 12603.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.86
RAINFALL INTENSITY(INCH/HR) = 2.63
AREA-AVERAGED Fm(INCH/HR) = 0.17
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.58
EFFECTIVE STREAM AREA(ACRES) = 71.80
TOTAL STREAM AREA(ACRES) = 171.00
PEAK FLOW RATE(CFS) AT CONFLUENCE = 101.30

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13483.99	19.57	1.644	0.30(0.30)	0.99	5211.1	600.00
1	16408.44	38.74	1.107	0.30(0.30)	0.99	10973.3	40100.00
1	17694.13	48.48	0.984	0.30(0.30)	0.99	13902.8	11801.00
1	19640.46	65.88	0.850	0.30(0.30)	0.99	20402.4	11910.00
1	20149.61	70.77	0.827	0.30(0.30)	0.99	22411.7	11000.00
1	21892.00	81.36	0.775	0.30(0.30)	0.99	28445.2	11330.00
1	22565.60	86.54	0.750	0.30(0.30)	0.99	31714.2	11300.00
1	22825.62	89.84	0.734	0.30(0.30)	0.99	33532.3	10630.00
1	22772.61	95.40	0.718	0.30(0.30)	0.99	36122.2	12330.00
1	22756.55	98.65	0.709	0.30(0.30)	0.99	37721.9	12410.00
1	22699.73	101.98	0.700	0.30(0.30)	0.99	39264.6	11600.00
1	22477.11	107.67	0.684	0.30(0.30)	0.99	41499.0	11111.00
1	22213.06	113.71	0.667	0.30(0.30)	0.99	43432.8	12201.00
1	21909.95	117.46	0.657	0.30(0.30)	0.99	44380.6	10410.00
1	21510.47	122.38	0.646	0.30(0.30)	0.99	45521.1	12231.00
1	20855.73	129.62	0.633	0.30(0.30)	0.99	46932.6	10400.00
1	20713.58	133.40	0.627	0.30(0.30)	0.99	47522.8	10200.00
1	20484.16	140.56	0.615	0.30(0.30)	0.99	48553.4	10320.00

1	20142.29	145.16	0.607	0.30	(0.30)	0.99	48778.8	10210.00
1	19767.60	149.81	0.599	0.30	(0.30)	0.99	48941.2	12000.00
1	17333.61	177.71	0.551	0.30	(0.30)	0.99	49558.2	10100.00
2	101.30	9.86	2.630	0.30	(0.17)	0.58	71.8	12603.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11866.73	9.86	2.630	0.30(0.29)	0.98	2696.7	12603.00
2	13544.63	19.57	1.644	0.30(0.30)	0.99	5282.9	600.00
3	16446.92	38.74	1.107	0.30(0.30)	0.99	11045.1	40100.00
4	17727.54	48.48	0.984	0.30(0.30)	0.99	13974.6	11801.00
5	19668.36	65.88	0.850	0.30(0.30)	0.99	20474.2	11910.00
6	20176.53	70.77	0.827	0.30(0.30)	0.99	22483.5	11000.00
7	21916.79	81.36	0.775	0.30(0.30)	0.99	28517.0	11330.00
8	22589.35	86.54	0.750	0.30(0.30)	0.99	31786.0	11300.00
9	22848.70	89.84	0.734	0.30(0.30)	0.99	33604.1	10630.00
10	22795.05	95.40	0.718	0.30(0.30)	0.99	36194.0	12330.00
11	22778.62	98.65	0.709	0.30(0.30)	0.99	37793.7	12410.00
12	22721.42	101.98	0.700	0.30(0.30)	0.99	39336.4	11600.00
13	22498.15	107.67	0.684	0.30(0.30)	0.99	41570.8	11111.00
14	22233.41	113.71	0.667	0.30(0.30)	0.99	43504.6	12201.00
15	21929.88	117.46	0.657	0.30(0.30)	0.99	44452.4	10410.00
16	21529.93	122.38	0.646	0.30(0.30)	0.99	45592.9	12231.00
17	20874.69	129.62	0.633	0.30(0.30)	0.99	47004.4	10400.00
18	20732.26	133.40	0.627	0.30(0.30)	0.99	47594.6	10200.00
19	20502.34	140.56	0.615	0.30(0.30)	0.99	48625.2	10320.00
20	20160.14	145.16	0.607	0.30(0.30)	0.99	48850.6	10210.00
21	19785.13	149.81	0.599	0.30(0.30)	0.99	49013.0	12000.00
22	17349.15	177.71	0.551	0.30(0.30)	0.99	49630.0	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22848.70 Tc(MIN.) = 89.84
EFFECTIVE AREA(ACRES) = 33604.11 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.) = 89.84
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.734
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) = 16.99					
EFFECTIVE AREA(ACRES) = 33647.51					
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) = 22848.70					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

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

MAINLINE Tc(MIN.) = 89.84
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.734
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) = 0.39					
EFFECTIVE AREA(ACRES) = 33648.41					
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) = 22848.70					
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE					

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

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

MAINLINE Tc(MIN.) = 89.84
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.734
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) = 4.85					
EFFECTIVE AREA(ACRES) = 33660.61					
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) = 22848.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 89.84
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.734
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) = 4.22
EFFECTIVE AREA (ACRES) = 33671.41 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) = 22848.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc (MIN.) = 89.84
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.734
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) = 1.60
EFFECTIVE AREA (ACRES) = 33675.51 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) = 22848.70

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) = 7.18
CHANNEL FLOW THRU SUBAREA (CFS) = 22848.70
FLOW VELOCITY (FEET/SEC.) = 13.50 FLOW DEPTH (FEET) = 7.18
TRAVEL TIME (MIN.) = 0.57 Tc (MIN.) = 90.41
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.) = 90.41
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.732
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) = 0.63
EFFECTIVE AREA (ACRES) = 33677.11 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) = 22848.70
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) = 7.89
CHANNEL FLOW THRU SUBAREA (CFS) = 22848.70
FLOW VELOCITY (FEET/SEC.) = 12.09 FLOW DEPTH (FEET) = 7.89
TRAVEL TIME (MIN.) = 0.59 Tc (MIN.) = 91.00
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<<<<
=====
MAINLINE Tc(MIN.) = 91.00
* 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) = 33687.71  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) = 22848.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

*****
FLOW PROCESS FROM NODE 12605.00 TO NODE 12605.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 91.00
* 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) = 33692.52  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) = 22848.70
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

*****
FLOW PROCESS FROM NODE 12605.00 TO NODE 12606.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<

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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
GIVEN CHANNEL BASE(FEET) = 200.00  CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000  MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 6.59
CHANNEL FLOW THRU SUBAREA(CFS) = 22848.70
FLOW VELOCITY(FEET/SEC.) = 14.89  FLOW DEPTH(FEET) = 6.59
TRAVEL TIME(MIN.) = 2.42  Tc(MIN.) = 93.42
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 = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 93.42
RAINFALL INTENSITY(INCH/HR) = 0.72
AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.99
EFFECTIVE STREAM AREA(ACRES) = 33692.52
TOTAL STREAM AREA(ACRES) = 49817.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22848.70

*****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 7
-----
>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<
=====
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 17.80  RAINFALL INTENSITY(INCH/HR) = 1.74
EFFECTIVE AREA(ACRES) = 457.90
TOTAL AREA(ACRES) = 553.80      PEAK FLOW RATE(CFS) = 538.10
AREA-AVERAGED Fm(INCH/HR) = 0.26  AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
      CONFLUENCE ANALYSES.

*****
FLOW PROCESS FROM NODE 12606.00 TO NODE 12606.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 17.80
RAINFALL INTENSITY(INCH/HR) = 1.74
AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.85
EFFECTIVE STREAM AREA(ACRES) = 457.90
TOTAL STREAM AREA(ACRES) = 553.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 538.10

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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	11866.73	14.35	1.985	0.30 (0.29)	0.98	2785.1	12603.00
1	13544.63	23.86	1.460	0.30 (0.30)	0.99	5371.3	600.00
1	16446.92	42.74	1.052	0.30 (0.30)	0.99	11133.5	40100.00
1	17727.54	52.38	0.945	0.30 (0.30)	0.99	14063.0	11801.00
1	19668.36	69.64	0.832	0.30 (0.30)	0.99	20562.6	11910.00
1	20176.53	74.50	0.808	0.30 (0.30)	0.99	22571.9	11000.00
1	21916.79	84.98	0.757	0.30 (0.30)	0.99	28605.4	11330.00
1	22589.35	90.13	0.733	0.30 (0.30)	0.99	31874.4	11300.00
1	22848.70	93.42	0.724	0.30 (0.30)	0.99	33692.5	10630.00
1	22795.05	98.97	0.708	0.30 (0.30)	0.99	36282.4	12330.00
1	22778.62	102.23	0.699	0.30 (0.30)	0.99	37882.1	12410.00
1	22721.42	105.56	0.690	0.30 (0.30)	0.99	39424.8	11600.00
1	22498.15	111.26	0.674	0.30 (0.30)	0.99	41659.2	11111.00
1	22233.41	117.31	0.657	0.30 (0.30)	0.99	43593.0	12201.00
1	21929.88	121.08	0.648	0.30 (0.30)	0.99	44540.8	10410.00
1	21529.93	126.03	0.640	0.30 (0.30)	0.99	45681.3	12231.00
1	20874.69	133.30	0.627	0.30 (0.30)	0.99	47092.8	10400.00
1	20732.26	137.10	0.621	0.30 (0.30)	0.99	47683.0	10200.00
1	20502.34	144.26	0.608	0.30 (0.30)	0.99	48713.6	10320.00
1	20160.14	148.89	0.600	0.30 (0.30)	0.99	48939.1	10210.00
1	19785.13	153.56	0.592	0.30 (0.30)	0.99	49101.4	12000.00
1	17349.15	181.63	0.546	0.30 (0.30)	0.99	49718.4	10100.00
2	538.10	17.80	1.741	0.30 (0.26)	0.85	457.9	12606.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12371.61	14.35	1.985	0.30 (0.29)	0.97	3154.2	12603.00
2	13014.23	17.80	1.741	0.30 (0.29)	0.97	4182.3	12606.00
3	13980.98	23.86	1.460	0.30 (0.29)	0.98	5829.2	600.00
4	16735.45	42.74	1.052	0.30 (0.30)	0.98	11591.4	40100.00
5	17977.55	52.38	0.945	0.30 (0.30)	0.99	14520.9	11801.00
6	19877.37	69.64	0.832	0.30 (0.30)	0.99	21020.5	11910.00
7	20376.98	74.50	0.808	0.30 (0.30)	0.99	23029.8	11000.00
8	22098.77	84.98	0.757	0.30 (0.30)	0.99	29063.3	11330.00
9	22762.35	90.13	0.733	0.30 (0.30)	0.99	32332.3	11300.00
10	23018.41	93.42	0.724	0.30 (0.30)	0.99	34150.4	10630.00
11	22959.18	98.97	0.708	0.30 (0.30)	0.99	36740.3	12330.00
12	22939.49	102.23	0.699	0.30 (0.30)	0.99	38340.0	12410.00
13	22878.96	105.56	0.690	0.30 (0.30)	0.99	39882.7	11600.00
14	22649.97	111.26	0.674	0.30 (0.30)	0.99	42117.1	11111.00
15	22379.17	117.31	0.657	0.30 (0.30)	0.99	44050.9	12201.00
16	22072.27	121.08	0.648	0.30 (0.30)	0.99	44998.7	10410.00
17	21669.25	126.03	0.640	0.30 (0.30)	0.99	46139.2	12231.00
18	21009.48	133.30	0.627	0.30 (0.30)	0.99	47550.7	10400.00
19	20864.70	137.10	0.621	0.30 (0.30)	0.99	48140.9	10200.00
20	20630.32	144.26	0.608	0.30 (0.30)	0.99	49171.5	10320.00
21	20285.24	148.89	0.600	0.30 (0.30)	0.99	49396.9	10210.00
22	19907.32	153.56	0.592	0.30 (0.30)	0.99	49559.3	12000.00
23	17454.45	181.63	0.546	0.30 (0.30)	0.99	50176.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23018.41 Tc(MIN.) = 93.42
EFFECTIVE AREA(ACRES) = 34150.41 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.) = 93.42
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.724
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) = 34166.41 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) = 23018.41
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.) = 93.42
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.724
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) = 34183.02 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) = 23018.41
 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.) = 93.42
 * 10 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
 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) = 34184.82 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) = 23018.41
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:
 TOTAL AREA(ACRES) = 50405.8 TC(MIN.) = 93.42
 EFFECTIVE AREA(ACRES) = 34184.82 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.991
 PEAK FLOW RATE(CFS) = 23018.41

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12371.61	14.35	1.985	0.30(0.29)	0.97	3188.6	12603.00
2	13014.23	17.80	1.741	0.30(0.29)	0.97	4216.7	12606.00
3	13980.98	23.86	1.460	0.30(0.29)	0.98	5863.6	600.00
4	16735.45	42.74	1.052	0.30(0.30)	0.98	11625.8	40100.00
5	17977.55	52.38	0.945	0.30(0.30)	0.99	14555.3	11801.00
6	19877.37	69.64	0.832	0.30(0.30)	0.99	21054.9	11910.00
7	20376.98	74.50	0.808	0.30(0.30)	0.99	23064.2	11000.00
8	22098.77	84.98	0.757	0.30(0.30)	0.99	29097.7	11330.00
9	22762.35	90.13	0.733	0.30(0.30)	0.99	32366.7	11300.00
10	23018.41	93.42	0.724	0.30(0.30)	0.99	34184.8	10630.00
11	22959.18	98.97	0.708	0.30(0.30)	0.99	36774.7	12330.00
12	22939.49	102.23	0.699	0.30(0.30)	0.99	38374.4	12410.00
13	22878.96	105.56	0.690	0.30(0.30)	0.99	39917.1	11600.00
14	22649.97	111.26	0.674	0.30(0.30)	0.99	42151.5	11111.00
15	22379.17	117.31	0.657	0.30(0.30)	0.99	44085.3	12201.00
16	22072.27	121.08	0.648	0.30(0.30)	0.99	45033.1	10410.00
17	21669.25	126.03	0.640	0.30(0.30)	0.99	46173.6	12231.00
18	21009.48	133.30	0.627	0.30(0.30)	0.99	47585.1	10400.00
19	20864.70	137.10	0.621	0.30(0.30)	0.99	48175.3	10200.00
20	20630.32	144.26	0.608	0.30(0.30)	0.99	49205.9	10320.00
21	20285.24	148.89	0.600	0.30(0.30)	0.99	49431.4	10210.00
22	19907.32	153.56	0.592	0.30(0.30)	0.99	49593.7	12000.00
23	17454.45	181.63	0.546	0.30(0.30)	0.99	50210.7	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:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S27- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV27.DAT
TIME/DATE OF STUDY: 10:09 06/14/2019

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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; 3.867
- 2) 10.00; 2.568
- 3) 15.00; 1.883
- 4) 20.00; 1.612
- 5) 25.00; 1.405
- 6) 30.00; 1.260
- 7) 40.00; 1.079
- 8) 50.00; 0.961
- 9) 60.00; 0.873
- 10) 90.00; 0.726
- 11) 120.00; 0.643
- 12) 180.00; 0.540
- 13) 360.00; 0.400
- 14) 1200.00; 0.176

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: RI10EV26.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13014.23	17.80	0.30 (0.29)	0.97	4216.7	12606.00
2	13980.98	23.86	0.30 (0.29)	0.98	5863.6	600.00
3	16735.45	42.74	0.30 (0.30)	0.98	11625.8	40100.00
4	17977.55	52.38	0.30 (0.30)	0.99	14555.3	11801.00
5	19877.37	69.64	0.30 (0.30)	0.99	21054.9	11910.00
6	20376.98	74.50	0.30 (0.30)	0.99	23064.2	11000.00
7	22098.77	84.98	0.30 (0.30)	0.99	29097.7	11330.00
8	23018.41	93.42	0.30 (0.30)	0.99	34184.8	10630.00
9	22959.18	98.97	0.30 (0.30)	0.99	36774.7	12330.00
10	22878.96	105.56	0.30 (0.30)	0.99	39917.1	11600.00
11	22649.97	111.26	0.30 (0.30)	0.99	42151.5	11111.00
12	22379.17	117.31	0.30 (0.30)	0.99	44085.3	12201.00
13	22072.27	121.08	0.30 (0.30)	0.99	45033.1	10410.00
14	21669.25	126.03	0.30 (0.30)	0.99	46173.6	12231.00
15	21009.48	133.30	0.30 (0.30)	0.99	47585.1	10400.00
16	20864.70	137.10	0.30 (0.30)	0.99	48175.3	10200.00
17	20630.32	144.26	0.30 (0.30)	0.99	49205.9	10320.00
18	20285.24	148.89	0.30 (0.30)	0.99	49431.4	10210.00
19	19907.32	153.56	0.30 (0.30)	0.99	49593.7	12000.00
20	17454.45	181.63	0.30 (0.30)	0.99	50210.7	10100.00
TOTAL AREA (ACRES) =						50210.7

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	13014.23	17.80	0.30 (0.29)	0.97	4216.7	12606.00
2	13980.98	23.86	0.30 (0.29)	0.98	5863.6	600.00
3	16735.45	42.74	0.30 (0.30)	0.98	11625.8	40100.00
4	17977.55	52.38	0.30 (0.30)	0.99	14555.3	11801.00
5	19877.37	69.64	0.30 (0.30)	0.99	21054.9	11910.00
6	20376.98	74.50	0.30 (0.30)	0.99	23064.2	11000.00
7	22098.77	84.98	0.30 (0.30)	0.99	29097.7	11330.00
8	23018.41	93.42	0.30 (0.30)	0.99	34184.8	10630.00
9	22959.18	98.97	0.30 (0.30)	0.99	36774.7	12330.00
10	22878.96	105.56	0.30 (0.30)	0.99	39917.1	11600.00
11	22649.97	111.26	0.30 (0.30)	0.99	42151.5	11111.00
12	22379.17	117.31	0.30 (0.30)	0.99	44085.3	12201.00
13	22072.27	121.08	0.30 (0.30)	0.99	45033.1	10410.00

14	21669.25	126.03	0.30	(0.30)	0.99	46173.6	12231.00
15	21009.48	133.30	0.30	(0.30)	0.99	47585.1	10400.00
16	20864.70	137.10	0.30	(0.30)	0.99	48175.3	10200.00
17	20630.32	144.26	0.30	(0.30)	0.99	49205.9	10320.00
18	20285.24	148.89	0.30	(0.30)	0.99	49431.4	10210.00
19	19907.32	153.56	0.30	(0.30)	0.99	49593.7	12000.00
20	17454.45	181.63	0.30	(0.30)	0.99	50210.7	10100.00
TOTAL AREA (ACRES) =			50210.7				

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) = 6.81

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713

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) = 23020.72

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 14.44

AVERAGE FLOW DEPTH(FEET) = 6.81 TRAVEL TIME(MIN.) = 1.45

Tc(MIN.) = 94.87

SUBAREA AREA(ACRES) = 7.55 SUBAREA RUNOFF(CFS) = 4.64

EFFECTIVE AREA(ACRES) = 34192.37 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50218.2 PEAK FLOW RATE(CFS) = 23018.41

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 6.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 6.81 FLOW VELOCITY(FEET/SEC.) = 14.44

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.) = 94.87

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713

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) = 11.75

EFFECTIVE AREA(ACRES) = 34223.77 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50249.6 PEAK FLOW RATE(CFS) = 23018.41

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.) = 94.87

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713

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) = 0.63

EFFECTIVE AREA(ACRES) = 34225.46 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99

TOTAL AREA(ACRES) = 50251.3 PEAK FLOW RATE(CFS) = 23018.41

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) = 7.13

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.712

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) = 23018.71

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.70

AVERAGE FLOW DEPTH(FEET) = 7.13 TRAVEL TIME(MIN.) = 0.18

Tc(MIN.) = 95.05

SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 0.61

EFFECTIVE AREA(ACRES) = 34226.95 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 50252.8 PEAK FLOW RATE(CFS) = 23018.41
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 7.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 7.13 FLOW VELOCITY(FEET/SEC.) = 13.70
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.) = 95.05
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) = 34226.95
TOTAL STREAM AREA(ACRES) = 50252.83
PEAK FLOW RATE(CFS) AT CONFLUENCE = 23018.41

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) = 2.032
SUBAREA Tc AND LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"GRASS" B 6.56 0.30 1.000 69 13.91
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 10.23
TOTAL AREA(ACRES) = 6.56 PEAK FLOW RATE(CFS) = 10.23

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) = 1.795
SUBAREA LOSS RATE DATA(AMC II):

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

NATURAL FAIR COVER
"OPEN BRUSH" B 26.94 0.30 1.000 66

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28.41
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.70
AVERAGE FLOW DEPTH(FEET) = 0.54 TRAVEL TIME(MIN.) = 2.71
Tc(MIN.) = 16.62

SUBAREA AREA(ACRES) = 26.94 SUBAREA RUNOFF(CFS) = 36.25
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) = 45.07
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.71 FLOW VELOCITY(FEET/SEC.) = 5.52
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) = 1.650

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

COMMERCIAL B 14.73 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) = 55.81
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.39
AVERAGE FLOW DEPTH(FEET) = 0.76 TRAVEL TIME(MIN.) = 2.67
Tc(MIN.) = 19.30

SUBAREA AREA(ACRES) = 14.73 SUBAREA RUNOFF(CFS) = 21.48
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) = 62.18
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) = 1.539

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) = 133.89

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.79

AVERAGE FLOW DEPTH(FEET) = 1.35 TRAVEL TIME(MIN.) = 2.46

Tc(MIN.) = 21.76

SUBAREA AREA(ACRES) = 105.64 SUBAREA RUNOFF(CFS) = 143.50

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) = 200.87

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 1.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 8.83

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 = 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) = 1.435

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) = 281.26

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.68

AVERAGE FLOW DEPTH(FEET) = 2.24 TRAVEL TIME(MIN.) = 2.52

Tc(MIN.) = 24.28

SUBAREA AREA(ACRES) = 127.13 SUBAREA RUNOFF(CFS) = 160.73

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) = 347.12

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 2.51 FLOW VELOCITY(FEET/SEC.) = 9.23

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) = 1.43

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 = 347.12

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13014.23	19.79	1.623	0.30(0.29)	0.97	4258.9	12606.00
1	13980.98	25.80	1.382	0.30(0.29)	0.98	5905.8	600.00
1	16735.45	44.57	1.025	0.30(0.30)	0.98	11668.0	40100.00
1	17977.55	54.16	0.924	0.30(0.30)	0.99	14597.5	11801.00
1	19877.37	71.36	0.817	0.30(0.30)	0.99	21097.0	11910.00
1	20376.98	76.20	0.794	0.30(0.30)	0.99	23106.3	11000.00
1	22098.77	86.64	0.742	0.30(0.30)	0.99	29139.8	11330.00
1	23018.41	95.05	0.712	0.30(0.30)	0.99	34227.0	10630.00
1	22959.18	100.61	0.697	0.30(0.30)	0.99	36816.8	12330.00
1	22878.96	107.20	0.678	0.30(0.30)	0.99	39959.3	11600.00
1	22649.97	112.91	0.663	0.30(0.30)	0.99	42193.6	11111.00
1	22379.17	118.96	0.646	0.30(0.30)	0.99	44127.4	12201.00
1	22072.27	122.74	0.638	0.30(0.30)	0.99	45075.3	10410.00
1	21669.25	127.70	0.630	0.30(0.30)	0.99	46215.7	12231.00
1	21009.48	134.99	0.617	0.30(0.30)	0.99	47627.2	10400.00
1	20864.70	138.79	0.611	0.30(0.30)	0.99	48217.5	10200.00
1	20630.32	145.96	0.598	0.30(0.30)	0.99	49248.0	10320.00
1	20285.24	150.60	0.590	0.30(0.30)	0.99	49473.5	10210.00
1	19907.32	155.28	0.582	0.30(0.30)	0.99	49635.8	12000.00
1	17454.45	183.43	0.537	0.30(0.30)	0.99	50252.8	10100.00
2	347.12	24.28	1.435	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	13336.03	19.79	1.623	0.30 (0.28)	0.93	4487.9	12606.00
2	14083.76	24.28	1.435	0.30 (0.28)	0.94	5770.5	12710.00
3	14314.71	25.80	1.382	0.30 (0.28)	0.94	6186.8	600.00
4	16978.97	44.57	1.025	0.30 (0.29)	0.97	11949.0	40100.00
5	18195.60	54.16	0.924	0.30 (0.29)	0.97	14878.5	11801.00
6	20068.34	71.36	0.817	0.30 (0.29)	0.98	21378.0	11910.00
7	20561.96	76.20	0.794	0.30 (0.29)	0.98	23387.3	11000.00
8	22270.81	86.64	0.742	0.30 (0.29)	0.98	29420.8	11330.00
9	23182.75	95.05	0.712	0.30 (0.30)	0.98	34508.0	10630.00
10	23119.64	100.61	0.697	0.30 (0.30)	0.99	37097.8	12330.00
11	23034.80	107.20	0.678	0.30 (0.30)	0.99	40240.3	11600.00
12	22801.82	112.91	0.663	0.30 (0.30)	0.99	42474.6	11111.00
13	22526.78	118.96	0.646	0.30 (0.30)	0.99	44408.4	12201.00
14	22217.96	122.74	0.638	0.30 (0.30)	0.99	45356.3	10410.00
15	21812.80	127.70	0.630	0.30 (0.30)	0.99	46496.7	12231.00
16	21149.86	134.99	0.617	0.30 (0.30)	0.99	47908.2	10400.00
17	21003.43	138.79	0.611	0.30 (0.30)	0.99	48498.5	10200.00
18	20765.94	145.96	0.598	0.30 (0.30)	0.99	49529.0	10320.00
19	20418.85	150.60	0.590	0.30 (0.30)	0.99	49754.5	10210.00
20	20038.89	155.28	0.582	0.30 (0.30)	0.99	49916.8	12000.00
21	17574.62	183.43	0.537	0.30 (0.30)	0.99	50533.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23182.75 Tc(MIN.) = 95.05
 EFFECTIVE AREA(ACRES) = 34507.95 AREA-AVERAGED Fm(INCH/HR) = 0.30
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 50533.8
 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.) = 95.05

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.712

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) = 1.71

EFFECTIVE AREA(ACRES) = 34512.45 AREA-AVERAGED Fm(INCH/HR) = 0.30

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

TOTAL AREA(ACRES) = 50538.3 PEAK FLOW RATE(CFS) = 23182.75

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) = 7.29

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.703

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) = 23201.57

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.46

AVERAGE FLOW DEPTH(FEET) = 7.29 TRAVEL TIME(MIN.) = 3.30

Tc(MIN.) = 98.36

SUBAREA AREA(ACRES) = 62.15 SUBAREA RUNOFF(CFS) = 37.64

EFFECTIVE AREA(ACRES) = 34574.60 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 50600.5 PEAK FLOW RATE(CFS) = 23182.75

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) = 7.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 7.29 FLOW VELOCITY(FEET/SEC.) = 13.45

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.) = 98.36

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.703

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) = 7.11

EFFECTIVE AREA(ACRES) = 34594.10 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 50620.0 PEAK FLOW RATE (CFS) = 23182.75
 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.) = 98.36
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.703
 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) = 1.31
 EFFECTIVE AREA (ACRES) = 34597.60 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 50623.5 PEAK FLOW RATE (CFS) = 23182.75
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION (MIN.) = 98.36
 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) = 34597.60
 TOTAL STREAM AREA (ACRES) = 50623.48
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 23182.75

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 19.20 RAINFALL INTENSITY (INCH/HR) = 1.66
 EFFECTIVE AREA (ACRES) = 97.20

TOTAL AREA (ACRES) = 439.50 PEAK FLOW RATE (CFS) = 92.20
 AREA-AVERAGED Fm (INCH/HR) = 0.14 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.48
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 12720.50 TO NODE 12720.50 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION (MIN.) = 19.20
 RAINFALL INTENSITY (INCH/HR) = 1.66
 AREA-AVERAGED Fm (INCH/HR) = 0.14
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.48
 EFFECTIVE STREAM AREA (ACRES) = 97.20
 TOTAL STREAM AREA (ACRES) = 439.50
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 92.20

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13336.03	23.79	1.455	0.30 (0.28)	0.92	4577.5	12606.00
1	14083.76	28.20	1.312	0.30 (0.28)	0.93	5860.2	12710.00
1	14314.71	29.70	1.269	0.30 (0.28)	0.93	6276.4	600.00
1	16978.97	48.24	0.982	0.30 (0.29)	0.96	12038.6	40100.00
1	18195.60	57.75	0.893	0.30 (0.29)	0.97	14968.1	11801.00
1	20068.34	74.83	0.800	0.30 (0.29)	0.98	21467.7	11910.00
1	20561.96	79.64	0.777	0.30 (0.29)	0.98	23477.0	11000.00
1	22270.81	89.99	0.726	0.30 (0.29)	0.98	29510.4	11330.00
1	23182.75	98.36	0.703	0.30 (0.29)	0.98	34597.6	10630.00
1	23119.64	103.91	0.688	0.30 (0.30)	0.98	37187.5	12330.00
1	23034.80	110.51	0.669	0.30 (0.30)	0.98	40329.9	11600.00
1	22801.82	116.23	0.653	0.30 (0.30)	0.98	42564.2	11111.00
1	22526.78	122.30	0.639	0.30 (0.30)	0.98	44498.1	12201.00
1	22217.96	126.09	0.633	0.30 (0.30)	0.98	45445.9	10410.00
1	21812.80	131.07	0.624	0.30 (0.30)	0.98	46586.3	12231.00
1	21149.86	138.40	0.611	0.30 (0.30)	0.98	47997.9	10400.00
1	21003.43	142.20	0.605	0.30 (0.30)	0.98	48588.1	10200.00
1	20765.94	149.39	0.593	0.30 (0.30)	0.98	49618.7	10320.00
1	20418.85	154.05	0.585	0.30 (0.30)	0.98	49844.1	10210.00
1	20038.89	158.75	0.576	0.30 (0.30)	0.98	50006.5	12000.00
1	17574.62	187.06	0.535	0.30 (0.30)	0.98	50623.5	10100.00
2	92.20	19.20	1.655	0.30 (0.14)	0.48	97.2	12720.50

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12682.39	19.20	1.655	0.30 (0.27)	0.91	3791.8	12720.50
2	13416.02	23.79	1.455	0.30 (0.27)	0.91	4674.7	12606.00
3	14155.03	28.20	1.312	0.30 (0.28)	0.92	5957.4	12710.00

4	14383.32	29.70	1.269	0.30	(0.28)	0.93	6373.6	600.00
5	17030.07	48.24	0.982	0.30	(0.29)	0.96	12135.8	40100.00
6	18241.28	57.75	0.893	0.30	(0.29)	0.96	15065.3	11801.00
7	20108.38	74.83	0.800	0.30	(0.29)	0.97	21564.9	11910.00
8	20600.56	79.64	0.777	0.30	(0.29)	0.98	23574.2	11000.00
9	22306.32	89.99	0.726	0.30	(0.29)	0.98	29607.6	11330.00
10	23216.84	98.36	0.703	0.30	(0.29)	0.98	34694.8	10630.00
11	23152.79	103.91	0.688	0.30	(0.29)	0.98	37284.7	12330.00
12	23066.84	110.51	0.669	0.30	(0.29)	0.98	40427.1	11600.00
13	22832.90	116.23	0.653	0.30	(0.29)	0.98	42661.4	11111.00
14	22556.98	122.30	0.639	0.30	(0.29)	0.98	44595.3	12201.00
15	22247.77	126.09	0.633	0.30	(0.29)	0.98	45543.1	10410.00
16	21842.08	131.07	0.624	0.30	(0.29)	0.98	46683.5	12231.00
17	21178.37	138.40	0.611	0.30	(0.29)	0.98	48095.1	10400.00
18	21031.54	142.20	0.605	0.30	(0.29)	0.98	48685.3	10200.00
19	20793.30	149.39	0.593	0.30	(0.30)	0.98	49715.9	10320.00
20	20445.72	154.05	0.585	0.30	(0.30)	0.98	49941.3	10210.00
21	20065.28	158.75	0.576	0.30	(0.30)	0.98	50103.7	12000.00
22	17598.44	187.06	0.535	0.30	(0.30)	0.98	50720.7	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23216.84 Tc(MIN.) = 98.36
EFFECTIVE AREA(ACRES) = 34694.80 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51063.0
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12720.50 = 108682.05 FEET.

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) = 8.02
CHANNEL FLOW THRU SUBAREA(CFS) = 23216.84
FLOW VELOCITY(FEET/SEC.) = 12.05 FLOW DEPTH(FEET) = 8.02
TRAVEL TIME(MIN.) = 0.61 Tc(MIN.) = 98.96
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

>>>>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) = 11.69
* 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
RESIDENTIAL
".4 DWELLING/ACRE" B 0.60 0.30 0.900 56

COMMERCIAL B 11.24 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) = 23220.21
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.69
AVERAGE FLOW DEPTH(FEET) = 11.69 TRAVEL TIME(MIN.) = 1.80
Tc(MIN.) = 100.76
SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 6.74
EFFECTIVE AREA(ACRES) = 34706.04 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51074.2 PEAK FLOW RATE(CFS) = 23216.84
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) = 11.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 11.68 FLOW VELOCITY(FEET/SEC.) = 7.69
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.) = 100.76
* 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 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 9.90 SUBAREA RUNOFF(CFS) = 3.53
EFFECTIVE AREA(ACRES) = 34715.94 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 51084.1 PEAK FLOW RATE(CFS) = 23216.84
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 12722.00 TO NODE 12722.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 100.76
* 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
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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.977
 SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 0.94
 EFFECTIVE AREA(ACRES) = 34718.54 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA(ACRES) = 51086.7 PEAK FLOW RATE(CFS) = 23216.84
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12722.00 TO NODE 12740.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 255.00 DOWNSTREAM(FEET) = 252.10
 CHANNEL LENGTH THRU SUBAREA(FEET) = 624.00 CHANNEL SLOPE = 0.0046
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 7.98
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.694

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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.925

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23220.20

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.12

AVERAGE FLOW DEPTH(FEET) = 7.98 TRAVEL TIME(MIN.) = 0.86

Tc(MIN.) = 101.62

SUBAREA AREA(ACRES) = 17.90 SUBAREA RUNOFF(CFS) = 6.71

EFFECTIVE AREA(ACRES) = 34736.44 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 51104.6 PEAK FLOW RATE(CFS) = 23216.84

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) = 7.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 7.98 FLOW VELOCITY(FEET/SEC.) = 12.12

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.) = 101.62

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.694

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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

SUBAREA AREA(ACRES) = 44.40 SUBAREA RUNOFF(CFS) = 15.74

EFFECTIVE AREA(ACRES) = 34780.84 AREA-AVERAGED Fm(INCH/HR) = 0.29

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

TOTAL AREA(ACRES) = 51149.0 PEAK FLOW RATE(CFS) = 23216.84

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12740.00 TO NODE 12740.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 101.62

RAINFALL INTENSITY(INCH/HR) = 0.69

AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.98

EFFECTIVE STREAM AREA(ACRES) = 34780.84

TOTAL STREAM AREA(ACRES) = 51149.02

PEAK FLOW RATE(CFS) AT CONFLUENCE = 23216.84

 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) = 2.044

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" B 6.33 0.30 1.000 63 13.82
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 9.94
TOTAL AREA (ACRES) = 6.33 PEAK FLOW RATE (CFS) = 9.94

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) = 1.747
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) = 36.72
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.40
AVERAGE FLOW DEPTH(FEET) = 0.73 TRAVEL TIME(MIN.) = 3.68
Tc(MIN.) = 17.50
SUBAREA AREA(ACRES) = 34.62 SUBAREA RUNOFF(CFS) = 53.51
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) = 61.76
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.98 FLOW VELOCITY(FEET/SEC.) = 5.26
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) = 1.37
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.584
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) = 103.40
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) = 83.23
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) = 138.95
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 1.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.59 FLOW VELOCITY(FEET/SEC.) = 6.63
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) = 2.04
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.404
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) = 178.58
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.33
AVERAGE FLOW DEPTH(FEET) = 2.01 TRAVEL TIME(MIN.) = 4.35
Tc(MIN.) = 25.04
SUBAREA AREA(ACRES) = 64.05 SUBAREA RUNOFF(CFS) = 79.20
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) = 201.89
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.15 FLOW VELOCITY(FEET/SEC.) = 6.57
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) = 1.289
 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) = 216.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.88
 AVERAGE FLOW DEPTH (FEET) = 1.97 TRAVEL TIME (MIN.) = 3.98
 Tc (MIN.) = 29.02
 SUBAREA AREA (ACRES) = 26.02 SUBAREA RUNOFF (CFS) = 29.47
 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) = 214.28
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 1.96
 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.96 FLOW VELOCITY (FEET/SEC.) = 7.86
 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.) = 29.02
 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 = 214.28

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12682.39	23.19	1.480	0.30 (0.27)	0.91	3877.9	12720.50
1	13416.02	27.70	1.327	0.30 (0.27)	0.91	4760.8	12606.00
1	14155.03	32.05	1.223	0.30 (0.28)	0.92	6043.4	12710.00
1	14383.32	33.52	1.196	0.30 (0.28)	0.92	6459.7	600.00
1	17030.07	51.85	0.945	0.30 (0.29)	0.96	12221.9	40100.00
1	18241.28	61.28	0.867	0.30 (0.29)	0.96	15151.4	11801.00
1	20108.38	78.26	0.784	0.30 (0.29)	0.97	21650.9	11910.00
1	20600.56	83.04	0.760	0.30 (0.29)	0.97	23660.2	11000.00
1	22306.32	93.30	0.717	0.30 (0.29)	0.98	29693.7	11330.00
1	23216.84	101.62	0.694	0.30 (0.29)	0.98	34780.8	10630.00
1	23152.79	107.18	0.678	0.30 (0.29)	0.98	37370.7	12330.00

1	23066.84	113.78	0.660	0.30 (0.29)	0.98	40513.2	11600.00
1	22832.90	119.51	0.644	0.30 (0.29)	0.98	42747.5	11111.00
1	22556.98	125.60	0.633	0.30 (0.29)	0.98	44681.3	12201.00
1	22247.77	129.40	0.627	0.30 (0.29)	0.98	45629.1	10410.00
1	21842.08	134.40	0.618	0.30 (0.29)	0.98	46769.6	12231.00
1	21178.37	141.76	0.606	0.30 (0.29)	0.98	48181.1	10400.00
1	21031.54	145.57	0.599	0.30 (0.29)	0.98	48771.3	10200.00
1	20793.30	152.77	0.587	0.30 (0.29)	0.98	49801.9	10320.00
1	20445.72	157.45	0.579	0.30 (0.29)	0.98	50027.4	10210.00
1	20065.28	162.18	0.571	0.30 (0.29)	0.98	50189.7	12000.00
1	17598.44	190.64	0.532	0.30 (0.30)	0.98	50806.7	10100.00
2	214.28	29.02	1.289	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	12879.88	23.19	1.480	0.30 (0.26)	0.88	4030.1	12720.50
2	13626.84	27.70	1.327	0.30 (0.26)	0.88	4942.7	12606.00
3	13853.68	29.02	1.289	0.30 (0.27)	0.88	5339.0	12730.00
4	14358.06	32.05	1.223	0.30 (0.27)	0.90	6233.9	12710.00
5	14581.77	33.52	1.196	0.30 (0.27)	0.90	6650.2	600.00
6	17185.39	51.85	0.945	0.30 (0.28)	0.94	12412.4	40100.00
7	18383.22	61.28	0.867	0.30 (0.29)	0.95	15341.9	11801.00
8	20236.06	78.26	0.784	0.30 (0.29)	0.97	21841.5	11910.00
9	20724.23	83.04	0.760	0.30 (0.29)	0.97	23850.7	11000.00
10	22422.57	93.30	0.717	0.30 (0.29)	0.97	29884.2	11330.00
11	23329.15	101.62	0.694	0.30 (0.29)	0.98	34971.4	10630.00
12	23262.46	107.18	0.678	0.30 (0.29)	0.98	37561.2	12330.00
13	23173.38	113.78	0.660	0.30 (0.29)	0.98	40703.7	11600.00
14	22936.71	119.51	0.644	0.30 (0.29)	0.98	42938.0	11111.00
15	22658.92	125.60	0.633	0.30 (0.29)	0.98	44871.9	12201.00
16	22348.58	129.40	0.627	0.30 (0.29)	0.98	45819.7	10410.00
17	21941.42	134.40	0.618	0.30 (0.29)	0.98	46960.1	12231.00
18	21275.55	141.76	0.606	0.30 (0.29)	0.98	48371.7	10400.00
19	21127.60	145.57	0.599	0.30 (0.29)	0.98	48961.9	10200.00
20	20887.23	152.77	0.587	0.30 (0.29)	0.98	49992.4	10320.00
21	20538.28	157.45	0.579	0.30 (0.29)	0.98	50217.9	10210.00
22	20156.44	162.18	0.571	0.30 (0.29)	0.98	50380.3	12000.00
23	17682.94	190.64	0.532	0.30 (0.29)	0.98	50997.3	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23329.15 Tc (MIN.) = 101.62
 EFFECTIVE AREA (ACRES) = 34971.38 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51339.6
 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) = 5.99
 CHANNEL FLOW THRU SUBAREA (CFS) = 23329.15
 FLOW VELOCITY (FEET/SEC.) = 16.92 FLOW DEPTH (FEET) = 5.99
 TRAVEL TIME (MIN.) = 0.40 Tc (MIN.) = 102.02
 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.) = 102.02
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.693
 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) = 5.30
 EFFECTIVE AREA (ACRES) = 34984.68 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51352.9 PEAK FLOW RATE (CFS) = 23329.15
 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.) = 102.02
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.693
 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) = 34985.57 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 51353.8 PEAK FLOW RATE (CFS) = 23329.15
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 102.02
 RAINFALL INTENSITY (INCH/HR) = 0.69
 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.98
 EFFECTIVE STREAM AREA (ACRES) = 34985.57
 TOTAL STREAM AREA (ACRES) = 51353.75
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 23329.15

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

 USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC (MIN.) = 24.93 RAINFALL INTENSITY (INCH/HR) = 1.41
 EFFECTIVE AREA (ACRES) = 31.10
 TOTAL AREA (ACRES) = 870.60 PEAK FLOW RATE (CFS) = 31.90
 AREA-AVERAGED Fm (INCH/HR) = 0.15 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
 CONFLUENCE ANALYSES.

 FLOW PROCESS FROM NODE 12741.00 TO NODE 12741.00 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.) = 24.93
 RAINFALL INTENSITY (INCH/HR) = 1.41
 AREA-AVERAGED Fm (INCH/HR) = 0.15
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.50
 EFFECTIVE STREAM AREA (ACRES) = 31.10
 TOTAL STREAM AREA (ACRES) = 870.60
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 31.90

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12879.88	23.68	1.460	0.30 (0.26)	0.88	4044.3	12720.50
1	13626.84	28.18	1.313	0.30 (0.26)	0.88	4956.9	12606.00
1	13853.68	29.49	1.275	0.30 (0.26)	0.88	5353.2	12730.00
1	14358.06	32.52	1.214	0.30 (0.27)	0.90	6248.1	12710.00
1	14581.77	33.99	1.188	0.30 (0.27)	0.90	6664.4	600.00
1	17185.39	52.29	0.941	0.30 (0.28)	0.94	12426.6	40100.00
1	18383.22	61.71	0.865	0.30 (0.29)	0.95	15356.1	11801.00
1	20236.06	78.67	0.782	0.30 (0.29)	0.97	21855.7	11910.00
1	20724.23	83.45	0.758	0.30 (0.29)	0.97	23864.9	11000.00
1	22422.57	93.70	0.716	0.30 (0.29)	0.97	29898.4	11330.00

1	23329.15	102.02	0.693	0.30 (0.29)	0.98	34985.6	10630.00
1	23262.46	107.58	0.677	0.30 (0.29)	0.98	37575.4	12330.00
1	23173.38	114.18	0.659	0.30 (0.29)	0.98	40717.9	11600.00
1	22936.71	119.91	0.643	0.30 (0.29)	0.98	42952.2	11111.00
1	22658.92	125.99	0.633	0.30 (0.29)	0.98	44886.1	12201.00
1	22348.58	129.81	0.626	0.30 (0.29)	0.98	45833.9	10410.00
1	21941.42	134.80	0.618	0.30 (0.29)	0.98	46974.3	12231.00
1	21275.55	142.17	0.605	0.30 (0.29)	0.98	48385.9	10400.00
1	21127.60	145.98	0.598	0.30 (0.29)	0.98	48976.1	10200.00
1	20887.23	153.19	0.586	0.30 (0.29)	0.98	50006.6	10320.00
1	20538.28	157.87	0.578	0.30 (0.29)	0.98	50232.1	10210.00
1	20156.44	162.59	0.570	0.30 (0.29)	0.98	50394.5	12000.00
1	17682.94	191.07	0.531	0.30 (0.29)	0.98	51011.5	10100.00
2	31.90	24.93	1.408	0.30 (0.15)	0.50	31.1	12741.00

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	12911.42	23.68	1.460	0.30 (0.26)	0.87	4073.9	12720.50
2	13119.70	24.93	1.408	0.30 (0.26)	0.87	4329.5	12741.00
3	13656.32	28.18	1.313	0.30 (0.26)	0.88	4988.0	12606.00
4	13882.20	29.49	1.275	0.30 (0.26)	0.88	5384.3	12730.00
5	14385.06	32.52	1.214	0.30 (0.27)	0.89	6279.2	12710.00
6	14608.09	33.99	1.188	0.30 (0.27)	0.90	6695.5	600.00
7	17205.45	52.29	0.941	0.30 (0.28)	0.94	12457.7	40100.00
8	18401.35	61.71	0.865	0.30 (0.29)	0.95	15387.2	11801.00
9	20252.08	78.67	0.782	0.30 (0.29)	0.96	21886.8	11910.00
10	20739.65	83.45	0.758	0.30 (0.29)	0.97	23896.0	11000.00
11	22436.92	93.70	0.716	0.30 (0.29)	0.97	29929.5	11330.00
12	23342.91	102.02	0.693	0.30 (0.29)	0.98	35016.7	10630.00
13	23275.83	107.58	0.677	0.30 (0.29)	0.98	37606.5	12330.00
14	23186.29	114.18	0.659	0.30 (0.29)	0.98	40749.0	11600.00
15	22949.22	119.91	0.643	0.30 (0.29)	0.98	42983.3	11111.00
16	22671.16	125.99	0.633	0.30 (0.29)	0.98	44917.2	12201.00
17	22360.66	129.81	0.626	0.30 (0.29)	0.98	45865.0	10410.00
18	21953.28	134.80	0.618	0.30 (0.29)	0.98	47005.4	12231.00
19	21287.08	142.17	0.605	0.30 (0.29)	0.98	48417.0	10400.00
20	21138.97	145.98	0.598	0.30 (0.29)	0.98	49007.2	10200.00
21	20898.29	153.19	0.586	0.30 (0.29)	0.98	50037.7	10320.00
22	20549.13	157.87	0.578	0.30 (0.29)	0.98	50263.2	10210.00
23	20167.09	162.59	0.570	0.30 (0.29)	0.98	50425.6	12000.00
24	17692.61	191.07	0.531	0.30 (0.29)	0.98	51042.6	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23342.91 Tc(MIN.) = 102.02
EFFECTIVE AREA(ACRES) = 35016.68 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52244.4
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12741.00 = 110976.71 FEET.

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) = 6.72
CHANNEL FLOW THRU SUBAREA(CFS) = 23342.91
FLOW VELOCITY(FEET/SEC.) = 14.86 FLOW DEPTH(FEET) = 6.72
TRAVEL TIME(MIN.) = 0.92 Tc(MIN.) = 102.93
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.) = 102.93
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.690
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	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) = 6.08
EFFECTIVE AREA(ACRES) = 35033.98 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52241.7 PEAK FLOW RATE(CFS) = 23342.91
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 52241.7 TC(MIN.) = 102.93
EFFECTIVE AREA(ACRES) = 35033.98 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.976
PEAK FLOW RATE(CFS) = 23342.91

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12911.42	24.80	1.413	0.30 (0.26)	0.87	4091.2	12720.50
2	13119.70	26.05	1.375	0.30 (0.26)	0.88	4346.8	12741.00
3	13656.32	29.29	1.281	0.30 (0.26)	0.88	5005.3	12606.00
4	13882.20	30.59	1.249	0.30 (0.26)	0.88	5401.6	12730.00
5	14385.06	33.60	1.195	0.30 (0.27)	0.89	6296.6	12710.00
6	14608.09	35.07	1.168	0.30 (0.27)	0.90	6712.8	600.00
7	17205.45	53.31	0.932	0.30 (0.28)	0.94	12475.0	40100.00
8	18401.35	62.71	0.860	0.30 (0.29)	0.95	15404.5	11801.00
9	20252.08	79.63	0.777	0.30 (0.29)	0.96	21904.1	11910.00
10	20739.65	84.40	0.753	0.30 (0.29)	0.97	23913.3	11000.00
11	22436.92	94.63	0.713	0.30 (0.29)	0.97	29946.8	11330.00
12	23342.91	102.93	0.690	0.30 (0.29)	0.98	35034.0	10630.00
13	23275.83	108.50	0.675	0.30 (0.29)	0.98	37623.9	12330.00
14	23186.29	115.10	0.657	0.30 (0.29)	0.98	40766.3	11600.00
15	22949.22	120.83	0.642	0.30 (0.29)	0.98	43000.6	11111.00
16	22671.16	126.92	0.631	0.30 (0.29)	0.98	44934.5	12201.00
17	22360.66	130.74	0.625	0.30 (0.29)	0.98	45882.3	10410.00
18	21953.28	135.74	0.616	0.30 (0.29)	0.98	47022.7	12231.00

19	21287.08	143.12	0.603	0.30	(0.29)	0.98	48434.3	10400.00
20	21138.97	146.93	0.597	0.30	(0.29)	0.98	49024.5	10200.00
21	20898.29	154.14	0.584	0.30	(0.29)	0.98	50055.0	10320.00
22	20549.13	158.83	0.576	0.30	(0.29)	0.98	50280.5	10210.00
23	20167.09	163.56	0.568	0.30	(0.29)	0.98	50442.9	12000.00
24	17692.61	192.08	0.531	0.30	(0.29)	0.98	51059.9	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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Analysis prepared by:

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5 Hutton Centre Drive Suite 500
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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S28- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV28.DAT
TIME/DATE OF STUDY: 10:09 06/14/2019

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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; 3.867
- 2) 10.00; 2.568
- 3) 15.00; 1.883
- 4) 20.00; 1.612
- 5) 25.00; 1.405
- 6) 30.00; 1.260
- 7) 40.00; 1.079
- 8) 50.00; 0.961
- 9) 60.00; 0.873
- 10) 90.00; 0.726
- 11) 120.00; 0.643
- 12) 180.00; 0.540
- 13) 360.00; 0.400
- 14) 1200.00; 0.176

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 # 2 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: RI10EV27.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13119.70	26.05	0.30 (0.26)	0.88	4346.8	12741.00
2	13882.20	30.59	0.30 (0.26)	0.88	5401.6	12730.00
3	14608.09	35.07	0.30 (0.27)	0.90	6712.8	600.00
4	17205.45	53.31	0.30 (0.28)	0.94	12475.0	40100.00
5	18401.35	62.71	0.30 (0.29)	0.95	15404.5	11801.00
6	20252.08	79.63	0.30 (0.29)	0.96	21904.1	11910.00
7	20739.65	84.40	0.30 (0.29)	0.97	23913.3	11000.00
8	22436.92	94.63	0.30 (0.29)	0.97	29946.8	11330.00
9	23342.91	102.93	0.30 (0.29)	0.98	35034.0	10630.00
10	23275.83	108.50	0.30 (0.29)	0.98	37623.9	12330.00
11	23186.29	115.10	0.30 (0.29)	0.98	40766.3	11600.00
12	22949.22	120.83	0.30 (0.29)	0.98	43000.6	11111.00
13	22671.16	126.92	0.30 (0.29)	0.98	44934.5	12201.00
14	21953.28	135.74	0.30 (0.29)	0.98	47022.7	12231.00
15	21287.08	143.12	0.30 (0.29)	0.98	48434.3	10400.00
16	21138.97	146.93	0.30 (0.29)	0.98	49024.5	10200.00
17	20898.29	154.14	0.30 (0.29)	0.98	50055.0	10320.00
18	20549.13	158.83	0.30 (0.29)	0.98	50280.5	10210.00
19	20167.09	163.56	0.30 (0.29)	0.98	50442.9	12000.00
20	17692.61	192.08	0.30 (0.29)	0.98	51059.9	10100.00
TOTAL AREA (ACRES) =						51059.9

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 15.1

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

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PEAK FLOWRATE TABLE FILE NAME: 0610501V.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	980.25	27.73	0.30 (0.29)	0.98	1026.3	50120.00
2	957.41	29.15	0.30 (0.29)	0.98	1042.7	50150.00
3	896.35	32.55	0.30 (0.29)	0.98	1063.4	50100.00
TOTAL AREA (ACRES) =						1063.4

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 IS CODE = 14.0

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

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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	980.25	27.73	0.30 (0.29)	0.98	1026.3
2	957.41	29.15	0.30 (0.29)	0.98	1042.7
3	896.35	32.55	0.30 (0.29)	0.98	1063.4
TOTAL AREA (ACRES) =			1063.4		

FLOW PROCESS FROM NODE 12800.00 TO NODE 12800.00 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	980.25	27.73	1.326	0.30 (0.29)	0.98	1026.3	50120.00
2	957.41	29.15	1.285	0.30 (0.29)	0.98	1042.7	50150.00
3	896.35	32.55	1.214	0.30 (0.29)	0.98	1063.4	50100.00

LONGEST FLOWPATH FROM NODE 50150.00 TO NODE 12800.00 = 11349.00 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	13119.70	26.05	1.375	0.30 (0.26)	0.88	4346.8	12741.00
2	13882.20	30.59	1.249	0.30 (0.26)	0.88	5401.6	12730.00
3	14608.09	35.07	1.168	0.30 (0.27)	0.90	6712.8	600.00
4	17205.45	53.31	0.932	0.30 (0.28)	0.94	12475.0	40100.00
5	18401.35	62.71	0.860	0.30 (0.29)	0.95	15404.5	11801.00
6	20252.08	79.63	0.777	0.30 (0.29)	0.96	21904.1	11910.00
7	20739.65	84.40	0.753	0.30 (0.29)	0.97	23913.3	11000.00
8	22436.92	94.63	0.713	0.30 (0.29)	0.97	29946.8	11330.00
9	23342.91	102.93	0.690	0.30 (0.29)	0.98	35034.0	10630.00
10	23275.83	108.50	0.675	0.30 (0.29)	0.98	37623.9	12330.00
11	23186.29	115.10	0.657	0.30 (0.29)	0.98	40766.3	11600.00
12	22949.22	120.83	0.642	0.30 (0.29)	0.98	43000.6	11111.00
13	22671.16	126.92	0.631	0.30 (0.29)	0.98	44934.5	12201.00
14	21953.28	135.74	0.616	0.30 (0.29)	0.98	47022.7	12231.00
15	21287.08	143.12	0.603	0.30 (0.29)	0.98	48434.3	10400.00
16	21138.97	146.93	0.597	0.30 (0.29)	0.98	49024.5	10200.00
17	20898.29	154.14	0.584	0.30 (0.29)	0.98	50055.0	10320.00
18	20549.13	158.83	0.576	0.30 (0.29)	0.98	50280.5	10210.00
19	20167.09	163.56	0.568	0.30 (0.29)	0.98	50442.9	12000.00
20	17692.61	192.08	0.531	0.30 (0.29)	0.98	51059.9	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	14084.08	26.05	1.375	0.30 (0.27)	0.89	5311.0	12741.00
2	14381.83	27.73	1.326	0.30 (0.27)	0.90	5763.1	50120.00
3	14597.75	29.15	1.285	0.30 (0.27)	0.90	6109.7	50150.00
4	14813.77	30.59	1.249	0.30 (0.27)	0.90	6453.1	12730.00
5	15096.32	32.55	1.214	0.30 (0.27)	0.90	7039.0	50100.00
6	15459.98	35.07	1.168	0.30 (0.27)	0.91	7776.2	600.00
7	17826.87	53.31	0.932	0.30 (0.28)	0.95	13538.4	40100.00
8	18952.47	62.71	0.860	0.30 (0.29)	0.95	16467.9	11801.00
9	20722.34	79.63	0.777	0.30 (0.29)	0.97	22967.5	11910.00
10	21187.13	84.40	0.753	0.30 (0.29)	0.97	24976.7	11000.00

11	22845.18	94.63	0.713	0.30 (0.29)	0.97	31010.2	11330.00
12	23728.77	102.93	0.690	0.30 (0.29)	0.98	36097.4	10630.00
13	23646.68	108.50	0.675	0.30 (0.29)	0.98	38687.2	12330.00
14	23539.34	115.10	0.657	0.30 (0.29)	0.98	41829.7	11600.00
15	23287.65	120.83	0.642	0.30 (0.29)	0.98	44064.0	11111.00
16	22999.40	126.92	0.631	0.30 (0.29)	0.98	45997.9	12201.00
17	22266.76	135.74	0.616	0.30 (0.29)	0.98	48086.1	12231.00
18	21588.21	143.12	0.603	0.30 (0.29)	0.98	49497.7	10400.00
19	21433.71	146.93	0.597	0.30 (0.29)	0.98	50087.9	10200.00
20	21180.97	154.14	0.584	0.30 (0.29)	0.98	51118.4	10320.00
21	20823.97	158.83	0.576	0.30 (0.29)	0.98	51343.9	10210.00
22	20434.01	163.56	0.568	0.30 (0.29)	0.98	51506.3	12000.00
23	17922.85	192.08	0.531	0.30 (0.29)	0.98	52123.2	10100.00

TOTAL AREA (ACRES) = 52123.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23728.77 Tc(MIN.) = 102.934
EFFECTIVE AREA(ACRES) = 36097.37 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52123.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12800.00 = 111795.71 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52123.2 TC(MIN.) = 102.93
EFFECTIVE AREA(ACRES) = 36097.37 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.977
PEAK FLOW RATE(CFS) = 23728.77

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14084.08	26.05	1.375	0.30 (0.27)	0.89	5311.0	12741.00
2	14381.83	27.73	1.326	0.30 (0.27)	0.90	5763.1	50120.00
3	14597.75	29.15	1.285	0.30 (0.27)	0.90	6109.7	50150.00
4	14813.77	30.59	1.249	0.30 (0.27)	0.90	6453.1	12730.00
5	15096.32	32.55	1.214	0.30 (0.27)	0.90	7039.0	50100.00
6	15459.98	35.07	1.168	0.30 (0.27)	0.91	7776.2	600.00
7	17826.87	53.31	0.932	0.30 (0.28)	0.95	13538.4	40100.00
8	18952.47	62.71	0.860	0.30 (0.29)	0.95	16467.9	11801.00
9	20722.34	79.63	0.777	0.30 (0.29)	0.97	22967.5	11910.00
10	21187.13	84.40	0.753	0.30 (0.29)	0.97	24976.7	11000.00
11	22845.18	94.63	0.713	0.30 (0.29)	0.97	31010.2	11330.00
12	23728.77	102.93	0.690	0.30 (0.29)	0.98	36097.4	10630.00
13	23646.68	108.50	0.675	0.30 (0.29)	0.98	38687.2	12330.00
14	23539.34	115.10	0.657	0.30 (0.29)	0.98	41829.7	11600.00
15	23287.65	120.83	0.642	0.30 (0.29)	0.98	44064.0	11111.00
16	22999.40	126.92	0.631	0.30 (0.29)	0.98	45997.9	12201.00
17	22266.76	135.74	0.616	0.30 (0.29)	0.98	48086.1	12231.00
18	21588.21	143.12	0.603	0.30 (0.29)	0.98	49497.7	10400.00
19	21433.71	146.93	0.597	0.30 (0.29)	0.98	50087.9	10200.00
20	21180.97	154.14	0.584	0.30 (0.29)	0.98	51118.4	10320.00
21	20823.97	158.83	0.576	0.30 (0.29)	0.98	51343.9	10210.00
22	20434.01	163.56	0.568	0.30 (0.29)	0.98	51506.3	12000.00
23	17922.85	192.08	0.531	0.30 (0.29)	0.98	52123.2	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 S29- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV29.DAT
TIME/DATE OF STUDY: 10:12 06/14/2019

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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; 3.855
- 2) 10.00; 2.561
- 3) 15.00; 1.881
- 4) 20.00; 1.610
- 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; 0.642
- 12) 180.00; 0.530
- 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: RI10EV28.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14084.08	26.05	0.30 (0.27)	0.89	5311.0	12741.00
2	15096.32	32.55	0.30 (0.27)	0.90	7039.0	50100.00
3	15459.98	35.07	0.30 (0.27)	0.91	7776.2	600.00
4	17826.87	53.31	0.30 (0.28)	0.95	13538.4	40100.00
5	18952.47	62.71	0.30 (0.29)	0.95	16467.9	11801.00
6	20722.34	79.63	0.30 (0.29)	0.97	22967.5	11910.00
7	21187.13	84.40	0.30 (0.29)	0.97	24976.7	11000.00
8	22845.18	94.63	0.30 (0.29)	0.97	31010.2	11330.00
9	23728.77	102.93	0.30 (0.29)	0.98	36097.4	10630.00
10	23646.68	108.50	0.30 (0.29)	0.98	38687.2	12330.00
11	23539.34	115.10	0.30 (0.29)	0.98	41829.7	11600.00
12	23287.65	120.83	0.30 (0.29)	0.98	44064.0	11111.00
13	22999.40	126.92	0.30 (0.29)	0.98	45997.9	12201.00
14	22266.76	135.74	0.30 (0.29)	0.98	48086.1	12231.00
15	21588.21	143.12	0.30 (0.29)	0.98	49497.7	10400.00
16	21433.71	146.93	0.30 (0.29)	0.98	50087.9	10200.00
17	21180.97	154.14	0.30 (0.29)	0.98	51118.4	10320.00
18	20823.97	158.83	0.30 (0.29)	0.98	51343.9	10210.00
19	20434.01	163.56	0.30 (0.29)	0.98	51506.3	12000.00
20	17922.85	192.08	0.30 (0.29)	0.98	52123.2	10100.00
TOTAL AREA (ACRES) =						52123.2

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	14084.08	26.05	0.30 (0.27)	0.89	5311.0	12741.00
2	15096.32	32.55	0.30 (0.27)	0.90	7039.0	50100.00
3	15459.98	35.07	0.30 (0.27)	0.91	7776.2	600.00
4	17826.87	53.31	0.30 (0.28)	0.95	13538.4	40100.00
5	18952.47	62.71	0.30 (0.29)	0.95	16467.9	11801.00
6	20722.34	79.63	0.30 (0.29)	0.97	22967.5	11910.00
7	21187.13	84.40	0.30 (0.29)	0.97	24976.7	11000.00
8	22845.18	94.63	0.30 (0.29)	0.97	31010.2	11330.00
9	23728.77	102.93	0.30 (0.29)	0.98	36097.4	10630.00
10	23646.68	108.50	0.30 (0.29)	0.98	38687.2	12330.00
11	23539.34	115.10	0.30 (0.29)	0.98	41829.7	11600.00
12	23287.65	120.83	0.30 (0.29)	0.98	44064.0	11111.00
13	22999.40	126.92	0.30 (0.29)	0.98	45997.9	12201.00

14	22266.76	135.74	0.30	(0.29)	0.98	48086.1	12231.00
15	21588.21	143.12	0.30	(0.29)	0.98	49497.7	10400.00
16	21433.71	146.93	0.30	(0.29)	0.98	50087.9	10200.00
17	21180.97	154.14	0.30	(0.29)	0.98	51118.4	10320.00
18	20823.97	158.83	0.30	(0.29)	0.98	51343.9	10210.00
19	20434.01	163.56	0.30	(0.29)	0.98	51506.3	12000.00
20	17922.85	192.08	0.30	(0.29)	0.98	52123.2	10100.00

TOTAL AREA (ACRES) = 52123.2

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) = 23728.77
 FLOW VELOCITY (FEET/SEC.) = 14.44 FLOW DEPTH (FEET) = 6.99
 TRAVEL TIME (MIN.) = 3.60 Tc (MIN.) = 106.54
 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.) = 106.54
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.679
 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) = 9.72
 EFFECTIVE AREA (ACRES) = 36116.77 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52142.6 PEAK FLOW RATE (CFS) = 23728.77
 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<<<<<

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MAINLINE Tc (MIN.) = 106.54
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.679
 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) = 3.07
 EFFECTIVE AREA (ACRES) = 36124.67 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52150.5 PEAK FLOW RATE (CFS) = 23728.77
 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.) = 106.54
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.679
 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) = 25.25
 EFFECTIVE AREA (ACRES) = 36194.07 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52219.9 PEAK FLOW RATE (CFS) = 23728.77
 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.) = 106.54

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.679
 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) = 5.82
 EFFECTIVE AREA (ACRES) = 36207.87 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52233.7 PEAK FLOW RATE (CFS) = 23728.77
 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.) = 106.54
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.679
 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) = 3.69
 EFFECTIVE AREA (ACRES) = 36218.67 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 52244.5 PEAK FLOW RATE (CFS) = 23728.77
 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) = 6.87
 CHANNEL FLOW THRU SUBAREA (CFS) = 23728.77
 FLOW VELOCITY (FEET/SEC.) = 14.74 FLOW DEPTH (FEET) = 6.87
 TRAVEL TIME (MIN.) = 0.14 Tc (MIN.) = 106.67
 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 # 3 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: E502XX10.DNA
 MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	44.85	11.41	0.30 (0.27)	0.91	28.7	50200.00
TOTAL AREA (ACRES) =		28.7				

 FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 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	14084.08	30.53	1.249	0.30 (0.27)	0.89	5432.3	12741.00
2	15096.32	36.92	1.133	0.30 (0.27)	0.90	7160.3	50100.00
3	15459.98	39.41	1.088	0.30 (0.27)	0.91	7897.5	600.00
4	17826.87	57.44	0.894	0.30 (0.28)	0.94	13659.7	40100.00
5	18952.47	66.75	0.839	0.30 (0.29)	0.95	16589.2	11801.00
6	20722.34	83.55	0.757	0.30 (0.29)	0.96	23088.8	11910.00
7	21187.13	88.29	0.733	0.30 (0.29)	0.97	25098.0	11000.00
8	22845.18	98.42	0.702	0.30 (0.29)	0.97	31131.5	11330.00
9	23728.77	106.67	0.679	0.30 (0.29)	0.98	36218.7	10630.00
10	23646.68	112.24	0.663	0.30 (0.29)	0.98	38808.5	12330.00
11	23539.34	118.85	0.645	0.30 (0.29)	0.98	41951.0	11600.00
12	23287.65	124.60	0.633	0.30 (0.29)	0.98	44185.3	11111.00
13	22999.40	130.70	0.622	0.30 (0.29)	0.98	46119.2	12201.00
14	22266.76	139.56	0.605	0.30 (0.29)	0.98	48207.4	12231.00
15	21588.21	146.98	0.592	0.30 (0.29)	0.98	49619.0	10400.00
16	21433.71	150.81	0.584	0.30 (0.29)	0.98	50209.2	10200.00
17	21180.97	158.03	0.571	0.30 (0.29)	0.98	51239.7	10320.00
18	20823.97	162.74	0.562	0.30 (0.29)	0.98	51465.2	10210.00
19	20434.01	167.49	0.553	0.30 (0.29)	0.98	51627.6	12000.00
20	17922.85	196.20	0.518	0.30 (0.29)	0.98	52244.5	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12902.00 = 115038.03 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	44.85	11.41	2.370	0.30 (0.27)	0.91	28.7	50200.00

LONGEST FLOWPATH FROM NODE 50200.00 TO NODE 12902.00 = 1426.00 FEET.

 ** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	44.85	11.41	2.370	0.30 (0.27)	0.91	28.7	50200.00

1	11313.02	11.41	2.370	0.30 (0.27)	0.89	2058.7	50200.00
2	14104.96	30.53	1.249	0.30 (0.27)	0.89	5461.0	12741.00
3	15114.72	36.92	1.133	0.30 (0.27)	0.90	7189.0	50100.00
4	15477.41	39.41	1.088	0.30 (0.27)	0.91	7926.2	600.00
5	17840.16	57.44	0.894	0.30 (0.28)	0.94	13688.4	40100.00
6	18964.58	66.75	0.839	0.30 (0.29)	0.95	16617.9	11801.00
7	20732.69	83.55	0.757	0.30 (0.29)	0.96	23117.5	11910.00
8	21196.98	88.29	0.733	0.30 (0.29)	0.97	25126.7	11000.00
9	22854.35	98.42	0.702	0.30 (0.29)	0.97	31160.2	11330.00
10	23737.45	106.67	0.679	0.30 (0.29)	0.98	36247.4	10630.00
11	23655.04	112.24	0.663	0.30 (0.29)	0.98	38837.2	12330.00
12	23547.30	118.85	0.645	0.30 (0.29)	0.98	41979.7	11600.00
13	23295.36	124.60	0.633	0.30 (0.29)	0.98	44214.0	11111.00
14	23006.86	130.70	0.622	0.30 (0.29)	0.98	46147.9	12201.00
15	22273.87	139.56	0.605	0.30 (0.29)	0.98	48236.1	12231.00
16	21595.03	146.98	0.592	0.30 (0.29)	0.98	49647.7	10400.00
17	21440.38	150.81	0.584	0.30 (0.29)	0.98	50237.9	10200.00
18	21187.35	158.03	0.571	0.30 (0.29)	0.98	51268.4	10320.00
19	20830.16	162.74	0.562	0.30 (0.29)	0.98	51493.9	10210.00
20	20440.01	167.49	0.553	0.30 (0.29)	0.98	51656.3	12000.00
21	17928.09	196.20	0.518	0.30 (0.29)	0.98	52273.2	10100.00

TOTAL AREA (ACRES) = 52273.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23737.45 Tc (MIN.) = 106.674
EFFECTIVE AREA (ACRES) = 36247.37 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
TOTAL AREA (ACRES) = 52273.2
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 # 3 <<<<<

FLOW PROCESS FROM NODE 12902.00 TO NODE 12902.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: E503XX10.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	315.51	26.45	1.361	0.30 (0.30)	0.99	366.4	50300.00

TOTAL AREA (ACRES) = 366.4

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	11313.02	11.41	2.370	0.30 (0.27)	0.89	2058.7	50200.00

2	14104.96	30.53	1.249	0.30 (0.27)	0.89	5461.0	12741.00
3	15114.72	36.92	1.133	0.30 (0.27)	0.90	7189.0	50100.00
4	15477.41	39.41	1.088	0.30 (0.27)	0.91	7926.2	600.00
5	17840.16	57.44	0.894	0.30 (0.28)	0.94	13688.4	40100.00
6	18964.58	66.75	0.839	0.30 (0.29)	0.95	16617.9	11801.00
7	20732.69	83.55	0.757	0.30 (0.29)	0.96	23117.5	11910.00
8	21196.98	88.29	0.733	0.30 (0.29)	0.97	25126.7	11000.00
9	22854.35	98.42	0.702	0.30 (0.29)	0.97	31160.2	11330.00
10	23737.45	106.67	0.679	0.30 (0.29)	0.98	36247.4	10630.00
11	23655.04	112.24	0.663	0.30 (0.29)	0.98	38837.2	12330.00
12	23547.30	118.85	0.645	0.30 (0.29)	0.98	41979.7	11600.00
13	23295.36	124.60	0.633	0.30 (0.29)	0.98	44214.0	11111.00
14	23006.86	130.70	0.622	0.30 (0.29)	0.98	46147.9	12201.00
15	22273.87	139.56	0.605	0.30 (0.29)	0.98	48236.1	12231.00
16	21595.03	146.98	0.592	0.30 (0.29)	0.98	49647.7	10400.00
17	21440.38	150.81	0.584	0.30 (0.29)	0.98	50237.9	10200.00
18	21187.35	158.03	0.571	0.30 (0.29)	0.98	51268.4	10320.00
19	20830.16	162.74	0.562	0.30 (0.29)	0.98	51493.9	10210.00
20	20440.01	167.49	0.553	0.30 (0.29)	0.98	51656.3	12000.00
21	17928.09	196.20	0.518	0.30 (0.29)	0.98	52273.2	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	315.51	26.45	1.361	0.30 (0.30)	0.99	366.4	50300.00

LONGEST FLOWPATH FROM NODE 50300.00 TO NODE 12902.00 = 8614.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11577.84	11.41	2.370	0.30 (0.27)	0.90	2216.7	50200.00
2	13825.08	26.45	1.361	0.30 (0.27)	0.90	5101.9	50300.00
3	14387.36	30.53	1.249	0.30 (0.27)	0.90	5827.4	12741.00
4	15362.67	36.92	1.133	0.30 (0.27)	0.91	7555.4	50100.00
5	15711.98	39.41	1.088	0.30 (0.27)	0.91	8292.6	600.00
6	18017.43	57.44	0.894	0.30 (0.28)	0.95	14054.8	40100.00
7	19125.46	66.75	0.839	0.30 (0.29)	0.95	16984.3	11801.00
8	20869.20	83.55	0.757	0.30 (0.29)	0.97	23483.9	11910.00
9	21326.62	88.29	0.733	0.30 (0.29)	0.97	25493.1	11000.00
10	22974.61	98.42	0.702	0.30 (0.29)	0.97	31526.6	11330.00
11	23850.95	106.67	0.679	0.30 (0.29)	0.98	36613.8	10630.00
12	23763.97	112.24	0.663	0.30 (0.29)	0.98	39203.6	12330.00
13	23650.83	118.85	0.645	0.30 (0.29)	0.98	42346.1	11600.00
14	23395.40	124.60	0.633	0.30 (0.29)	0.98	44580.4	11111.00
15	23103.53	130.70	0.622	0.30 (0.29)	0.98	46514.3	12201.00
16	22365.64	139.56	0.605	0.30 (0.29)	0.98	48602.5	12231.00
17	21682.70	146.98	0.592	0.30 (0.29)	0.98	50014.1	10400.00
18	21525.93	150.81	0.584	0.30 (0.29)	0.98	50604.3	10200.00
19	21268.92	158.03	0.571	0.30 (0.29)	0.98	51634.8	10320.00
20	20909.12	162.74	0.562	0.30 (0.29)	0.98	51860.3	10210.00
21	20516.34	167.49	0.553	0.30 (0.29)	0.98	52022.7	12000.00
22	17994.03	196.20	0.518	0.30 (0.29)	0.98	52639.6	10100.00

TOTAL AREA (ACRES) = 52639.6

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23850.95 Tc (MIN.) = 106.674
EFFECTIVE AREA (ACRES) = 36613.77 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52639.6
 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) = 12.11
 CHANNEL FLOW THRU SUBAREA(CFS) = 23850.95
 FLOW VELOCITY(FEET/SEC.) = 7.56 FLOW DEPTH(FEET) = 12.11
 TRAVEL TIME(MIN.) = 1.98 Tc(MIN.) = 108.65
 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 # 1 <<<<<

PEAK FLOWRATE TABLE FILE NAME: E504XX10.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	81.37	17.84	0.30 (0.29)	0.97	70.5	50400.00
TOTAL AREA (ACRES) =						70.5

FLOW PROCESS FROM NODE 12903.00 TO NODE 12903.00 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	11577.84	13.90	2.030	0.30 (0.27)	0.90	2216.7	50200.00
2	13825.08	28.81	1.293	0.30 (0.27)	0.90	5101.9	50300.00
3	14387.36	32.85	1.207	0.30 (0.27)	0.90	5827.4	12741.00
4	15362.67	39.20	1.092	0.30 (0.27)	0.91	7555.4	50100.00
5	15711.98	41.66	1.057	0.30 (0.27)	0.91	8292.6	600.00
6	18017.43	59.60	0.875	0.30 (0.28)	0.95	14054.8	40100.00
7	19125.46	68.87	0.829	0.30 (0.29)	0.95	16984.3	11801.00
8	20869.20	85.61	0.746	0.30 (0.29)	0.97	23483.9	11910.00
9	21326.62	90.34	0.724	0.30 (0.29)	0.97	25493.1	11000.00
10	22974.61	100.42	0.696	0.30 (0.29)	0.97	31526.6	11330.00
11	23850.95	108.65	0.673	0.30 (0.29)	0.98	36613.8	10630.00

12	23763.97	114.22	0.658	0.30 (0.29)	0.98	39203.6	12330.00
13	23650.83	120.83	0.640	0.30 (0.29)	0.98	42346.1	11600.00
14	23395.40	126.59	0.630	0.30 (0.29)	0.98	44580.4	11111.00
15	23103.53	132.70	0.618	0.30 (0.29)	0.98	46514.3	12201.00
16	22365.64	141.58	0.602	0.30 (0.29)	0.98	48602.5	12231.00
17	21682.70	149.02	0.588	0.30 (0.29)	0.98	50014.1	10400.00
18	21525.93	152.85	0.581	0.30 (0.29)	0.98	50604.3	10200.00
19	21268.92	160.07	0.567	0.30 (0.29)	0.98	51634.8	10320.00
20	20909.12	164.79	0.558	0.30 (0.29)	0.98	51860.3	10210.00
21	20516.34	169.57	0.549	0.30 (0.29)	0.98	52022.7	12000.00
22	17994.03	198.36	0.517	0.30 (0.29)	0.98	52639.6	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 12903.00 = 115933.56 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	81.37	17.84	1.727	0.30 (0.29)	0.97	70.5	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	11654.63	13.90	2.030	0.30 (0.27)	0.90	2271.7	50200.00
2	12252.28	17.84	1.727	0.30 (0.27)	0.90	3048.6	50400.00
3	13881.90	28.81	1.293	0.30 (0.27)	0.90	5172.4	50300.00
4	14439.29	32.85	1.207	0.30 (0.27)	0.90	5897.9	12741.00
5	15408.06	39.20	1.092	0.30 (0.27)	0.91	7625.9	50100.00
6	15755.43	41.66	1.057	0.30 (0.27)	0.91	8363.1	600.00
7	18050.58	59.60	0.875	0.30 (0.28)	0.95	14125.3	40100.00
8	19155.95	68.87	0.829	0.30 (0.29)	0.95	17054.8	11801.00
9	20895.04	85.61	0.746	0.30 (0.29)	0.97	23554.4	11910.00
10	21351.20	90.34	0.724	0.30 (0.29)	0.97	25563.6	11000.00
11	22997.61	100.42	0.696	0.30 (0.29)	0.97	31597.1	11330.00
12	23872.65	108.65	0.673	0.30 (0.29)	0.98	36684.3	10630.00
13	23784.81	114.22	0.658	0.30 (0.29)	0.98	39274.1	12330.00
14	23670.67	120.83	0.640	0.30 (0.29)	0.98	42416.6	11600.00
15	23414.63	126.59	0.630	0.30 (0.29)	0.98	44650.9	11111.00
16	23122.12	132.70	0.618	0.30 (0.29)	0.98	46584.8	12201.00
17	22383.29	141.58	0.602	0.30 (0.29)	0.98	48673.0	12231.00
18	21699.56	149.02	0.588	0.30 (0.29)	0.98	50084.6	10400.00
19	21542.39	152.85	0.581	0.30 (0.29)	0.98	50674.8	10200.00
20	21284.61	160.07	0.567	0.30 (0.29)	0.98	51705.3	10320.00
21	20924.32	164.79	0.558	0.30 (0.29)	0.98	51930.8	10210.00
22	20531.04	169.57	0.549	0.30 (0.29)	0.98	52093.2	12000.00
23	18006.86	198.36	0.517	0.30 (0.29)	0.98	52710.1	10100.00

TOTAL AREA (ACRES) = 52710.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 23872.65 Tc (MIN.) = 108.649
 EFFECTIVE AREA (ACRES) = 36684.27 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.97
 TOTAL AREA (ACRES) = 52710.1
 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 # 1 <<<<<

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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<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 214.00 DOWNSTREAM(FEET) = 213.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 767.57 CHANNEL SLOPE = 0.0013
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 11.61
CHANNEL FLOW THRU SUBAREA(CFS) = 23872.65
FLOW VELOCITY(FEET/SEC.) = 7.97 FLOW DEPTH(FEET) = 11.61
TRAVEL TIME(MIN.) = 1.61 Tc(MIN.) = 110.25
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 = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 110.25
RAINFALL INTENSITY(INCH/HR) = 0.67
AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.98
EFFECTIVE STREAM AREA(ACRES) = 36684.27
TOTAL STREAM AREA(ACRES) = 52710.14
PEAK FLOW RATE(CFS) AT CONFLUENCE = 23872.65
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 7
-----
>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<
=====
USER-SPECIFIED VALUES ARE AS FOLLOWS:
TC(MIN.) = 18.52 RAINFALL INTENSITY(INCH/HR) = 1.69
EFFECTIVE AREA(ACRES) = 28.30
TOTAL AREA(ACRES) = 214.70 PEAK FLOW RATE(CFS) = 35.60
AREA-AVERAGED Fm(INCH/HR) = 0.13 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.42
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.
*****
FLOW PROCESS FROM NODE 12904.00 TO NODE 12904.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 18.52
RAINFALL INTENSITY(INCH/HR) = 1.69

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AREA-AVERAGED Fm(INCH/HR) = 0.13
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.42
EFFECTIVE STREAM AREA(ACRES) = 28.30
TOTAL STREAM AREA(ACRES) = 214.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 35.60

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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	11654.63	15.93	1.830	0.30(0.27)	0.90	2271.7	50200.00
1	12252.28	19.83	1.619	0.30(0.27)	0.90	3048.6	50400.00
1	13881.90	30.72	1.246	0.30(0.27)	0.90	5172.4	50300.00
1	14439.29	34.74	1.173	0.30(0.27)	0.90	5897.9	12741.00
1	15408.06	41.04	1.065	0.30(0.27)	0.91	7625.9	50100.00
1	15755.43	43.50	1.036	0.30(0.27)	0.91	8363.1	600.00
1	18050.58	61.36	0.865	0.30(0.28)	0.95	14125.3	40100.00
1	19155.95	70.59	0.820	0.30(0.29)	0.95	17054.8	11801.00
1	20895.04	87.29	0.738	0.30(0.29)	0.97	23554.4	11910.00
1	21351.20	92.00	0.719	0.30(0.29)	0.97	25563.6	11000.00
1	22997.61	102.04	0.692	0.30(0.29)	0.97	31597.1	11330.00
1	23872.65	110.25	0.669	0.30(0.29)	0.98	36684.3	10630.00
1	23784.81	115.83	0.654	0.30(0.29)	0.98	39274.1	12330.00
1	23670.67	122.44	0.637	0.30(0.29)	0.98	42416.6	11600.00
1	23414.63	128.20	0.627	0.30(0.29)	0.98	44650.9	11111.00
1	23122.12	134.32	0.615	0.30(0.29)	0.98	46584.8	12201.00
1	22383.29	143.22	0.599	0.30(0.29)	0.98	48673.0	12231.00
1	21699.56	150.67	0.585	0.30(0.29)	0.98	50084.6	10400.00
1	21542.39	154.50	0.578	0.30(0.29)	0.98	50674.8	10200.00
1	21284.61	161.74	0.564	0.30(0.29)	0.98	51705.3	10320.00
1	20924.32	166.47	0.555	0.30(0.29)	0.98	51930.8	10210.00
1	20531.04	171.25	0.546	0.30(0.29)	0.98	52093.2	12000.00
1	18006.86	200.12	0.515	0.30(0.29)	0.98	52710.1	10100.00
2	35.60	18.52	1.690	0.30(0.13)	0.42	28.3	12904.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11688.01	15.93	1.830	0.30(0.27)	0.90	2296.0	50200.00
2	12086.74	18.52	1.690	0.30(0.27)	0.90	2815.4	12904.00
3	12286.26	19.83	1.619	0.30(0.27)	0.90	3076.9	50400.00
4	13907.38	30.72	1.246	0.30(0.27)	0.90	5200.7	50300.00
5	14463.11	34.74	1.173	0.30(0.27)	0.90	5926.2	12741.00
6	15429.42	41.04	1.065	0.30(0.27)	0.90	7654.2	50100.00
7	15776.13	43.50	1.036	0.30(0.27)	0.91	8391.4	600.00
8	18067.40	61.36	0.865	0.30(0.28)	0.94	14153.6	40100.00
9	19171.75	70.59	0.820	0.30(0.29)	0.95	17083.1	11801.00
10	20908.98	87.29	0.738	0.30(0.29)	0.96	23582.7	11910.00
11	21364.70	92.00	0.719	0.30(0.29)	0.97	25591.9	11000.00
12	23010.48	102.04	0.692	0.30(0.29)	0.97	31625.4	11330.00
13	23885.01	110.25	0.669	0.30(0.29)	0.98	36712.6	10630.00
14	23796.81	115.83	0.654	0.30(0.29)	0.98	39302.4	12330.00
15	23682.31	122.44	0.637	0.30(0.29)	0.98	42444.9	11600.00
16	23426.03	128.20	0.627	0.30(0.29)	0.98	44679.2	11111.00
17	23133.26	134.32	0.615	0.30(0.29)	0.98	46613.1	12201.00

18	22394.05	143.22	0.599	0.30	(0.29)	0.98	48701.3	12231.00
19	21710.00	150.67	0.585	0.30	(0.29)	0.98	50112.9	10400.00
20	21552.67	154.50	0.578	0.30	(0.29)	0.98	50703.1	10200.00
21	21294.58	161.74	0.564	0.30	(0.29)	0.98	51733.6	10320.00
22	20934.09	166.47	0.555	0.30	(0.29)	0.98	51959.1	10210.00
23	20540.60	171.25	0.546	0.30	(0.29)	0.98	52121.5	12000.00
24	18015.72	200.12	0.515	0.30	(0.29)	0.98	52738.4	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23885.01 Tc(MIN.) = 110.25
EFFECTIVE AREA(ACRES) = 36712.57 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52924.8
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.) = 110.25
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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) = 13.83
EFFECTIVE AREA(ACRES) = 36751.67 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52963.9 PEAK FLOW RATE(CFS) = 23885.01
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.) = 110.25
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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) = 36756.67 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52968.9 PEAK FLOW RATE(CFS) = 23885.01
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.) = 110.25
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.669
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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) = 2.03
EFFECTIVE AREA(ACRES) = 36762.57 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
TOTAL AREA(ACRES) = 52974.8 PEAK FLOW RATE(CFS) = 23885.01
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 52974.8 TC(MIN.) = 110.25
EFFECTIVE AREA(ACRES) = 36762.57 AREA-AVERAGED Fm(INCH/HR) = 0.29
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.976
PEAK FLOW RATE(CFS) = 23885.01

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11688.01	15.93	1.830	0.30(0.27)	0.90	2346.0	50200.00
2	12086.74	18.52	1.690	0.30(0.27)	0.90	2865.4	12904.00
3	12286.26	19.83	1.619	0.30(0.27)	0.90	3126.9	50400.00
4	13907.38	30.72	1.246	0.30(0.27)	0.90	5250.7	50300.00
5	14463.11	34.74	1.173	0.30(0.27)	0.90	5976.2	12741.00
6	15429.42	41.04	1.065	0.30(0.27)	0.91	7704.2	50100.00
7	15776.13	43.50	1.036	0.30(0.27)	0.91	8441.4	600.00
8	18067.40	61.36	0.865	0.30(0.28)	0.94	14203.6	40100.00
9	19171.75	70.59	0.820	0.30(0.29)	0.95	17133.1	11801.00

10	20908.98	87.29	0.738	0.30	(0.29)	0.96	23632.7	11910.00
11	21364.70	92.00	0.719	0.30	(0.29)	0.97	25641.9	11000.00
12	23010.48	102.04	0.692	0.30	(0.29)	0.97	31675.4	11330.00
13	23885.01	110.25	0.669	0.30	(0.29)	0.98	36762.6	10630.00
14	23796.81	115.83	0.654	0.30	(0.29)	0.98	39352.4	12330.00
15	23682.31	122.44	0.637	0.30	(0.29)	0.98	42494.9	11600.00
16	23426.03	128.20	0.627	0.30	(0.29)	0.98	44729.2	11111.00
17	23133.26	134.32	0.615	0.30	(0.29)	0.98	46663.1	12201.00
18	22394.05	143.22	0.599	0.30	(0.29)	0.98	48751.3	12231.00
19	21710.00	150.67	0.585	0.30	(0.29)	0.98	50162.9	10400.00
20	21552.67	154.50	0.578	0.30	(0.29)	0.98	50753.1	10200.00
21	21294.58	161.74	0.564	0.30	(0.29)	0.98	51783.6	10320.00
22	20934.09	166.47	0.555	0.30	(0.29)	0.98	52009.1	10210.00
23	20540.60	171.25	0.546	0.30	(0.29)	0.98	52171.5	12000.00
24	18015.72	200.12	0.515	0.30	(0.29)	0.98	52788.4	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:

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Santa Ana, CA 92707

***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S33- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV33.DAT
TIME/DATE OF STUDY: 10:12 06/14/2019

=====

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; 3.775
- 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 13222.00 TO NODE 13222.00 IS CODE = 7

>>>>USER SPECIFIED HYDROLOGY INFORMATION AT NODE<<<<<

=====

USER-SPECIFIED VALUES ARE AS FOLLOWS:

TC(MIN.) = 70.37 RAINFALL INTENSITY(INCH/HR) = 0.81
EFFECTIVE AREA(ACRES) = 3660.20
TOTAL AREA(ACRES) = 4924.40 PEAK FLOW RATE(CFS) = 1572.50
AREA-AVERAGED Fm(INCH/HR) = 0.25 AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.82
NOTE: EFFECTIVE AREA IS USED AS THE TOTAL CONTRIBUTING AREA FOR ALL
CONFLUENCE ANALYSES.

FLOW PROCESS FROM NODE 13222.00 TO NODE 13301.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 427.51 DOWNSTREAM(FEET) = 382.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 2533.33 CHANNEL SLOPE = 0.0180
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 2.93
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.788
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 1585.35
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.22
AVERAGE FLOW DEPTH(FEET) = 2.93 TRAVEL TIME(MIN.) = 4.58
Tc(MIN.) = 74.95
SUBAREA AREA(ACRES) = 45.20 SUBAREA RUNOFF(CFS) = 25.70
EFFECTIVE AREA(ACRES) = 3705.40 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 4969.6 PEAK FLOW RATE(CFS) = 1811.93
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 3.16 FLOW VELOCITY(FEET/SEC.) = 9.63
 LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 74.95
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.788
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 9.05
 EFFECTIVE AREA(ACRES) = 3721.90 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 4986.1 PEAK FLOW RATE(CFS) = 1820.98

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 74.95
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.788
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.977
 SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 3.52
 EFFECTIVE AREA(ACRES) = 3729.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 4994.0 PEAK FLOW RATE(CFS) = 1824.50

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 74.95
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.788
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 9.67
 EFFECTIVE AREA(ACRES) = 3751.80 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5016.0 PEAK FLOW RATE(CFS) = 1834.17

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 81

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

=====

MAINLINE Tc(MIN.) = 74.95
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.788
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA(ACRES) = 15.00 SUBAREA RUNOFF(CFS) = 6.59
 EFFECTIVE AREA(ACRES) = 3766.80 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
 TOTAL AREA(ACRES) = 5031.0 PEAK FLOW RATE(CFS) = 1840.76

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 10

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

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

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

INITIAL SUBAREA FLOW-LENGTH (FEET) = 317.00
ELEVATION DATA: UPSTREAM (FEET) = 801.00 DOWNSTREAM (FEET) = 685.00

Tc = K * [(LENGTH** 3.00) / (ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 8.641
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.859
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63 8.64
NATURAL FAIR COVER
"OPEN BRUSH" B 0.30 0.30 1.000 66 8.64
NATURAL FAIR COVER
"OPEN BRUSH" B 0.30 0.30 1.000 66 8.64
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF (CFS) = 2.53
TOTAL AREA (ACRES) = 1.10 PEAK FLOW RATE (CFS) = 2.53

FLOW PROCESS FROM NODE 31101.00 TO NODE 31102.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 685.00 DOWNSTREAM (FEET) = 655.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 135.00 CHANNEL SLOPE = 0.2222
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.768
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.50 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 0.70 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 3.98
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.25
AVERAGE FLOW DEPTH (FEET) = 0.46 TRAVEL TIME (MIN.) = 0.36
Tc (MIN.) = 9.00
SUBAREA AREA (ACRES) = 1.30 SUBAREA RUNOFF (CFS) = 2.89
EFFECTIVE AREA (ACRES) = 2.40 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 2.4 PEAK FLOW RATE (CFS) = 5.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.51 FLOW VELOCITY (FEET/SEC.) = 6.88
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31102.00 = 452.00 FEET.

FLOW PROCESS FROM NODE 31102.00 TO NODE 31103.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 655.00 DOWNSTREAM (FEET) = 630.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 203.00 CHANNEL SLOPE = 0.1232
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH (FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.654
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" B 0.30 0.30 1.000 63
NATURAL FAIR COVER
"OPEN BRUSH" B 0.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 1.90 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 7.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.43
AVERAGE FLOW DEPTH (FEET) = 0.59 TRAVEL TIME (MIN.) = 0.46
Tc (MIN.) = 9.46
SUBAREA AREA (ACRES) = 2.30 SUBAREA RUNOFF (CFS) = 4.87
EFFECTIVE AREA (ACRES) = 4.70 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 4.7 PEAK FLOW RATE (CFS) = 9.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.65 FLOW VELOCITY (FEET/SEC.) = 7.96
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31103.00 = 655.00 FEET.

FLOW PROCESS FROM NODE 31103.00 TO NODE 31104.00 IS CODE = 51
=====

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

ELEVATION DATA: UPSTREAM (FEET) = 630.00 DOWNSTREAM (FEET) = 605.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 321.00 CHANNEL SLOPE = 0.0779
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.467
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH" B 1.10 0.30 1.000 66
NATURAL FAIR COVER
"OPEN BRUSH" B 2.50 0.30 1.000 66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 13.47
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.79

AVERAGE FLOW DEPTH(FEET) = 0.88 TRAVEL TIME(MIN.) = 0.92
Tc(MIN.) = 10.38
SUBAREA AREA(ACRES) = 3.60 SUBAREA RUNOFF(CFS) = 7.02
EFFECTIVE AREA(ACRES) = 8.30 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 8.3 PEAK FLOW RATE(CFS) = 16.19

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.94 FLOW VELOCITY(FEET/SEC.) = 6.07
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31104.00 = 976.00 FEET.

FLOW PROCESS FROM NODE 31104.00 TO NODE 31105.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 605.00 DOWNSTREAM(FEET) = 585.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.00 CHANNEL SLOPE = 0.0694
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.367

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 22.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.26
AVERAGE FLOW DEPTH(FEET) = 1.09 TRAVEL TIME(MIN.) = 0.77
Tc(MIN.) = 11.15
SUBAREA AREA(ACRES) = 6.40 SUBAREA RUNOFF(CFS) = 11.91
EFFECTIVE AREA(ACRES) = 14.70 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 14.7 PEAK FLOW RATE(CFS) = 27.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.17 FLOW VELOCITY(FEET/SEC.) = 6.64
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31105.00 = 1264.00 FEET.

FLOW PROCESS FROM NODE 31105.00 TO NODE 31106.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 585.00 DOWNSTREAM(FEET) = 560.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 344.00 CHANNEL SLOPE = 0.0727
CHANNEL BASE(FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH(FEET) = 10.00

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.264

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 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)<<<<<

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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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 57.10

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.97
 AVERAGE FLOW DEPTH (FEET) = 1.65 TRAVEL TIME (MIN.) = 1.48
 Tc (MIN.) = 13.42
 SUBAREA AREA (ACRES) = 15.10 SUBAREA RUNOFF (CFS) = 24.05
 EFFECTIVE AREA (ACRES) = 40.60 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 40.6 PEAK FLOW RATE (CFS) = 64.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 1.73 FLOW VELOCITY (FEET/SEC.) = 7.16
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31107.00 = 2227.00 FEET.

 FLOW PROCESS FROM NODE 31107.00 TO NODE 31108.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM (FEET) = 530.00 DOWNSTREAM (FEET) = 515.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 377.00 CHANNEL SLOPE = 0.0398
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.952

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 78.29
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.98
 AVERAGE FLOW DEPTH (FEET) = 1.93 TRAVEL TIME (MIN.) = 0.90
 Tc (MIN.) = 14.32
 SUBAREA AREA (ACRES) = 18.30 SUBAREA RUNOFF (CFS) = 27.21
 EFFECTIVE AREA (ACRES) = 58.90 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 58.9 PEAK FLOW RATE (CFS) = 87.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 2.02 FLOW VELOCITY (FEET/SEC.) = 7.18
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31108.00 = 2604.00 FEET.

 FLOW PROCESS FROM NODE 31108.00 TO NODE 31109.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM (FEET) = 515.00 DOWNSTREAM (FEET) = 490.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 520.00 CHANNEL SLOPE = 0.0481
 CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
 MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.841

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 97.72
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.93
 AVERAGE FLOW DEPTH (FEET) = 2.03 TRAVEL TIME (MIN.) = 1.09
 Tc (MIN.) = 15.41
 SUBAREA AREA (ACRES) = 14.60 SUBAREA RUNOFF (CFS) = 20.25
 EFFECTIVE AREA (ACRES) = 73.50 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 73.5 PEAK FLOW RATE (CFS) = 101.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 2.06 FLOW VELOCITY (FEET/SEC.) = 8.03
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 31109.00 = 3124.00 FEET.

 FLOW PROCESS FROM NODE 31109.00 TO NODE 31109.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 15.41
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.841
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 45.49
EFFECTIVE AREA (ACRES) = 106.30 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 106.3 PEAK FLOW RATE (CFS) = 147.42

FLOW PROCESS FROM NODE 31109.00 TO NODE 31110.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM (FEET) = 490.00 DOWNSTREAM (FEET) = 432.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 1420.00 CHANNEL SLOPE = 0.0408
CHANNEL BASE (FEET) = 0.00 "Z" FACTOR = 3.000
MANNING'S FACTOR = 0.040 MAXIMUM DEPTH (FEET) = 10.00
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.688

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30					
SUBAREA AVERAGE PVIOUS 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/ 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) = 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/ 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) = 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1840.76	74.95	0.788	0.30 (0.25)	0.82	3766.8	13222.00

LONGEST FLOWPATH FROM NODE 13222.00 TO NODE 13301.00 = 2533.33 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1437.37	22.38	1.497	0.30 (0.25)	0.84	1279.4	31100.00
2	1910.29	74.95	0.788	0.30 (0.25)	0.82	3921.3	13222.00

TOTAL AREA (ACRES) = 5185.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1910.29 Tc(MIN.) = 74.952
EFFECTIVE AREA(ACRES) = 3921.30 AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.82
TOTAL AREA(ACRES) = 5185.5
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13301.00 = 6391.00 FEET.

FLOW PROCESS FROM NODE 13301.00 TO NODE 13301.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13301.00 TO NODE 13302.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 382.00 DOWNSTREAM(FEET) = 375.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1141.09 CHANNEL SLOPE = 0.0061
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 4.43
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.774
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 1912.29

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.82

AVERAGE FLOW DEPTH(FEET) = 4.43 TRAVEL TIME(MIN.) = 2.79

Tc(MIN.) = 77.74

SUBAREA AREA(ACRES) = 9.40 SUBAREA RUNOFF(CFS) = 4.01

EFFECTIVE AREA(ACRES) = 3930.70 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA(ACRES) = 5194.9 PEAK FLOW RATE(CFS) = 1910.29

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 4.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 4.42 FLOW VELOCITY(FEET/SEC.) = 6.83

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13302.00 = 7532.09 FEET.

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 77.74

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.774

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 RESIDENTIAL	B	1.10	0.30	0.100	56
".4 DWELLING/ACRE"	B	3.50	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	6.90	0.30	1.000	79
NATURAL POOR COVER "BARREN"	B	0.20	0.30	1.000	86

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.952

SUBAREA AREA(ACRES) = 28.10 SUBAREA RUNOFF(CFS) = 12.36

EFFECTIVE AREA(ACRES) = 3958.80 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83

TOTAL AREA(ACRES) = 5223.0 PEAK FLOW RATE(CFS) = 1910.29

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 77.74

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.774

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.894
 SUBAREA AREA (ACRES) = 3.10 SUBAREA RUNOFF (CFS) = 1.41
 EFFECTIVE AREA (ACRES) = 3961.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5226.1 PEAK FLOW RATE (CFS) = 1910.29
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

=====

MAINLINE Tc (MIN.) = 77.74
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.774
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 20.20 SUBAREA RUNOFF (CFS) = 8.63
 EFFECTIVE AREA (ACRES) = 3982.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5246.3 PEAK FLOW RATE (CFS) = 1910.29
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

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MAINLINE Tc (MIN.) = 77.74
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.774
 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.996
 SUBAREA AREA (ACRES) = 76.40 SUBAREA RUNOFF (CFS) = 32.71
 EFFECTIVE AREA (ACRES) = 4058.50 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5322.7 PEAK FLOW RATE (CFS) = 1919.28

 FLOW PROCESS FROM NODE 13302.00 TO NODE 13302.00 IS CODE = 81

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

=====

MAINLINE Tc (MIN.) = 77.74
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.774
 SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.999
 SUBAREA AREA (ACRES) = 114.60 SUBAREA RUNOFF (CFS) = 48.96
 EFFECTIVE AREA (ACRES) = 4173.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.83
 TOTAL AREA (ACRES) = 5437.3 PEAK FLOW RATE (CFS) = 1968.24

 FLOW PROCESS FROM NODE 13302.00 TO NODE 13303.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

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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) = 4.02
 CHANNEL FLOW THRU SUBAREA (CFS) = 1968.24
 FLOW VELOCITY (FEET/SEC.) = 7.88 FLOW DEPTH (FEET) = 4.02
 TRAVEL TIME (MIN.) = 4.64 Tc (MIN.) = 82.38
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13303.00 = 9726.05 FEET.

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

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=====
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"            B         0.20     0.30     1.000    86
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         0.40     0.30     1.000    65
NATURAL POOR COVER
"BARREN"            B         0.80     0.30     1.000    86
COMMERCIAL          B         1.40     0.30     0.100    56
NATURAL FAIR COVER
"GRASS"             B         2.60     0.30     1.000    69
NATURAL FAIR COVER
"OPEN BRUSH"       B         2.20     0.30     1.000    66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.834
SUBAREA AREA(ACRES) = 7.60      SUBAREA RUNOFF(CFS) = 3.43
EFFECTIVE AREA(ACRES) = 4180.70  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5444.9      PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         3.10     0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         3.40     0.30     1.000    65
NATURAL POOR COVER
"BARREN"            B         0.50     0.30     1.000    86
NATURAL FAIR COVER
"CHAPARRAL,BROADLEAF" B         0.20     0.30     1.000    63
COMMERCIAL          B         3.60     0.30     0.100    56
NATURAL FAIR COVER
"GRASS"             B         4.00     0.30     1.000    69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.781
SUBAREA AREA(ACRES) = 14.80     SUBAREA RUNOFF(CFS) = 6.89
EFFECTIVE AREA(ACRES) = 4195.50  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.83
TOTAL AREA(ACRES) = 5459.7      PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL FAIR COVER
"OPEN BRUSH"       B         14.60    0.30     1.000    66
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         6.30     0.30     1.000    79
NATURAL FAIR COVER
"WOODLAND,GRASS"   B         3.70     0.30     1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 24.60     SUBAREA RUNOFF(CFS) = 10.00
EFFECTIVE AREA(ACRES) = 4220.10  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5484.3      PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.752
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA      Fp        Ap      SCS
  LAND USE          GROUP   (ACRES)  (INCH/HR) (DECIMAL) CN
NATURAL POOR COVER
"BARREN"            B         0.50     0.30     1.000    86
COMMERCIAL          B         0.30     0.30     0.100    56
NATURAL FAIR COVER
"OPEN BRUSH"       B         0.20     0.30     1.000    66
RESIDENTIAL
".4 DWELLING/ACRE" B         0.80     0.30     0.900    56
AGRICULTURAL POOR COVER
"ROW CROPS,CONTOURED" B         1.60     0.30     1.000    79
NATURAL POOR COVER
"BARREN"            B         31.90    0.30     1.000    86
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.990
SUBAREA AREA(ACRES) = 35.30     SUBAREA RUNOFF(CFS) = 14.44
EFFECTIVE AREA(ACRES) = 4255.40  AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.84
TOTAL AREA(ACRES) = 5519.6      PEAK FLOW RATE(CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
    
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>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

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=====
MAINLINE Tc(MIN.) = 82.38
    
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* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.752
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.830
SUBAREA AREA (ACRES) = 10.50 SUBAREA RUNOFF (CFS) = 4.75
EFFECTIVE AREA (ACRES) = 4265.90 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5530.1 PEAK FLOW RATE (CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13303.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 82.38
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.752
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.917
SUBAREA AREA (ACRES) = 11.60 SUBAREA RUNOFF (CFS) = 4.97
EFFECTIVE AREA (ACRES) = 4277.50 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5541.7 PEAK FLOW RATE (CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13303.00 TO NODE 13304.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 355.00 DOWNSTREAM (FEET) = 350.00
CHANNEL LENGTH THRU SUBAREA (FEET) = 925.40 CHANNEL SLOPE = 0.0054
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 4.67
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.740
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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.850
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 1971.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 6.60
AVERAGE FLOW DEPTH (FEET) = 4.67 TRAVEL TIME (MIN.) = 2.34
Tc (MIN.) = 84.72
SUBAREA AREA (ACRES) = 13.80 SUBAREA RUNOFF (CFS) = 6.02
EFFECTIVE AREA (ACRES) = 4291.30 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5555.5 PEAK FLOW RATE (CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT (FEET) = 4.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 4.66 FLOW VELOCITY (FEET/SEC.) = 6.59
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13304.00 = 10651.45 FEET.

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 84.72
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.740
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA (ACRES) = 22.80 SUBAREA RUNOFF (CFS) = 9.03
EFFECTIVE AREA (ACRES) = 4314.10 AREA-AVERAGED Fm (INCH/HR) = 0.25
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
TOTAL AREA (ACRES) = 5578.3 PEAK FLOW RATE (CFS) = 1968.24
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13304.00 TO NODE 13304.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 84.72

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.740

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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

NATURAL FAIR COVER

"WOODLAND,GRASS"

NATURAL FAIR COVER

"OPEN BRUSH"

RESIDENTIAL

".4 DWELLING/ACRE"

AGRICULTURAL POOR COVER

"ROW CROPS,CONTOURED"

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.994

SUBAREA AREA(ACRES) = 3.40 SUBAREA RUNOFF(CFS) = 1.35

EFFECTIVE AREA(ACRES) = 4317.50 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5581.7 PEAK FLOW RATE(CFS) = 1968.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13304.00 TO NODE 13305.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 350.00 DOWNSTREAM(FEET) = 315.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2966.27 CHANNEL SLOPE = 0.0118

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 3.75

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713

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

NATURAL FAIR COVER

"GRASS"

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1973.33

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.61

AVERAGE FLOW DEPTH(FEET) = 3.74 TRAVEL TIME(MIN.) = 5.74

Tc(MIN.) = 90.46

SUBAREA AREA(ACRES) = 27.40 SUBAREA RUNOFF(CFS) = 10.18

EFFECTIVE AREA(ACRES) = 4344.90 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5609.1 PEAK FLOW RATE(CFS) = 1968.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 3.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.74 FLOW VELOCITY(FEET/SEC.) = 8.59

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

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

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

MAINLINE Tc(MIN.) = 90.46

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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

NATURAL POOR COVER

"BARREN"

NATURAL FAIR COVER

"MEADOWS"

NATURAL FAIR COVER

"WOODLAND,GRASS"

NATURAL POOR COVER

"BARREN"

COMMERCIAL

AGRICULTURAL POOR COVER

"FALLOW"

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.934

SUBAREA AREA(ACRES) = 53.20 SUBAREA RUNOFF(CFS) = 20.71

EFFECTIVE AREA(ACRES) = 4398.10 AREA-AVERAGED Fm(INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84

TOTAL AREA(ACRES) = 5662.3 PEAK FLOW RATE(CFS) = 1968.24

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

MAINLINE Tc(MIN.) = 90.46

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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

AGRICULTURAL POOR COVER

"ROW CROPS,CONTOURED"

NATURAL FAIR COVER

"WOODLAND,GRASS"

NATURAL POOR COVER

"BARREN"

COMMERCIAL

AGRICULTURAL POOR COVER

"FALLOW"

NATURAL FAIR COVER

"GRASS"

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.860

SUBAREA AREA(ACRES) = 27.60 SUBAREA RUNOFF(CFS) = 11.30

EFFECTIVE AREA(ACRES) = 4425.70 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5689.9 PEAK FLOW RATE(CFS) = 1968.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

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MAINLINE Tc(MIN.) = 90.46
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713
 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) = 9.75
 EFFECTIVE AREA(ACRES) = 4451.40 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5715.6 PEAK FLOW RATE(CFS) = 1968.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

=====

MAINLINE Tc(MIN.) = 90.46
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	B	2.00	0.30	0.100	56
AGRICULTURAL POOR COVER "FALLOW"	B	3.70	0.30	1.000	86
NATURAL FAIR COVER "OPEN BRUSH"	B	2.10	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	2.60	0.30	0.900	56
AGRICULTURAL POOR COVER "ROW CROPS, CONTOURED"	B	0.20	0.30	1.000	79
NATURAL FAIR COVER "WOODLAND, GRASS"	B	0.10	0.30	1.000	65

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.807

SUBAREA AREA(ACRES) = 10.70 SUBAREA RUNOFF(CFS) = 4.53
 EFFECTIVE AREA(ACRES) = 4462.10 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5726.3 PEAK FLOW RATE(CFS) = 1968.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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

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

=====

MAINLINE Tc(MIN.) = 90.46
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.713
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
NATURAL FAIR COVER "OPEN BRUSH"	B	0.50	0.30	1.000	66
RESIDENTIAL ".4 DWELLING/ACRE"	B	8.20	0.30	0.900	56

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.906
 SUBAREA AREA(ACRES) = 8.70 SUBAREA RUNOFF(CFS) = 3.45
 EFFECTIVE AREA(ACRES) = 4470.80 AREA-AVERAGED Fm(INCH/HR) = 0.25
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.84
 TOTAL AREA(ACRES) = 5735.0 PEAK FLOW RATE(CFS) = 1968.24
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 15.1

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

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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	742.59	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<<<<<

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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	1542.58	39.21	1.082	0.30(0.26)	0.88	1828.9	31100.00
2	1968.24	90.46	0.713	0.30(0.25)	0.84	4470.8	13222.00

LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM	Q	Tc	Intensity	Fp(Fm)	Ap	Ae	HEADWATER
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NUMBER	(CFS)	(MIN.)	(INCH/HR)	(INCH/HR)	(ACRES)	NODE
1	742.59	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 (ACRES)	Ae (ACRES)	HEADWATER NODE
1	1905.11	14.11	1.980	0.30(0.21)	0.70	1091.8	120.00
2	1901.05	14.27	1.959	0.30(0.21)	0.70	1102.0	110.00
3	1947.39	21.58	1.529	0.30(0.22)	0.73	1510.4	100.00
4	1939.09	24.64	1.406	0.30(0.22)	0.74	1659.4	150.00
5	1981.26	39.21	1.082	0.30(0.23)	0.78	2339.1	31100.00
6	2236.65	90.46	0.713	0.30(0.24)	0.80	4981.0	13222.00

TOTAL AREA (ACRES) = 6245.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2236.65 Tc(MIN.) = 90.457
EFFECTIVE AREA(ACRES) = 4981.00 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.70
TOTAL AREA(ACRES) = 6245.2
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13305.00 = 13617.72 FEET.

FLOW PROCESS FROM NODE 13305.00 TO NODE 13305.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13305.00 TO NODE 13306.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 315.00 DOWNSTREAM(FEET) = 245.50
CHANNEL LENGTH THRU SUBAREA(FEET) = 4408.41 CHANNEL SLOPE = 0.0158
GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.72
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.692
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) = 2250.18
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.90
AVERAGE FLOW DEPTH(FEET) = 3.72 TRAVEL TIME(MIN.) = 7.43
Tc(MIN.) = 97.88
SUBAREA AREA(ACRES) = 68.80 SUBAREA RUNOFF(CFS) = 27.05
EFFECTIVE AREA(ACRES) = 5049.80 AREA-AVERAGED Fm(INCH/HR) = 0.24
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80
TOTAL AREA(ACRES) = 6314.0 PEAK FLOW RATE(CFS) = 2236.65
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.70 FLOW VELOCITY(FEET/SEC.) = 9.88
LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13306.00 = 18026.13 FEET.

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 97.88
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.692
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	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) = 20.27
EFFECTIVE AREA(ACRES) = 5096.10 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) = 2236.65
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 97.88
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.692
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	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) = 21.99
 EFFECTIVE AREA (ACRES) = 5154.70 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) = 2236.65
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 97.88
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.692

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 "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) = 3.71
 EFFECTIVE AREA (ACRES) = 5164.40 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) = 2236.65
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13306.00 TO NODE 13306.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 97.88
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.692

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) = 0.87					
EFFECTIVE AREA (ACRES) = 5166.70 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) = 2236.65					

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13306.00 TO NODE 13307.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM (FEET) = 245.50 DOWNSTREAM (FEET) = 220.00
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1543.21 CHANNEL SLOPE = 0.0165
 GIVEN CHANNEL BASE (FEET) = 50.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 3.66
 CHANNEL FLOW THRU SUBAREA (CFS) = 2236.65
 FLOW VELOCITY (FEET/SEC.) = 10.03 FLOW DEPTH (FEET) = 3.66
 TRAVEL TIME (MIN.) = 2.56 Tc (MIN.) = 100.45
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13307.00 = 19569.34 FEET.

 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 100.45
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.685

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) = 2.79
 EFFECTIVE AREA (ACRES) = 5174.40 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) = 2236.65
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13307.00 TO NODE 13307.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 100.45
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.685

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) = 2.11
 EFFECTIVE AREA(ACRES) = 5180.50 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) = 2236.65
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13307.00 TO NODE 13308.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 220.00 DOWNSTREAM(FEET) = 212.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 925.62 CHANNEL SLOPE = 0.0086
 GIVEN CHANNEL BASE(FEET) = 50.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT(FEET) = 4.39
 CHANNEL FLOW THRU SUBAREA(CFS) = 2236.65
 FLOW VELOCITY(FEET/SEC.) = 8.06 FLOW DEPTH(FEET) = 4.39
 TRAVEL TIME(MIN.) = 1.91 Tc(MIN.) = 102.36
 LONGEST FLOWPATH FROM NODE 31100.00 TO NODE 13308.00 = 20494.96 FEET.

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 102.36
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679
 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) = 4.02
 EFFECTIVE AREA(ACRES) = 5190.00 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) = 2236.65
 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<<<<<

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MAINLINE Tc(MIN.) = 102.36
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679
 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) = 36.06
 EFFECTIVE AREA(ACRES) = 5265.60 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80
 TOTAL AREA(ACRES) = 6529.8 PEAK FLOW RATE(CFS) = 2236.65
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 102.36
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679
 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) = 5.47
 EFFECTIVE AREA(ACRES) = 5281.20 AREA-AVERAGED Fm(INCH/HR) = 0.24
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.80
 TOTAL AREA(ACRES) = 6545.4 PEAK FLOW RATE(CFS) = 2236.65
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 102.36
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679

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) = 36.06
EFFECTIVE AREA(ACRES) = 5361.60 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) = 2236.65
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 102.36
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679
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) = 0.37
EFFECTIVE AREA(ACRES) = 5362.60 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) = 2236.65
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 102.36
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679
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) = 0.72
EFFECTIVE AREA(ACRES) = 5364.70 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) = 2236.65
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13308.00 TO NODE 13308.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 102.36
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.679
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) = 4.03
EFFECTIVE AREA(ACRES) = 5376.30 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) = 2236.65
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: R110EV29.DNA
MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap (DECIMAL)	Ae (ACRES)	HEADWATER NODE
1	12286.26	19.83	0.30(0.27)	0.90	3126.9	50400.00
2	13907.38	30.72	0.30(0.27)	0.90	5250.7	50300.00
3	14463.11	34.74	0.30(0.27)	0.90	5976.2	12741.00

4	15776.13	43.50	0.30	(0.27)	0.91	8441.4	600.00
5	18067.40	61.36	0.30	(0.28)	0.94	14203.6	40100.00
6	19171.75	70.59	0.30	(0.29)	0.95	17133.1	11801.00
7	20908.98	87.29	0.30	(0.29)	0.96	23632.7	11910.00
8	21364.70	92.00	0.30	(0.29)	0.97	25641.9	11000.00
9	23010.48	102.04	0.30	(0.29)	0.97	31675.4	11330.00
10	23885.01	110.25	0.30	(0.29)	0.98	36762.6	10630.00
11	23796.81	115.83	0.30	(0.29)	0.98	39352.4	12330.00
12	23682.31	122.44	0.30	(0.29)	0.98	42494.9	11600.00
13	23426.03	128.20	0.30	(0.29)	0.98	44729.2	11111.00
14	23133.26	134.32	0.30	(0.29)	0.98	46663.1	12201.00
15	22394.05	143.22	0.30	(0.29)	0.98	48751.3	12231.00
16	21710.00	150.67	0.30	(0.29)	0.98	50162.9	10400.00
17	21294.58	161.74	0.30	(0.29)	0.98	51783.6	10320.00
18	20934.09	166.47	0.30	(0.29)	0.98	52009.1	10210.00
19	20540.60	171.25	0.30	(0.29)	0.98	52171.5	12000.00
20	18015.72	200.12	0.30	(0.29)	0.98	52788.4	10100.00

TOTAL AREA (ACRES) = 52788.4

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	12286.26	19.83	0.30 (0.27)	0.90	3126.9	50400.00
2	13907.38	30.72	0.30 (0.27)	0.90	5250.7	50300.00
3	14463.11	34.74	0.30 (0.27)	0.90	5976.2	12741.00
4	15776.13	43.50	0.30 (0.27)	0.91	8441.4	600.00
5	18067.40	61.36	0.30 (0.28)	0.94	14203.6	40100.00
6	19171.75	70.59	0.30 (0.29)	0.95	17133.1	11801.00
7	20908.98	87.29	0.30 (0.29)	0.96	23632.7	11910.00
8	21364.70	92.00	0.30 (0.29)	0.97	25641.9	11000.00
9	23010.48	102.04	0.30 (0.29)	0.97	31675.4	11330.00
10	23885.01	110.25	0.30 (0.29)	0.98	36762.6	10630.00
11	23796.81	115.83	0.30 (0.29)	0.98	39352.4	12330.00
12	23682.31	122.44	0.30 (0.29)	0.98	42494.9	11600.00
13	23426.03	128.20	0.30 (0.29)	0.98	44729.2	11111.00
14	23133.26	134.32	0.30 (0.29)	0.98	46663.1	12201.00
15	22394.05	143.22	0.30 (0.29)	0.98	48751.3	12231.00
16	21710.00	150.67	0.30 (0.29)	0.98	50162.9	10400.00
17	21294.58	161.74	0.30 (0.29)	0.98	51783.6	10320.00
18	20934.09	166.47	0.30 (0.29)	0.98	52009.1	10210.00
19	20540.60	171.25	0.30 (0.29)	0.98	52171.5	12000.00
20	18015.72	200.12	0.30 (0.29)	0.98	52788.4	10100.00

TOTAL AREA (ACRES) = 52788.4

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) = 13.69
CHANNEL FLOW THRU SUBAREA (CFS) = 23885.01
FLOW VELOCITY (FEET/SEC.) = 6.50 FLOW DEPTH (FEET) = 13.69
TRAVEL TIME (MIN.) = 3.56 Tc (MIN.) = 113.82
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
1	12286.26	24.23	1.422	0.30 (0.27)	0.90	3126.9	50400.00
2	13907.38	34.95	1.160	0.30 (0.27)	0.90	5250.7	50300.00
3	14463.11	38.92	1.088	0.30 (0.27)	0.90	5976.2	12741.00
4	15776.13	47.56	0.979	0.30 (0.27)	0.91	8441.4	600.00
5	18067.40	65.24	0.836	0.30 (0.28)	0.94	14203.6	40100.00
6	19171.75	74.40	0.791	0.30 (0.29)	0.95	17133.1	11801.00
7	20908.98	91.00	0.711	0.30 (0.29)	0.96	23632.7	11910.00
8	21364.70	95.69	0.698	0.30 (0.29)	0.97	25641.9	11000.00
9	23010.48	105.64	0.670	0.30 (0.29)	0.97	31675.4	11330.00
10	23885.01	113.82	0.647	0.30 (0.29)	0.98	36762.6	10630.00
11	23796.81	119.39	0.632	0.30 (0.29)	0.98	39352.4	12330.00
12	23682.31	126.01	0.620	0.30 (0.29)	0.98	42494.9	11600.00
13	23426.03	131.79	0.610	0.30 (0.29)	0.98	44729.2	11111.00
14	23133.26	137.92	0.600	0.30 (0.29)	0.98	46663.1	12201.00
15	22394.05	146.85	0.584	0.30 (0.29)	0.98	48751.3	12231.00
16	21710.00	154.34	0.572	0.30 (0.29)	0.98	50162.9	10400.00
17	21294.58	165.43	0.553	0.30 (0.29)	0.98	51783.6	10320.00
18	20934.09	170.18	0.545	0.30 (0.29)	0.98	52009.1	10210.00
19	20540.60	174.98	0.537	0.30 (0.29)	0.98	52171.5	12000.00
20	18015.72	204.01	0.509	0.30 (0.29)	0.98	52788.4	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	1905.11	26.62	1.345	0.30 (0.21)	0.71	1487.1	120.00
2	1901.05	26.78	1.341	0.30 (0.21)	0.71	1497.3	110.00
3	1947.39	34.00	1.177	0.30 (0.22)	0.73	1905.7	100.00
4	1939.09	37.08	1.121	0.30 (0.22)	0.74	2054.7	150.00
5	1981.26	51.59	0.936	0.30 (0.23)	0.77	2734.4	31100.00
6	2236.65	102.36	0.679	0.30 (0.24)	0.79	5376.3	13222.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14138.01	24.23	1.422	0.30 (0.25)	0.84	4480.9	50400.00
2	14552.00	26.62	1.345	0.30 (0.25)	0.84	5086.5	120.00
3	14572.97	26.78	1.341	0.30 (0.25)	0.84	5129.4	110.00
4	15711.78	34.00	1.177	0.30 (0.26)	0.85	6969.0	100.00
5	15852.23	34.95	1.160	0.30 (0.26)	0.85	7202.1	50300.00

6	16145.11	37.08	1.121	0.30	(0.26)	0.85	7695.2	150.00
7	16407.54	38.92	1.088	0.30	(0.26)	0.86	8116.9	12741.00
8	17745.68	47.56	0.979	0.30	(0.26)	0.88	10987.0	600.00
9	18279.41	51.59	0.936	0.30	(0.27)	0.89	12488.6	31100.00
10	20117.36	65.24	0.836	0.30	(0.27)	0.91	17648.7	40100.00
11	21267.79	74.40	0.791	0.30	(0.28)	0.92	21054.8	11801.00
12	23088.49	91.00	0.711	0.30	(0.28)	0.93	28417.9	11910.00
13	23567.78	95.69	0.698	0.30	(0.28)	0.94	30671.0	11000.00
14	24704.25	102.36	0.679	0.30	(0.28)	0.94	35061.5	13222.00
15	25200.48	105.64	0.670	0.30	(0.28)	0.95	37051.7	11330.00
16	25958.96	113.82	0.647	0.30	(0.29)	0.95	42138.9	10630.00
17	25791.56	119.39	0.632	0.30	(0.29)	0.95	44728.7	12330.00
18	25616.66	126.01	0.620	0.30	(0.29)	0.96	47871.2	11600.00
19	25310.57	131.79	0.610	0.30	(0.29)	0.96	50105.5	11111.00
20	24964.94	137.92	0.600	0.30	(0.29)	0.96	52039.4	12201.00
21	24148.71	146.85	0.584	0.30	(0.29)	0.96	54127.6	12231.00
22	23400.07	154.34	0.572	0.30	(0.29)	0.96	55539.2	10400.00
23	22889.04	165.43	0.553	0.30	(0.29)	0.96	57159.9	10320.00
24	22487.59	170.18	0.545	0.30	(0.29)	0.96	57385.4	10210.00
25	22052.70	174.98	0.537	0.30	(0.29)	0.96	57547.8	12000.00
26	19389.86	204.01	0.509	0.30	(0.29)	0.96	58164.7	10100.00

TOTAL AREA (ACRES) = 59428.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 25958.96 Tc (MIN.) = 113.817
EFFECTIVE AREA (ACRES) = 42138.87 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
TOTAL AREA (ACRES) = 59428.9
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13308.00 = 118090.66 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 59428.9 TC (MIN.) = 113.82
EFFECTIVE AREA (ACRES) = 42138.87 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.952
PEAK FLOW RATE (CFS) = 25958.96

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14138.01	24.23	1.422	0.30 (0.25)	0.84	4480.9	50400.00
2	14552.00	26.62	1.345	0.30 (0.25)	0.84	5086.5	120.00
3	14572.97	26.78	1.341	0.30 (0.25)	0.84	5129.4	110.00
4	15711.78	34.00	1.177	0.30 (0.26)	0.85	6969.0	100.00
5	15852.23	34.95	1.160	0.30 (0.26)	0.85	7202.1	50300.00
6	16145.11	37.08	1.121	0.30 (0.26)	0.85	7695.2	150.00
7	16407.54	38.92	1.088	0.30 (0.26)	0.86	8116.9	12741.00
8	17745.68	47.56	0.979	0.30 (0.26)	0.88	10987.0	600.00
9	18279.41	51.59	0.936	0.30 (0.27)	0.89	12488.6	31100.00
10	20117.36	65.24	0.836	0.30 (0.27)	0.91	17648.7	40100.00
11	21267.79	74.40	0.791	0.30 (0.28)	0.92	21054.8	11801.00
12	23088.49	91.00	0.711	0.30 (0.28)	0.93	28417.9	11910.00
13	23567.78	95.69	0.698	0.30 (0.28)	0.94	30671.0	11000.00
14	24704.25	102.36	0.679	0.30 (0.28)	0.94	35061.5	13222.00
15	25200.48	105.64	0.670	0.30 (0.28)	0.95	37051.7	11330.00
16	25958.96	113.82	0.647	0.30 (0.29)	0.95	42138.9	10630.00
17	25791.56	119.39	0.632	0.30 (0.29)	0.95	44728.7	12330.00
18	25616.66	126.01	0.620	0.30 (0.29)	0.96	47871.2	11600.00
19	25310.57	131.79	0.610	0.30 (0.29)	0.96	50105.5	11111.00

20	24964.94	137.92	0.600	0.30	(0.29)	0.96	52039.4	12201.00
21	24148.71	146.85	0.584	0.30	(0.29)	0.96	54127.6	12231.00
22	23400.07	154.34	0.572	0.30	(0.29)	0.96	55539.2	10400.00
23	22889.04	165.43	0.553	0.30	(0.29)	0.96	57159.9	10320.00
24	22487.59	170.18	0.545	0.30	(0.29)	0.96	57385.4	10210.00
25	22052.70	174.98	0.537	0.30	(0.29)	0.96	57547.8	12000.00
26	19389.86	204.01	0.509	0.30	(0.29)	0.96	58164.7	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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Analysis prepared by:

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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S34- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV34.DAT
TIME/DATE OF STUDY: 10:12 06/14/2019

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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; 3.757
- 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 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

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

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PEAK FLOWRATE TABLE FILE NAME: RI10EV33.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14572.97	26.78	0.30 (0.25)	0.84	5129.4	110.00
2	16407.54	38.92	0.30 (0.26)	0.86	8116.9	12741.00
3	17745.68	47.56	0.30 (0.26)	0.88	10987.0	600.00
4	18279.41	51.59	0.30 (0.27)	0.89	12488.6	31100.00
5	20117.36	65.24	0.30 (0.27)	0.91	17648.7	40100.00
6	21267.79	74.40	0.30 (0.28)	0.92	21054.8	11801.00
7	23088.49	91.00	0.30 (0.28)	0.93	28417.9	11910.00
8	23567.78	95.69	0.30 (0.28)	0.94	30671.0	11000.00
9	25200.48	105.64	0.30 (0.28)	0.95	37051.7	11330.00
10	25958.96	113.82	0.30 (0.29)	0.95	42138.9	10630.00
11	25791.56	119.39	0.30 (0.29)	0.95	44728.7	12330.00
12	25616.66	126.01	0.30 (0.29)	0.96	47871.2	11600.00
13	25310.57	131.79	0.30 (0.29)	0.96	50105.5	11111.00
14	24964.94	137.92	0.30 (0.29)	0.96	52039.4	12201.00
15	24148.71	146.85	0.30 (0.29)	0.96	54127.6	12231.00
16	23400.07	154.34	0.30 (0.29)	0.96	55539.2	10400.00
17	22889.04	165.43	0.30 (0.29)	0.96	57159.9	10320.00
18	22487.59	170.18	0.30 (0.29)	0.96	57385.4	10210.00
19	22052.70	174.98	0.30 (0.29)	0.96	57547.8	12000.00
20	19389.86	204.01	0.30 (0.29)	0.96	58164.7	10100.00
TOTAL AREA (ACRES) =						58164.7

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	14572.97	26.78	0.30 (0.25)	0.84	5129.4	110.00
2	16407.54	38.92	0.30 (0.26)	0.86	8116.9	12741.00
3	17745.68	47.56	0.30 (0.26)	0.88	10987.0	600.00
4	18279.41	51.59	0.30 (0.27)	0.89	12488.6	31100.00
5	20117.36	65.24	0.30 (0.27)	0.91	17648.7	40100.00
6	21267.79	74.40	0.30 (0.28)	0.92	21054.8	11801.00
7	23088.49	91.00	0.30 (0.28)	0.93	28417.9	11910.00
8	23567.78	95.69	0.30 (0.28)	0.94	30671.0	11000.00
9	25200.48	105.64	0.30 (0.28)	0.95	37051.7	11330.00
10	25958.96	113.82	0.30 (0.29)	0.95	42138.9	10630.00
11	25791.56	119.39	0.30 (0.29)	0.95	44728.7	12330.00
12	25616.66	126.01	0.30 (0.29)	0.96	47871.2	11600.00
13	25310.57	131.79	0.30 (0.29)	0.96	50105.5	11111.00

14	24964.94	137.92	0.30 (0.29)	0.96	52039.4	12201.00
15	24148.71	146.85	0.30 (0.29)	0.96	54127.6	12231.00
16	23400.07	154.34	0.30 (0.29)	0.96	55539.2	10400.00
17	22889.04	165.43	0.30 (0.29)	0.96	57159.9	10320.00
18	22487.59	170.18	0.30 (0.29)	0.96	57385.4	10210.00
19	22052.70	174.98	0.30 (0.29)	0.96	57547.8	12000.00
20	19389.86	204.01	0.30 (0.29)	0.96	58164.7	10100.00

TOTAL AREA (ACRES) = 58164.7

FLOW PROCESS FROM NODE 13308.00 TO NODE 13402.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 215.00 DOWNSTREAM(FEET) = 209.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 623.02 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) = 6.91
 CHANNEL FLOW THRU SUBAREA(CFS) = 25958.96
 FLOW VELOCITY(FEET/SEC.) = 16.02 FLOW DEPTH(FEET) = 6.91
 TRAVEL TIME(MIN.) = 0.65 Tc(MIN.) = 114.47
 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: 0610505V.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	172.78	21.02	0.30 (0.30)	0.99	153.2	50500.00

TOTAL AREA (ACRES) = 153.2

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	14572.97	27.57	1.316	0.30 (0.25)	0.84	5129.4	110.00
2	16407.54	39.68	1.072	0.30 (0.26)	0.86	8116.9	12741.00
3	17745.68	48.29	0.968	0.30 (0.26)	0.88	10987.0	600.00
4	18279.41	52.32	0.928	0.30 (0.27)	0.89	12488.6	31100.00
5	20117.36	65.95	0.831	0.30 (0.27)	0.91	17648.7	40100.00
6	21267.79	75.10	0.786	0.30 (0.28)	0.92	21054.8	11801.00
7	23088.49	91.67	0.707	0.30 (0.28)	0.93	28417.9	11910.00
8	23567.78	96.36	0.694	0.30 (0.28)	0.94	30671.0	11000.00
9	25200.48	106.30	0.666	0.30 (0.28)	0.95	37051.7	11330.00
10	25958.96	114.47	0.643	0.30 (0.29)	0.95	42138.9	10630.00
11	25791.56	120.04	0.627	0.30 (0.29)	0.95	44728.7	12330.00
12	25616.66	126.66	0.616	0.30 (0.29)	0.96	47871.2	11600.00

13	25310.57	132.44	0.606	0.30 (0.29)	0.96	50105.5	11111.00
14	24964.94	138.57	0.595	0.30 (0.29)	0.96	52039.4	12201.00
15	24148.71	147.51	0.580	0.30 (0.29)	0.96	54127.6	12231.00
16	23400.07	155.01	0.567	0.30 (0.29)	0.96	55539.2	10400.00
17	22889.04	166.11	0.549	0.30 (0.29)	0.96	57159.9	10320.00
18	22487.59	170.86	0.541	0.30 (0.29)	0.96	57385.4	10210.00
19	22052.70	175.67	0.532	0.30 (0.29)	0.96	57547.8	12000.00
20	19389.86	204.73	0.506	0.30 (0.29)	0.96	58164.7	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	172.78	21.02	1.549	0.30 (0.30)	0.99	153.2	50500.00

LONGEST FLOWPATH FROM NODE 50500.00 TO NODE 13402.00 = 6247.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13714.91	21.02	1.549	0.30 (0.25)	0.85	4063.6	50500.00
2	14713.65	27.57	1.316	0.30 (0.25)	0.85	5282.6	110.00
3	16514.56	39.68	1.072	0.30 (0.26)	0.86	8270.1	12741.00
4	17838.39	48.29	0.968	0.30 (0.26)	0.88	11140.2	600.00
5	18366.53	52.32	0.928	0.30 (0.27)	0.89	12641.8	31100.00
6	20191.11	65.95	0.831	0.30 (0.27)	0.91	17801.9	40100.00
7	21335.31	75.10	0.786	0.30 (0.28)	0.92	21208.0	11801.00
8	23145.22	91.67	0.707	0.30 (0.28)	0.94	28571.1	11910.00
9	23622.69	96.36	0.694	0.30 (0.28)	0.94	30824.2	11000.00
10	25251.50	106.30	0.666	0.30 (0.28)	0.95	37204.9	11330.00
11	26006.79	114.47	0.643	0.30 (0.29)	0.95	42292.0	10630.00
12	25837.22	120.04	0.627	0.30 (0.29)	0.95	44881.9	12330.00
13	25660.77	126.66	0.616	0.30 (0.29)	0.96	48024.4	11600.00
14	25353.32	132.44	0.606	0.30 (0.29)	0.96	50258.7	11111.00
15	25006.25	138.57	0.595	0.30 (0.29)	0.96	52192.5	12201.00
16	24187.92	147.51	0.580	0.30 (0.29)	0.96	54280.8	12231.00
17	23437.53	155.01	0.567	0.30 (0.29)	0.96	55692.3	10400.00
18	22923.90	166.11	0.549	0.30 (0.29)	0.96	57313.1	10320.00
19	22521.34	170.86	0.541	0.30 (0.29)	0.96	57538.6	10210.00
20	22085.31	175.67	0.532	0.30 (0.29)	0.96	57700.9	12000.00
21	19418.83	204.73	0.506	0.30 (0.29)	0.96	58317.9	10100.00

TOTAL AREA (ACRES) = 58317.9

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 26006.79 Tc(MIN.) = 114.465
 EFFECTIVE AREA(ACRES) = 42292.05 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 58317.9
 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) = 8.31
 CHANNEL FLOW THRU SUBAREA(CFS) = 26006.79
 FLOW VELOCITY(FEET/SEC.) = 12.95 FLOW DEPTH(FEET) = 8.31
 TRAVEL TIME(MIN.) = 0.51 Tc(MIN.) = 114.97
 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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0610506V.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	61.99	18.17	0.30	(0.30)	1.00	49.6	50600.00
TOTAL AREA (ACRES) =							49.6

 FLOW PROCESS FROM NODE 13404.00 TO NODE 13404.00 IS CODE = 11

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

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13714.91	21.65	1.523	0.30(0.25)	0.85	4063.6	50500.00
2	14713.65	28.19	1.299	0.30(0.25)	0.85	5282.6	110.00
3	16514.56	40.27	1.063	0.30(0.26)	0.86	8270.1	12741.00
4	17838.39	48.87	0.961	0.30(0.26)	0.88	11140.2	600.00
5	18366.53	52.89	0.923	0.30(0.27)	0.89	12641.8	31100.00
6	20191.11	66.51	0.828	0.30(0.27)	0.91	17801.9	40100.00
7	21335.31	75.64	0.783	0.30(0.28)	0.92	21208.0	11801.00
8	23145.22	92.20	0.706	0.30(0.28)	0.94	28571.1	11910.00
9	23622.69	96.88	0.693	0.30(0.28)	0.94	30824.2	11000.00
10	25251.50	106.81	0.664	0.30(0.28)	0.95	37204.9	11330.00
11	26006.79	114.97	0.641	0.30(0.29)	0.95	42292.0	10630.00
12	25837.22	120.55	0.626	0.30(0.29)	0.95	44881.9	12330.00
13	25660.77	127.17	0.615	0.30(0.29)	0.96	48024.4	11600.00
14	25353.32	132.95	0.605	0.30(0.29)	0.96	50258.7	11111.00
15	25006.25	139.09	0.595	0.30(0.29)	0.96	52192.5	12201.00
16	24187.92	148.04	0.579	0.30(0.29)	0.96	54280.8	12231.00
17	23437.53	155.54	0.567	0.30(0.29)	0.96	55692.3	10400.00
18	22923.90	166.64	0.548	0.30(0.29)	0.96	57313.1	10320.00
19	22521.34	171.40	0.540	0.30(0.29)	0.96	57538.6	10210.00
20	22085.31	176.21	0.531	0.30(0.29)	0.96	57700.9	12000.00
21	19418.83	205.29	0.505	0.30(0.29)	0.96	58317.9	10100.00
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13404.00 =							119109.03 FEET.

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	61.99	18.17	1.688	0.30(0.30)	1.00	49.6	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	13069.59	18.17	1.688	0.30(0.25)	0.85	3459.8	50600.00
2	13769.53	21.65	1.523	0.30(0.25)	0.85	4113.2	50500.00
3	14758.24	28.19	1.299	0.30(0.25)	0.85	5332.2	110.00
4	16548.62	40.27	1.063	0.30(0.26)	0.86	8319.7	12741.00
5	17867.91	48.87	0.961	0.30(0.26)	0.88	11189.8	600.00
6	18394.32	52.89	0.923	0.30(0.27)	0.89	12691.4	31100.00
7	20214.68	66.51	0.828	0.30(0.27)	0.91	17851.5	40100.00
8	21356.87	75.64	0.783	0.30(0.28)	0.92	21257.6	11801.00
9	23163.34	92.20	0.706	0.30(0.28)	0.94	28620.7	11910.00
10	23640.21	96.88	0.693	0.30(0.28)	0.94	30873.8	11000.00
11	25267.77	106.81	0.664	0.30(0.28)	0.95	37254.5	11330.00
12	26022.03	114.97	0.641	0.30(0.29)	0.95	42341.6	10630.00
13	25851.78	120.55	0.626	0.30(0.29)	0.95	44931.5	12330.00
14	25674.82	127.17	0.615	0.30(0.29)	0.96	48074.0	11600.00
15	25366.94	132.95	0.605	0.30(0.29)	0.96	50308.3	11111.00
16	25019.40	139.09	0.595	0.30(0.29)	0.96	52242.1	12201.00
17	24200.40	148.04	0.579	0.30(0.29)	0.96	54330.4	12231.00
18	23449.43	155.54	0.567	0.30(0.29)	0.96	55741.9	10400.00
19	22934.96	166.64	0.548	0.30(0.29)	0.96	57362.7	10320.00
20	22532.04	171.40	0.540	0.30(0.29)	0.96	57588.2	10210.00
21	22095.65	176.21	0.531	0.30(0.29)	0.96	57750.5	12000.00
22	19428.00	205.29	0.505	0.30(0.29)	0.96	58367.5	10100.00
TOTAL AREA (ACRES) =							58367.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 26022.03 Tc(MIN.) = 114.974
 EFFECTIVE AREA(ACRES) = 42341.64 AREA-AVERAGED Fm(INCH/HR) = 0.29
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA(ACRES) = 58367.5
 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

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

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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) = 7.43
 CHANNEL FLOW THRU SUBAREA(CFS) = 26022.03
 FLOW VELOCITY(FEET/SEC.) = 14.76 FLOW DEPTH(FEET) = 7.43
 TRAVEL TIME(MIN.) = 1.81 Tc(MIN.) = 116.78
 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<<<<<

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MAINLINE Tc(MIN.) = 116.78
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.636
 SUBAREA LOSS RATE DATA(AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
NATURAL FAIR COVER					
"GRASS"	B	0.20	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	4.00	0.30	1.000	69
NATURAL FAIR COVER					
"GRASS"	B	2.00	0.30	1.000	69
NATURAL FAIR COVER					
"OPEN BRUSH"	B	9.70	0.30	1.000	66
NATURAL FAIR COVER					
"OPEN BRUSH"	B	2.60	0.30	1.000	66
AGRICULTURAL POOR COVER					
"ROW CROPS, STRAIGHT ROW"	B	1.80	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) = 20.30 SUBAREA RUNOFF (CFS) = 6.14
EFFECTIVE AREA (ACRES) = 42361.94 AREA-AVERAGED Fm (INCH/HR) = 0.29
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA (ACRES) = 58387.8 PEAK FLOW RATE (CFS) = 26022.03
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.) = 116.78

* 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	3.50	0.30	1.000	81
NATURAL FAIR COVER					
"WOODLAND, GRASS"	B	12.60	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) = 22.00 SUBAREA RUNOFF (CFS) = 6.66

EFFECTIVE AREA (ACRES) = 42383.94 AREA-AVERAGED Fm (INCH/HR) = 0.29

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA (ACRES) = 58409.8 PEAK FLOW RATE (CFS) = 26022.03

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 IS CODE = 15.1

>>>>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			

FLOW PROCESS FROM NODE 13406.00 TO NODE 13406.00 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	13069.59	20.46	1.571	0.30 (0.26)	0.85	3502.1	50600.00
2	13769.53	23.90	1.432	0.30 (0.26)	0.85	4155.5	50500.00
3	14758.24	30.39	1.241	0.30 (0.25)	0.85	5374.5	110.00
4	16548.62	42.38	1.038	0.30 (0.26)	0.86	8362.0	12741.00
5	17867.91	50.93	0.940	0.30 (0.26)	0.88	11232.1	600.00
6	18394.32	54.92	0.905	0.30 (0.27)	0.89	12733.7	31100.00
7	20214.68	68.48	0.818	0.30 (0.27)	0.91	17893.8	40100.00
8	21356.87	77.58	0.773	0.30 (0.28)	0.92	21299.9	11801.00
9	23163.34	94.08	0.700	0.30 (0.28)	0.94	28663.0	11910.00
10	23640.21	98.75	0.687	0.30 (0.28)	0.94	30916.1	11000.00
11	25267.77	108.64	0.659	0.30 (0.28)	0.95	37296.8	11330.00
12	26022.03	116.78	0.636	0.30 (0.29)	0.95	42383.9	10630.00
13	25851.78	122.37	0.623	0.30 (0.29)	0.95	44973.8	12330.00
14	25674.82	128.99	0.612	0.30 (0.29)	0.96	48116.3	11600.00
15	25366.94	134.77	0.602	0.30 (0.29)	0.96	50350.6	11111.00
16	25019.40	140.92	0.591	0.30 (0.29)	0.96	52284.4	12201.00
17	24200.40	149.89	0.576	0.30 (0.29)	0.96	54372.7	12231.00
18	23449.43	157.41	0.563	0.30 (0.29)	0.96	55784.2	10400.00
19	22934.96	168.52	0.545	0.30 (0.29)	0.96	57405.0	10320.00
20	22532.04	173.29	0.536	0.30 (0.29)	0.96	57630.5	10210.00
21	22095.65	178.12	0.528	0.30 (0.29)	0.96	57792.8	12000.00
22	19428.00	207.28	0.504	0.30 (0.29)	0.96	58409.8	10100.00

LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 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	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 13406.00 = 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	11508.28	10.14	2.489	0.30(0.24)	0.79	1972.5	429.00
2	12112.66	11.82	2.271	0.30(0.24)	0.79	2300.4	425.00
3	12177.58	12.10	2.234	0.30(0.24)	0.79	2355.3	400.00
4	12349.35	13.74	2.022	0.30(0.24)	0.79	2675.0	300.00
5	13459.86	19.30	1.628	0.30(0.24)	0.80	3741.7	210.00
6	13672.71	20.46	1.571	0.30(0.24)	0.80	3955.6	50600.00
7	13840.88	21.30	1.537	0.30(0.24)	0.80	4124.5	410.00
8	14091.45	22.55	1.487	0.30(0.24)	0.80	4376.2	200.00
9	14231.46	23.25	1.459	0.30(0.24)	0.80	4517.2	230.00
10	14356.65	23.90	1.432	0.30(0.24)	0.80	4644.7	50500.00
11	14427.89	24.41	1.412	0.30(0.24)	0.80	4742.8	220.50
12	15262.41	30.39	1.241	0.30(0.24)	0.81	5865.7	110.00
13	16962.09	42.38	1.038	0.30(0.25)	0.83	8853.2	12741.00
14	18237.56	50.93	0.940	0.30(0.26)	0.86	11723.3	600.00
15	18748.26	54.92	0.905	0.30(0.26)	0.87	13224.9	31100.00
16	20529.98	68.48	0.818	0.30(0.27)	0.90	18385.0	40100.00
17	21652.12	77.58	0.773	0.30(0.27)	0.91	21791.1	11801.00
18	23426.04	94.08	0.700	0.30(0.28)	0.93	29154.2	11910.00
19	23897.00	98.75	0.687	0.30(0.28)	0.93	31407.3	11000.00
20	25512.04	108.64	0.659	0.30(0.28)	0.94	37788.0	11330.00
21	26255.99	116.78	0.636	0.30(0.28)	0.95	42875.1	10630.00
22	26079.87	122.37	0.623	0.30(0.28)	0.95	45465.0	12330.00
23	25897.89	128.99	0.612	0.30(0.29)	0.95	48607.5	11600.00
24	25585.61	134.77	0.602	0.30(0.29)	0.95	50841.8	11111.00
25	25233.40	140.92	0.591	0.30(0.29)	0.95	52775.6	12201.00
26	24407.59	149.89	0.576	0.30(0.29)	0.95	54863.9	12231.00
27	23650.90	157.41	0.563	0.30(0.29)	0.96	56275.4	10400.00
28	23128.00	168.52	0.545	0.30(0.29)	0.96	57896.2	10320.00
29	22721.45	173.29	0.536	0.30(0.29)	0.96	58121.7	10210.00
30	22281.40	178.12	0.528	0.30(0.29)	0.96	58284.0	12000.00
31	19602.91	207.28	0.504	0.30(0.29)	0.96	58901.0	10100.00
TOTAL AREA (ACRES) =		58901.0					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 26255.99 Tc(MIN.) = 116.783
 EFFECTIVE AREA(ACRES) = 42875.14 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.81
 TOTAL AREA(ACRES) = 58901.0
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13406.00 = 120711.00 FEET.

 FLOW PROCESS FROM NODE 13406.00 TO NODE 13408.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

 ELEVATION DATA: UPSTREAM(FEET) = 195.00 DOWNSTREAM(FEET) = 182.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 2458.36 CHANNEL SLOPE = 0.0053
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 8.25

* 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
USER-DEFINED	-	7.00	0.30	1.000	-
USER-DEFINED	-	3.30	0.30	1.000	-
USER-DEFINED	-	0.40	0.30	0.100	-
USER-DEFINED	-	1.40	0.30	1.000	-
USER-DEFINED	-	0.30	0.30	0.100	-

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.949

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 26257.90

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.19

AVERAGE FLOW DEPTH(FEET) = 8.25 TRAVEL TIME(MIN.) = 3.11

Tc(MIN.) = 119.89

SUBAREA AREA(ACRES) = 12.40 SUBAREA RUNOFF(CFS) = 3.82

EFFECTIVE AREA(ACRES) = 42887.54 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 58913.4 PEAK FLOW RATE(CFS) = 26255.99

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) = 8.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 8.25 FLOW VELOCITY(FEET/SEC.) = 13.19

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 # 2 <<<<<

FLOW PROCESS FROM NODE 13408.00 TO NODE 13408.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0610507V.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	264.52	21.27	0.30(0.30)	0.99	236.8	50700.00
TOTAL AREA(ACRES) =		236.8				

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	11508.28	14.26	1.955	0.30(0.24)	0.80	1984.9	429.00
2	12112.66	15.87	1.812	0.30(0.24)	0.80	2312.8	425.00
3	12177.58	16.14	1.798	0.30(0.24)	0.80	2367.7	400.00

4	12349.35	17.76	1.710	0.30 (0.24)	0.79	2687.4	300.00
5	13459.86	23.20	1.461	0.30 (0.24)	0.80	3754.1	210.00
6	13672.71	24.34	1.415	0.30 (0.24)	0.80	3968.0	50600.00
7	13840.88	25.16	1.383	0.30 (0.24)	0.80	4136.9	410.00
8	14091.45	26.38	1.349	0.30 (0.24)	0.80	4388.6	200.00
9	14231.46	27.07	1.330	0.30 (0.24)	0.80	4529.6	230.00
10	14356.65	27.72	1.312	0.30 (0.24)	0.80	4657.1	50500.00
11	14427.89	28.22	1.298	0.30 (0.24)	0.80	4755.2	220.50
12	15262.41	34.12	1.173	0.30 (0.24)	0.81	5878.1	110.00
13	16962.09	45.98	0.995	0.30 (0.25)	0.83	8865.6	12741.00
14	18237.56	54.44	0.909	0.30 (0.26)	0.86	11735.7	600.00
15	18748.26	58.40	0.874	0.30 (0.26)	0.87	13237.3	31100.00
16	20529.98	71.85	0.802	0.30 (0.27)	0.90	18397.4	40100.00
17	21652.12	80.89	0.757	0.30 (0.27)	0.91	21803.5	11801.00
18	23426.04	97.31	0.691	0.30 (0.28)	0.93	29166.6	11910.00
19	23897.00	101.95	0.678	0.30 (0.28)	0.93	31419.7	11000.00
20	25512.04	111.77	0.650	0.30 (0.28)	0.94	37800.4	11330.00
21	26255.99	119.89	0.627	0.30 (0.28)	0.95	42887.5	10630.00
22	26079.87	125.48	0.618	0.30 (0.28)	0.95	45477.4	12330.00
23	25897.89	132.11	0.606	0.30 (0.29)	0.95	48619.9	11600.00
24	25585.61	137.91	0.597	0.30 (0.29)	0.95	50854.2	11111.00
25	25233.40	144.07	0.586	0.30 (0.29)	0.95	52788.0	12201.00
26	24407.59	153.07	0.571	0.30 (0.29)	0.95	54876.3	12231.00
27	23650.90	160.63	0.558	0.30 (0.29)	0.96	56287.8	10400.00
28	23128.00	171.76	0.539	0.30 (0.29)	0.96	57908.6	10320.00
29	22721.45	176.55	0.531	0.30 (0.29)	0.96	58134.1	10210.00
30	22281.40	181.40	0.524	0.30 (0.29)	0.96	58296.4	12000.00
31	19602.91	210.71	0.501	0.30 (0.29)	0.96	58913.4	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	264.52	21.27	1.539	0.30 (0.30)	0.99	236.8	50700.00

LONGEST FLOWPATH FROM NODE 50700.00 TO NODE 13408.00 = 7903.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	11745.10	14.26	1.955	0.30 (0.24)	0.81	2143.6	429.00
2	12353.49	15.87	1.812	0.30 (0.24)	0.81	2489.4	425.00
3	12420.18	16.14	1.798	0.30 (0.24)	0.81	2547.4	400.00
4	12600.80	17.76	1.710	0.30 (0.24)	0.81	2885.1	300.00
5	13330.63	21.27	1.539	0.30 (0.24)	0.81	3612.7	50700.00
6	13707.77	23.20	1.461	0.30 (0.24)	0.81	3990.9	210.00
7	13910.77	24.34	1.415	0.30 (0.24)	0.81	4204.8	50600.00
8	14072.32	25.16	1.383	0.30 (0.24)	0.81	4373.7	410.00
9	14315.60	26.38	1.349	0.30 (0.24)	0.81	4625.4	200.00
10	14451.50	27.07	1.330	0.30 (0.24)	0.81	4766.4	230.00
11	14572.84	27.72	1.312	0.30 (0.24)	0.81	4893.9	50500.00
12	14641.07	28.22	1.298	0.30 (0.24)	0.81	4992.0	220.50
13	15448.98	34.12	1.173	0.30 (0.24)	0.82	6114.9	110.00
14	17110.81	45.98	0.995	0.30 (0.25)	0.84	9102.4	12741.00
15	18367.85	54.44	0.909	0.30 (0.26)	0.86	11972.4	600.00
16	18871.11	58.40	0.874	0.30 (0.26)	0.87	13474.1	31100.00
17	20637.38	71.85	0.802	0.30 (0.27)	0.90	18634.1	40100.00
18	21750.01	80.89	0.757	0.30 (0.27)	0.91	22040.3	11801.00
19	23509.93	97.31	0.691	0.30 (0.28)	0.93	29403.4	11910.00

20	23978.09	101.95	0.678	0.30 (0.28)	0.93	31656.4	11000.00
21	25587.20	111.77	0.650	0.30 (0.28)	0.94	38037.2	11330.00
22	26326.24	119.89	0.627	0.30 (0.28)	0.95	43124.3	10630.00
23	26148.08	125.48	0.618	0.30 (0.28)	0.95	45714.2	12330.00
24	25963.69	132.11	0.606	0.30 (0.29)	0.95	48856.6	11600.00
25	25649.31	137.91	0.597	0.30 (0.29)	0.95	51091.0	11111.00
26	25294.87	144.07	0.586	0.30 (0.29)	0.95	53024.8	12201.00
27	24465.79	153.07	0.571	0.30 (0.29)	0.96	55113.1	12231.00
28	23706.37	160.63	0.558	0.30 (0.29)	0.96	56524.6	10400.00
29	23179.43	171.76	0.539	0.30 (0.29)	0.96	58145.4	10320.00
30	22771.14	176.55	0.531	0.30 (0.29)	0.96	58370.9	10210.00
31	22329.62	181.40	0.524	0.30 (0.29)	0.96	58533.2	12000.00
32	19646.30	210.71	0.501	0.30 (0.29)	0.96	59150.2	10100.00

TOTAL AREA (ACRES) = 59150.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 26326.24 Tc(MIN.) = 119.889
EFFECTIVE AREA(ACRES) = 43124.32 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 59150.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13408.00 = 123169.36 FEET.

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

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 182.00 DOWNSTREAM(FEET) = 178.72
CHANNEL LENGTH THRU SUBAREA(FEET) = 952.73 CHANNEL SLOPE = 0.0034
GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT(FEET) = 9.34
* 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
USER-DEFINED	-	0.40	0.30	1.000	-
USER-DEFINED	-	2.90	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) = 26326.73
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.43
AVERAGE FLOW DEPTH(FEET) = 9.34 TRAVEL TIME(MIN.) = 1.39
Tc(MIN.) = 121.28
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 0.96
EFFECTIVE AREA(ACRES) = 43127.62 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 59153.5 PEAK FLOW RATE(CFS) = 26326.24
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) = 9.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.34 FLOW VELOCITY(FEET/SEC.) = 11.43
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 12

 >>>>CLEAR MEMORY BANK # 3 <<<<<<
 =====

 FLOW PROCESS FROM NODE 13410.00 TO NODE 13410.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: RI10EV36.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	11745.10	16.08	1.801	0.30 (0.24)	0.81	2146.9	429.00
2	12353.49	17.66	1.716	0.30 (0.24)	0.81	2492.7	425.00
3	12420.18	17.93	1.702	0.30 (0.24)	0.81	2550.7	400.00
4	12600.80	19.54	1.615	0.30 (0.24)	0.81	2888.4	300.00
5	13330.63	23.02	1.468	0.30 (0.24)	0.81	3616.0	50700.00
6	13707.77	24.93	1.391	0.30 (0.24)	0.81	3994.2	210.00
7	13910.77	26.06	1.358	0.30 (0.24)	0.81	4208.1	50600.00
8	14072.32	26.88	1.335	0.30 (0.24)	0.81	4377.0	410.00
9	14315.60	28.09	1.302	0.30 (0.24)	0.81	4628.7	200.00
10	14451.50	28.77	1.282	0.30 (0.24)	0.81	4769.7	230.00
11	14572.84	29.41	1.265	0.30 (0.24)	0.81	4897.2	50500.00
12	14641.07	29.91	1.250	0.30 (0.24)	0.81	4995.3	220.50
13	15448.98	35.78	1.143	0.30 (0.24)	0.82	6118.2	110.00
14	17110.81	47.58	0.977	0.30 (0.25)	0.84	9105.7	12741.00
15	18367.85	56.00	0.895	0.30 (0.26)	0.86	11975.7	600.00
16	18871.11	59.95	0.860	0.30 (0.26)	0.87	13477.4	31100.00
17	20637.38	73.35	0.794	0.30 (0.27)	0.90	18637.4	40100.00
18	21750.01	82.37	0.750	0.30 (0.27)	0.91	22043.6	11801.00
19	23509.93	98.75	0.687	0.30 (0.28)	0.93	29406.7	11910.00
20	23978.09	103.39	0.674	0.30 (0.28)	0.93	31659.7	11000.00
21	25587.20	113.18	0.646	0.30 (0.28)	0.94	38040.5	11330.00
22	26326.24	121.28	0.625	0.30 (0.28)	0.95	43127.6	10630.00
23	26148.08	126.87	0.615	0.30 (0.28)	0.95	45717.5	12330.00
24	25963.69	133.50	0.604	0.30 (0.29)	0.95	48859.9	11600.00

25	25649.31	139.31	0.594	0.30 (0.29)	0.95	51094.3	11111.00
26	25294.87	145.48	0.584	0.30 (0.29)	0.95	53028.1	12201.00
27	24465.79	154.49	0.568	0.30 (0.29)	0.96	55116.4	12231.00
28	23706.37	162.07	0.555	0.30 (0.29)	0.96	56527.9	10400.00
29	23179.43	173.21	0.537	0.30 (0.29)	0.96	58148.7	10320.00
30	22771.14	178.01	0.528	0.30 (0.29)	0.96	58374.2	10210.00
31	22329.62	182.86	0.523	0.30 (0.29)	0.96	58536.5	12000.00
32	19646.30	212.24	0.500	0.30 (0.29)	0.96	59153.5	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	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	13007.53	16.08	1.801	0.30 (0.25)	0.83	2898.9	429.00
2	13662.94	17.66	1.716	0.30 (0.25)	0.83	3318.6	425.00
3	13736.29	17.93	1.702	0.30 (0.25)	0.83	3389.2	400.00
4	13948.39	19.54	1.615	0.30 (0.25)	0.83	3802.4	300.00
5	14744.86	23.02	1.468	0.30 (0.25)	0.83	4692.6	50700.00
6	15140.70	24.93	1.391	0.30 (0.25)	0.83	5160.2	210.00
7	15365.27	26.06	1.358	0.30 (0.25)	0.83	5427.1	50600.00
8	15540.79	26.88	1.335	0.30 (0.25)	0.83	5634.0	410.00
9	15801.39	28.09	1.302	0.30 (0.25)	0.83	5942.4	200.00
10	15945.19	28.77	1.282	0.30 (0.25)	0.83	6115.3	230.00
11	16072.74	29.41	1.265	0.30 (0.25)	0.83	6272.8	50500.00
12	16145.01	29.91	1.250	0.30 (0.25)	0.83	6394.3	220.50
13	16285.90	30.81	1.233	0.30 (0.25)	0.83	6607.1	110.00
14	16665.46	33.19	1.190	0.30 (0.25)	0.83	7218.7	100.00
15	16871.35	34.56	1.165	0.30 (0.25)	0.83	7562.2	100.00
16	17043.39	35.78	1.143	0.30 (0.25)	0.84	7860.3	110.00
17	17340.78	37.85	1.105	0.30 (0.25)	0.84	8491.9	130.00
18	18744.09	47.58	0.977	0.30 (0.26)	0.85	11441.9	12741.00
19	19556.38	52.91	0.922	0.30 (0.26)	0.87	13521.6	20100.00
20	20000.08	56.00	0.895	0.30 (0.26)	0.87	14671.6	600.00
21	20406.35	59.35	0.866	0.30 (0.26)	0.88	16046.1	13600.00
22	20479.92	59.95	0.860	0.30 (0.26)	0.88	16289.2	31100.00
23	22179.17	73.35	0.794	0.30 (0.27)	0.90	21775.8	40100.00
24	23246.73	82.37	0.750	0.30 (0.27)	0.91	25401.5	11801.00
25	24924.70	98.75	0.687	0.30 (0.28)	0.93	33163.8	11910.00
26	25051.73	100.08	0.683	0.30 (0.28)	0.93	33839.1	13510.00
27	25359.86	103.39	0.674	0.30 (0.28)	0.93	35469.9	11000.00
28	26594.20	111.28	0.652	0.30 (0.28)	0.94	40663.7	13500.00
29	26886.94	113.18	0.646	0.30 (0.28)	0.94	41900.2	11330.00
30	27549.67	121.28	0.625	0.30 (0.28)	0.95	46987.3	10630.00
31	27337.77	126.87	0.615	0.30 (0.28)	0.95	49577.2	12330.00
32	27113.37	133.50	0.604	0.30 (0.28)	0.95	52719.6	11600.00

Stream Number	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
33	26763.98	139.31	0.594	0.30 (0.29)	0.95	54954.0	11111.00
34	26372.33	145.48	0.584	0.30 (0.29)	0.95	56887.8	12201.00
35	25488.86	154.49	0.568	0.30 (0.29)	0.95	58976.1	12231.00
36	24683.76	162.07	0.555	0.30 (0.29)	0.95	60387.6	10400.00
37	24089.59	173.21	0.537	0.30 (0.29)	0.96	62008.4	10320.00
38	23652.36	178.01	0.528	0.30 (0.29)	0.96	62233.8	10210.00
39	23190.98	182.86	0.523	0.30 (0.29)	0.96	62396.2	12000.00
40	20427.17	212.24	0.500	0.30 (0.29)	0.96	63013.2	10100.00
TOTAL AREA (ACRES) =							63013.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 27549.67 Tc (MIN.) = 121.278
EFFECTIVE AREA (ACRES) = 46987.31 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88
TOTAL AREA (ACRES) = 63013.2
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13410.00 = 124122.09 FEET.

FLOW PROCESS FROM NODE 13410.00 TO NODE 13412.00 IS CODE = 56

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

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ELEVATION DATA: UPSTREAM (FEET) = 178.72 DOWNSTREAM (FEET) = 176.93
CHANNEL LENGTH THRU SUBAREA (FEET) = 169.78 CHANNEL SLOPE = 0.0105
GIVEN CHANNEL BASE (FEET) = 200.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
*ESTIMATED CHANNEL HEIGHT (FEET) = 6.96
CHANNEL FLOW THRU SUBAREA (CFS) = 27549.67
FLOW VELOCITY (FEET/SEC.) = 16.86 FLOW DEPTH (FEET) = 6.96
TRAVEL TIME (MIN.) = 0.17 Tc (MIN.) = 121.45
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13412.00 = 124291.87 FEET.

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 13412.00 TO NODE 13412.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506101E.DNA

MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM 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	13007.53	16.30	1.789	0.30 (0.25)	0.83	2898.9	429.00
2	13662.94	17.87	1.705	0.30 (0.25)	0.83	3318.6	425.00
3	13736.29	18.14	1.690	0.30 (0.25)	0.83	3389.2	400.00
4	13948.39	19.75	1.603	0.30 (0.25)	0.83	3802.4	300.00
5	14744.86	23.23	1.460	0.30 (0.25)	0.83	4692.6	50700.00
6	15140.70	25.13	1.384	0.30 (0.25)	0.83	5160.2	210.00
7	15365.27	26.27	1.352	0.30 (0.25)	0.83	5427.1	50600.00
8	15540.79	27.08	1.330	0.30 (0.25)	0.83	5634.0	410.00
9	15801.39	28.29	1.296	0.30 (0.25)	0.83	5942.4	200.00
10	15945.19	28.97	1.277	0.30 (0.25)	0.83	6115.3	230.00
11	16072.74	29.61	1.259	0.30 (0.25)	0.83	6272.8	50500.00
12	16145.01	30.11	1.246	0.30 (0.25)	0.83	6394.3	220.50
13	16285.90	31.01	1.230	0.30 (0.25)	0.83	6607.1	110.00
14	16665.46	33.39	1.186	0.30 (0.25)	0.83	7218.7	100.00
15	16871.35	34.76	1.161	0.30 (0.25)	0.83	7562.2	100.00
16	17043.39	35.98	1.139	0.30 (0.25)	0.84	7860.3	110.00
17	17340.78	38.05	1.102	0.30 (0.25)	0.84	8491.9	130.00
18	18744.09	47.77	0.974	0.30 (0.26)	0.85	11441.9	12741.00
19	19556.38	53.09	0.921	0.30 (0.26)	0.87	13521.6	20100.00
20	20000.08	56.19	0.894	0.30 (0.26)	0.87	14671.6	600.00
21	20406.35	59.54	0.864	0.30 (0.26)	0.88	16046.1	13600.00
22	20479.92	60.14	0.859	0.30 (0.26)	0.88	16289.2	31100.00
23	22179.17	73.54	0.793	0.30 (0.27)	0.90	21775.8	40100.00
24	23246.73	82.55	0.749	0.30 (0.27)	0.91	25401.5	11801.00
25	24924.70	98.93	0.687	0.30 (0.28)	0.93	33163.8	11910.00
26	25051.73	100.25	0.683	0.30 (0.28)	0.93	33839.1	13510.00
27	25359.86	103.56	0.674	0.30 (0.28)	0.93	35469.9	11000.00
28	26594.20	111.45	0.651	0.30 (0.28)	0.94	40663.7	13500.00
29	26886.94	113.35	0.646	0.30 (0.28)	0.94	41900.2	11330.00
30	27549.67	121.45	0.625	0.30 (0.28)	0.95	46987.3	10630.00
31	27337.77	127.04	0.615	0.30 (0.28)	0.95	49577.2	12330.00
32	27113.37	133.67	0.604	0.30 (0.28)	0.95	52719.6	11600.00
33	26763.98	139.48	0.594	0.30 (0.29)	0.95	54954.0	11111.00
34	26372.33	145.65	0.583	0.30 (0.29)	0.95	56887.8	12201.00
35	25488.86	154.67	0.568	0.30 (0.29)	0.95	58976.1	12231.00
36	24683.76	162.24	0.555	0.30 (0.29)	0.95	60387.6	10400.00
37	24089.59	173.39	0.536	0.30 (0.29)	0.96	62008.4	10320.00
38	23652.36	178.19	0.528	0.30 (0.29)	0.96	62233.8	10210.00
39	23190.98	183.04	0.523	0.30 (0.29)	0.96	62396.2	12000.00
40	20427.17	212.43	0.500	0.30 (0.29)	0.96	63013.2	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	13296.11	16.30	1.789	0.30 (0.25)	0.85	3137.2	429.00
2	13961.46	17.87	1.705	0.30 (0.25)	0.84	3579.8	425.00
3	14036.19	18.14	1.690	0.30 (0.25)	0.84	3654.4	400.00
4	14254.65	19.75	1.603	0.30 (0.25)	0.84	4091.3	300.00
5	15065.43	23.23	1.460	0.30 (0.25)	0.84	5032.1	50700.00

6	15465.14	25.13	1.384	0.30	(0.25)	0.84	5527.6	210.00
7	15694.47	26.27	1.352	0.30	(0.25)	0.84	5811.2	50600.00
8	15872.86	27.08	1.330	0.30	(0.25)	0.84	6030.0	410.00
9	16136.94	28.29	1.296	0.30	(0.25)	0.84	6356.0	200.00
10	16282.28	28.97	1.277	0.30	(0.25)	0.84	6538.8	230.00
11	16410.98	29.61	1.259	0.30	(0.25)	0.84	6705.7	50500.00
12	16484.37	30.11	1.246	0.30	(0.25)	0.84	6834.6	220.50
13	16629.35	31.01	1.230	0.30	(0.25)	0.84	7060.4	110.00
14	17018.13	33.39	1.186	0.30	(0.25)	0.84	7706.8	100.00
15	17228.23	34.76	1.161	0.30	(0.25)	0.84	8070.4	100.00
16	17403.33	35.98	1.139	0.30	(0.25)	0.84	8386.3	110.00
17	17704.44	38.05	1.102	0.30	(0.25)	0.85	9048.2	130.00
18	18050.68	40.42	1.061	0.30	(0.26)	0.85	9803.9	10100.00
19	19069.49	47.77	0.974	0.30	(0.26)	0.86	12032.9	12741.00
20	19856.15	53.09	0.921	0.30	(0.26)	0.87	14112.6	20100.00
21	20286.79	56.19	0.894	0.30	(0.26)	0.88	15262.6	600.00
22	20678.96	59.54	0.864	0.30	(0.27)	0.88	16637.1	13600.00
23	20750.25	60.14	0.859	0.30	(0.27)	0.89	16880.2	31100.00
24	22417.84	73.54	0.793	0.30	(0.27)	0.91	22366.8	40100.00
25	23464.11	82.55	0.749	0.30	(0.27)	0.92	25992.5	11801.00
26	25112.34	98.93	0.687	0.30	(0.28)	0.93	33754.8	11910.00
27	25237.58	100.25	0.683	0.30	(0.28)	0.93	34430.1	13510.00
28	25541.22	103.56	0.674	0.30	(0.28)	0.93	36060.9	11000.00
29	26764.85	111.45	0.651	0.30	(0.28)	0.94	41254.7	13500.00
30	27055.01	113.35	0.646	0.30	(0.28)	0.94	42491.2	11330.00
31	27707.53	121.45	0.625	0.30	(0.28)	0.95	47578.3	10630.00
32	27491.08	127.04	0.615	0.30	(0.28)	0.95	50168.2	12330.00
33	27261.27	133.67	0.604	0.30	(0.29)	0.95	53310.6	11600.00
34	26907.16	139.48	0.594	0.30	(0.29)	0.95	55545.0	11111.00
35	26510.48	145.65	0.583	0.30	(0.29)	0.95	57478.8	12201.00
36	25619.66	154.67	0.568	0.30	(0.29)	0.95	59567.1	12231.00
37	24808.39	162.24	0.555	0.30	(0.29)	0.95	60978.6	10400.00
38	24205.15	173.39	0.536	0.30	(0.29)	0.96	62599.4	10320.00
39	23764.01	178.19	0.528	0.30	(0.29)	0.96	62824.8	10210.00
40	23300.03	183.04	0.523	0.30	(0.29)	0.96	62987.2	12000.00
41	20525.35	212.43	0.500	0.30	(0.29)	0.96	63604.2	10100.00

TOTAL AREA (ACRES) = 63604.2

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 27707.53 Tc(MIN.) = 121.446
EFFECTIVE AREA(ACRES) = 47578.31 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 63604.2
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 = 56

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

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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) = 6.30
CHANNEL FLOW THRU SUBAREA(CFS) = 27707.53
FLOW VELOCITY(FEET/SEC.) = 19.01 FLOW DEPTH(FEET) = 6.30

TRAVEL TIME(MIN.) = 0.23 Tc(MIN.) = 121.67
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 <<<<<

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PEAK FLOWRATE TABLE FILE NAME: 0610508V.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	143.78	21.90	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	13296.11	16.59	1.773	0.30(0.25)	0.85	3137.2	429.00
2	13961.46	18.16	1.689	0.30(0.25)	0.84	3579.8	425.00
3	14036.19	18.43	1.674	0.30(0.25)	0.84	3654.4	400.00
4	14254.65	20.04	1.588	0.30(0.25)	0.84	4091.3	300.00
5	15065.43	23.51	1.448	0.30(0.25)	0.84	5032.1	50700.00
6	15465.14	25.41	1.376	0.30(0.25)	0.84	5527.6	210.00
7	15694.47	26.55	1.345	0.30(0.25)	0.84	5811.2	50600.00
8	15872.86	27.36	1.322	0.30(0.25)	0.84	6030.0	410.00
9	16136.94	28.56	1.288	0.30(0.25)	0.84	6356.0	200.00
10	16282.28	29.25	1.269	0.30(0.25)	0.84	6538.8	230.00
11	16410.98	29.89	1.251	0.30(0.25)	0.84	6705.7	50500.00
12	16484.37	30.39	1.241	0.30(0.25)	0.84	6834.6	220.50
13	16629.35	31.28	1.225	0.30(0.25)	0.84	7060.4	110.00
14	17018.13	33.66	1.181	0.30(0.25)	0.84	7706.8	100.00
15	17228.23	35.03	1.157	0.30(0.25)	0.84	8070.4	100.00
16	17403.33	36.25	1.134	0.30(0.25)	0.84	8386.3	110.00
17	17704.44	38.31	1.097	0.30(0.25)	0.85	9048.2	130.00
18	18050.68	40.69	1.058	0.30(0.26)	0.85	9803.9	10100.00
19	19069.49	48.03	0.971	0.30(0.26)	0.86	12032.9	12741.00
20	19856.15	53.35	0.919	0.30(0.26)	0.87	14112.6	20100.00
21	20286.79	56.45	0.891	0.30(0.26)	0.88	15262.6	600.00
22	20678.96	59.79	0.862	0.30(0.27)	0.88	16637.1	13600.00
23	20750.25	60.39	0.858	0.30(0.27)	0.89	16880.2	31100.00
24	22417.84	73.78	0.792	0.30(0.27)	0.91	22366.8	40100.00
25	23464.11	82.79	0.748	0.30(0.27)	0.92	25992.5	11801.00
26	25112.34	99.16	0.686	0.30(0.28)	0.93	33754.8	11910.00
27	25237.58	100.48	0.682	0.30(0.28)	0.93	34430.1	13510.00
28	25541.22	103.79	0.673	0.30(0.28)	0.93	36060.9	11000.00

29	26764.85	111.68	0.651	0.30	(0.28)	0.94	41254.7	13500.00
30	27055.01	113.58	0.645	0.30	(0.28)	0.94	42491.2	11330.00
31	27707.53	121.67	0.624	0.30	(0.28)	0.95	47578.3	10630.00
32	27491.08	127.27	0.615	0.30	(0.28)	0.95	50168.2	12330.00
33	27261.27	133.90	0.603	0.30	(0.29)	0.95	53310.6	11600.00
34	26907.16	139.71	0.593	0.30	(0.29)	0.95	55545.0	11111.00
35	26510.48	145.88	0.583	0.30	(0.29)	0.95	57478.8	12201.00
36	25619.66	154.90	0.568	0.30	(0.29)	0.95	59567.1	12231.00
37	24808.39	162.48	0.555	0.30	(0.29)	0.95	60978.6	10400.00
38	24205.15	173.63	0.536	0.30	(0.29)	0.96	62599.4	10320.00
39	23764.01	178.43	0.528	0.30	(0.29)	0.96	62824.8	10210.00
40	23300.03	183.29	0.522	0.30	(0.29)	0.96	62987.2	12000.00
41	20255.35	212.68	0.500	0.30	(0.29)	0.96	63604.2	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	143.78	21.90	1.513	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	13428.32	16.59	1.773	0.30 (0.25)	0.85	3236.6	429.00
2	14097.91	18.16	1.689	0.30 (0.25)	0.85	3688.7	425.00
3	14173.22	18.43	1.674	0.30 (0.25)	0.85	3764.9	400.00
4	14394.35	20.04	1.588	0.30 (0.25)	0.85	4211.4	300.00
5	14833.38	21.90	1.513	0.30 (0.25)	0.85	4727.3	50800.00
6	15201.54	23.51	1.448	0.30 (0.25)	0.84	5163.4	50700.00
7	15592.76	25.41	1.376	0.30 (0.25)	0.84	5658.9	210.00
8	15818.34	26.55	1.345	0.30 (0.25)	0.84	5942.5	50600.00
9	15994.05	27.36	1.322	0.30 (0.25)	0.84	6161.2	410.00
10	16254.14	28.56	1.288	0.30 (0.25)	0.84	6487.2	200.00
11	16397.22	29.25	1.269	0.30 (0.25)	0.84	6670.1	230.00
12	16523.81	29.89	1.251	0.30 (0.25)	0.84	6836.9	50500.00
13	16595.98	30.39	1.241	0.30 (0.25)	0.84	6965.8	220.50
14	16739.04	31.28	1.225	0.30 (0.25)	0.84	7191.7	110.00
15	17122.71	33.66	1.181	0.30 (0.25)	0.84	7838.0	100.00
16	17329.86	35.03	1.157	0.30 (0.25)	0.85	8201.6	100.00
17	17502.34	36.25	1.134	0.30 (0.25)	0.85	8517.6	110.00
18	17799.00	38.31	1.097	0.30 (0.25)	0.85	9179.5	130.00
19	18140.66	40.69	1.058	0.30 (0.26)	0.85	9935.1	10100.00
20	19149.22	48.03	0.971	0.30 (0.26)	0.86	12164.2	12741.00
21	19929.66	53.35	0.919	0.30 (0.26)	0.87	14243.8	20100.00
22	20357.09	56.45	0.891	0.30 (0.26)	0.88	15393.9	600.00
23	20745.77	59.79	0.862	0.30 (0.27)	0.89	16768.4	13600.00
24	20816.62	60.39	0.858	0.30 (0.27)	0.89	17011.5	31100.00
25	22476.40	73.78	0.792	0.30 (0.27)	0.91	22498.1	40100.00
26	23517.41	82.79	0.748	0.30 (0.27)	0.92	26123.8	11801.00
27	25158.38	99.16	0.686	0.30 (0.28)	0.93	33886.1	11910.00
28	25283.17	100.48	0.682	0.30 (0.28)	0.93	34561.4	13510.00
29	25585.70	103.79	0.673	0.30 (0.28)	0.93	36192.1	11000.00
30	26806.69	111.68	0.651	0.30 (0.28)	0.94	41386.0	13500.00
31	27096.22	113.58	0.645	0.30 (0.28)	0.94	42622.4	11330.00
32	27746.26	121.67	0.624	0.30 (0.28)	0.95	47709.6	10630.00
33	27528.68	127.27	0.615	0.30 (0.28)	0.95	50299.4	12330.00
34	27297.54	133.90	0.603	0.30 (0.29)	0.95	53441.9	11600.00

35	26942.26	139.71	0.593	0.30	(0.29)	0.95	55676.2	11111.00
36	26544.34	145.88	0.583	0.30	(0.29)	0.95	57610.1	12201.00
37	25651.71	154.90	0.568	0.30	(0.29)	0.95	59698.3	12231.00
38	24838.92	162.48	0.555	0.30	(0.29)	0.95	61109.9	10400.00
39	24233.44	173.63	0.536	0.30	(0.29)	0.96	62730.6	10320.00
40	23791.33	178.43	0.528	0.30	(0.29)	0.96	62956.1	10210.00
41	23326.73	183.29	0.522	0.30	(0.29)	0.96	63118.5	12000.00
42	20549.38	212.68	0.500	0.30	(0.29)	0.96	63735.5	10100.00

TOTAL AREA (ACRES) = 63735.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) =	27746.26	Tc (MIN.) =	121.674
EFFECTIVE AREA (ACRES) =	47709.57	AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30	AREA-AVERAGED Ap =	0.94
TOTAL AREA (ACRES) =	63735.5		
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13700.00 =	124551.97 FEET.		

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) =	63735.5	TC (MIN.) =	121.67
EFFECTIVE AREA (ACRES) =	47709.57	AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30	AREA-AVERAGED Ap =	0.946
PEAK FLOW RATE (CFS) =	27746.26		

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13428.32	16.59	1.773	0.30 (0.25)	0.85	3236.6	429.00
2	14097.91	18.16	1.689	0.30 (0.25)	0.85	3688.7	425.00
3	14173.22	18.43	1.674	0.30 (0.25)	0.85	3764.9	400.00
4	14394.35	20.04	1.588	0.30 (0.25)	0.85	4211.4	300.00
5	14833.38	21.90	1.513	0.30 (0.25)	0.85	4727.3	50800.00
6	15201.54	23.51	1.448	0.30 (0.25)	0.84	5163.4	50700.00
7	15592.76	25.41	1.376	0.30 (0.25)	0.84	5658.9	210.00
8	15818.34	26.55	1.345	0.30 (0.25)	0.84	5942.5	50600.00
9	15994.05	27.36	1.322	0.30 (0.25)	0.84	6161.2	410.00
10	16254.14	28.56	1.288	0.30 (0.25)	0.84	6487.2	200.00
11	16397.22	29.25	1.269	0.30 (0.25)	0.84	6670.1	230.00
12	16523.81	29.89	1.251	0.30 (0.25)	0.84	6836.9	50500.00
13	16595.98	30.39	1.241	0.30 (0.25)	0.84	6965.8	220.50
14	16739.04	31.28	1.225	0.30 (0.25)	0.84	7191.7	110.00
15	17122.71	33.66	1.181	0.30 (0.25)	0.84	7838.0	100.00
16	17329.86	35.03	1.157	0.30 (0.25)	0.85	8201.6	100.00
17	17502.34	36.25	1.134	0.30 (0.25)	0.85	8517.6	110.00
18	17799.00	38.31	1.097	0.30 (0.25)	0.85	9179.5	130.00
19	18140.66	40.69	1.058	0.30 (0.26)	0.85	9935.1	10100.00
20	19149.22	48.03	0.971	0.30 (0.26)	0.86	12164.2	12741.00
21	19929.66	53.35	0.919	0.30 (0.26)	0.87	14243.8	20100.00
22	20357.09	56.45	0.891	0.30 (0.26)	0.88	15393.9	600.00
23	20745.77	59.79	0.862	0.30 (0.27)	0.89	16768.4	13600.00
24	20816.62	60.39	0.858	0.30 (0.27)	0.89	17011.5	31100.00
25	22476.40	73.78	0.792	0.30 (0.27)	0.91	22498.1	40100.00
26	23517.41	82.79	0.748	0.30 (0.27)	0.92	26123.8	11801.00
27	25158.38	99.16	0.686	0.30 (0.28)	0.93	33886.1	11910.00
28	25283.17	100.48	0.682	0.30 (0.28)	0.93	34561.4	13510.00
29	25585.70	103.79	0.673	0.30 (0.28)	0.93	36192.1	11000.00
30	26806.69	111.68	0.651	0.30 (0.28)	0.94	41386.0	13500.00
31	27096.22	113.58	0.645	0.30 (0.28)	0.94	42622.4	11330.00
32	27746.26	121.67	0.624	0.30 (0.28)	0.95	47709.6	10630.00

33	27528.68	127.27	0.615	0.30 (0.28)	0.95	50299.4	12330.00
34	27297.54	133.90	0.603	0.30 (0.29)	0.95	53441.9	11600.00
35	26942.26	139.71	0.593	0.30 (0.29)	0.95	55676.2	11111.00
36	26544.34	145.88	0.583	0.30 (0.29)	0.95	57610.1	12201.00
37	25651.71	154.90	0.568	0.30 (0.29)	0.95	59698.3	12231.00
38	24838.92	162.48	0.555	0.30 (0.29)	0.95	61109.9	10400.00
39	24233.44	173.63	0.536	0.30 (0.29)	0.96	62730.6	10320.00
40	23791.33	178.43	0.528	0.30 (0.29)	0.96	62956.1	10210.00
41	23326.73	183.29	0.522	0.30 (0.29)	0.96	63118.5	12000.00
42	20549.38	212.68	0.500	0.30 (0.29)	0.96	63735.5	10100.00

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END OF RATIONAL METHOD ANALYSIS

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
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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 S36- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV APRIL 2019 ROKAMOTO *

FILE NAME: RI10EV36.DAT
TIME/DATE OF STUDY: 07:04 04/17/2019

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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; 3.720
- 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	65	11.00

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 6.29
TOTAL AREA(ACRES) = 3.39 PEAK FLOW RATE(CFS) = 6.29

FLOW PROCESS FROM NODE 13600.50 TO NODE 13601.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 744.80 DOWNSTREAM(FEET) = 707.32
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.30 CHANNEL SLOPE = 0.0896
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.35
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.101
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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.

*****
FLOW PROCESS FROM NODE 13620.00 TO NODE 13620.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====
MAINLINE Tc(MIN.) = 62.14
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.844
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp      Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      1.44    0.30    1.000    65
NATURAL FAIR COVER
"WOODLAND,GRASS"      B      0.01    0.30    1.000    65
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 1.45 SUBAREA RUNOFF(CFS) = 0.71
EFFECTIVE AREA(ACRES) = 1537.43 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1607.8 PEAK FLOW RATE(CFS) = 775.06

*****
FLOW PROCESS FROM NODE 13603.00 TO NODE 13620.00 IS CODE = 11
-----
>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1         775.06  62.14  0.844  0.30( 0.28) 0.95    1537.4  13510.00
  2         737.52  72.51  0.793  0.30( 0.28) 0.95    1607.8  13500.00
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13620.00 = 20677.72 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1         93.35  22.04  1.500  0.30( 0.30) 1.00    86.4    13600.00
LONGEST FLOWPATH FROM NODE 13600.00 TO NODE 13620.00 = 3732.03 FEET.

** PEAK FLOW RATE TABLE **
STREAM      Q      Tc      Intensity  Fp(Fm)      Ap      Ae      HEADWATER
NUMBER      (CFS)    (MIN.)  (INCH/HR)  (INCH/HR)  (ACRES)  NODE
  1         690.20  22.04  1.500  0.30( 0.29) 0.96    631.7   13600.00

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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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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.

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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER 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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	853.43	17.90	1.695	0.30(0.28)	0.94	683.2	20100.00
2	879.44	24.27	1.411	0.30(0.28)	0.95	878.4	13600.00
3	919.88	64.26	0.834	0.30(0.28)	0.95	1870.5	13510.00
4	866.53	74.67	0.783	0.30(0.28)	0.94	1940.9	13500.00
TOTAL AREA(ACRES) =		1940.9					

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 919.88 Tc(MIN.) = 64.255
EFFECTIVE AREA(ACRES) = 1870.51 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
TOTAL AREA(ACRES) = 1940.9

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

FLOW PROCESS FROM NODE 13640.00 TO NODE 13641.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<

ELEVATION DATA: UPSTREAM(FEET) = 489.00 DOWNSTREAM(FEET) = 436.89
CHANNEL LENGTH THRU SUBAREA(FEET) = 2994.52 CHANNEL SLOPE = 0.0174
GIVEN CHANNEL BASE(FEET) = 30.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 3.000 MANNING'S FACTOR = 0.040

*ESTIMATED CHANNEL HEIGHT(FEET) = 2.85

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.805

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 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.

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.12

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.805

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 47.60

EFFECTIVE AREA(ACRES) = 2042.79 AREA-AVERAGED Fm(INCH/HR) = 0.29

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95

TOTAL AREA(ACRES) = 2113.1 PEAK FLOW RATE(CFS) = 955.58

FLOW PROCESS FROM NODE 13641.00 TO NODE 13641.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 70.12

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.805

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 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.

FLOW PROCESS FROM NODE 13642.00 TO NODE 13642.00 IS CODE = 81

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

MAINLINE Tc(MIN.) = 75.80
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.777
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 9.95 0.30 1.000 -
USER-DEFINED - 10.02 0.30 1.000 -
USER-DEFINED - 4.45 0.30 1.000 -
USER-DEFINED - 179.37 0.30 1.000 -
USER-DEFINED - 11.47 0.30 1.000 -
USER-DEFINED - 0.17 0.30 0.850 -
SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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	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/ 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) = 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/ 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) = 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.

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/ 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) = 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
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.

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/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 0.11 0.30 1.000 -
 USER-DEFINED - 0.77 0.30 1.000 -
 USER-DEFINED - 0.22 0.30 1.000 -
 USER-DEFINED - 2.69 0.30 1.000 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 3.79 SUBAREA RUNOFF (CFS) = 2.77
 EFFECTIVE AREA (ACRES) = 1858.75 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.98
 TOTAL AREA (ACRES) = 3116.4 PEAK FLOW RATE (CFS) = 1370.44

 FLOW PROCESS FROM NODE 13643.00 TO NODE 13660.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 13659.00 TO NODE 13659.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 2P10EVAA.DNA
 MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	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 (DECIMAL)	Ae (ACRES)	HEADWATER NODE
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STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap (DECIMAL)	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 (DECIMAL)	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 (DECIMAL)	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 PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA (ACRES) = 24.40 SUBAREA RUNOFF (CFS) = 17.69
 EFFECTIVE AREA (ACRES) = 2104.25 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA (ACRES) = 3361.9 PEAK FLOW RATE (CFS) = 1598.25
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13660.00 TO NODE 13660.00 IS CODE = 81

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

=====

MAINLINE Tc (MIN.) = 37.56
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.106

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 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/ 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) = 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.

 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/ 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) = 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/ 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) = 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

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FLOW PROCESS FROM NODE 13660.00 TO NODE 13680.00 IS CODE = 12
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>>>>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.) = 39.28
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         5.29   0.30   1.000 -
USER-DEFINED        -        31.25   0.30   1.000 -
USER-DEFINED        -         0.22   0.30   1.000 -
USER-DEFINED        -         6.26   0.30   1.000 -
USER-DEFINED        -         0.07   0.30   1.000 -
USER-DEFINED        -         0.22   0.30   1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 43.31   SUBAREA RUNOFF(CFS) = 30.18
EFFECTIVE AREA(ACRES) = 2257.77   AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3515.4   PEAK FLOW RATE(CFS) = 1619.86
-----
*****
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
-----
MAINLINE Tc(MIN.) = 39.28
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         2.47   0.30   0.850 -
USER-DEFINED        -         3.06   0.30   0.850 -
USER-DEFINED        -        17.76   0.30   0.500 -
USER-DEFINED        -         7.31   0.30   0.500 -
USER-DEFINED        -         0.34   0.30   1.000 -
USER-DEFINED        -         8.22   0.30   1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.659
SUBAREA AREA(ACRES) = 39.16   SUBAREA RUNOFF(CFS) = 30.89
EFFECTIVE AREA(ACRES) = 2296.93   AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3554.6   PEAK FLOW RATE(CFS) = 1650.76
-----
*****
FLOW PROCESS FROM NODE 13680.00 TO NODE 13680.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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*****
MAINLINE Tc(MIN.) = 39.28
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.074
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/   SCS SOIL   AREA   Fp   Ap   SCS
LAND USE            GROUP   (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -         0.53   0.30   1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 0.53   SUBAREA RUNOFF(CFS) = 0.37
EFFECTIVE AREA(ACRES) = 2297.46   AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3555.1   PEAK FLOW RATE(CFS) = 1651.13
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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 -
USER-DEFINED        -         0.52   0.30   1.000 -
USER-DEFINED        -         3.61   0.30   1.000 -
USER-DEFINED        -         0.67   0.30   1.000 -
USER-DEFINED        -         1.37   0.30   1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1654.87
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.87
AVERAGE FLOW DEPTH(FEET) = 3.99   TRAVEL TIME(MIN.) = 4.83
Tc(MIN.) = 44.11
SUBAREA AREA(ACRES) = 11.67   SUBAREA RUNOFF(CFS) = 7.49
EFFECTIVE AREA(ACRES) = 2309.13   AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30   AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3566.8   PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE
GIVEN CHANNEL BASE(FEET) = 30.00   CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 3.000   MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 3.99
-----
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.99   FLOW VELOCITY(FEET/SEC.) = 9.87
LONGEST FLOWPATH FROM NODE 13500.00 TO NODE 13682.00 = 37051.30 FEET.
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*****
FLOW PROCESS FROM NODE 13682.00 TO NODE 13682.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
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=====
MAINLINE Tc(MIN.) = 44.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp        Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED          -        6.90     0.30     1.000     -
USER-DEFINED          -       23.04     0.30     1.000     -
USER-DEFINED          -        1.18     0.30     1.000     -
USER-DEFINED          -        1.56     0.30     1.000     -
USER-DEFINED          -       53.20     0.30     1.000     -
USER-DEFINED          -        2.08     0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 87.96      SUBAREA RUNOFF(CFS) = 56.44
EFFECTIVE AREA(ACRES) = 2397.09  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3654.7      PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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<<<<
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=====
MAINLINE Tc(MIN.) = 44.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp        Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED          -        0.01     0.30     1.000     -
USER-DEFINED          -        0.18     0.30     1.000     -
USER-DEFINED          -        0.38     0.30     1.000     -
USER-DEFINED          -        0.22     0.30     1.000     -
USER-DEFINED          -        7.73     0.30     1.000     -
USER-DEFINED          -        4.37     0.30     1.000     -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 12.89      SUBAREA RUNOFF(CFS) = 8.27
EFFECTIVE AREA(ACRES) = 2409.98  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3667.6      PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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<<<<
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=====
MAINLINE Tc(MIN.) = 44.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp        Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
AGRICULTURAL POOR COVER
"FALLOW"              B        2.57     0.30     1.000     86
AGRICULTURAL POOR COVER
"FALLOW"              B        1.97     0.30     1.000     86

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NATURAL FAIR COVER
"GRASS"                B        1.00     0.30     1.000     69
NATURAL FAIR COVER
"GRASS"                B        2.98     0.30     1.000     69
NATURAL FAIR COVER
"OPEN BRUSH"          B        2.39     0.30     1.000     66
NATURAL FAIR COVER
"OPEN BRUSH"          B        1.67     0.30     1.000     66
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA AREA(ACRES) = 12.58      SUBAREA RUNOFF(CFS) = 8.07
EFFECTIVE AREA(ACRES) = 2422.56  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3680.2      PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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<<<<
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=====
MAINLINE Tc(MIN.) = 44.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp        Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
NATURAL FAIR COVER
"OPEN BRUSH"          B        0.44     0.30     1.000     66
PUBLIC PARK            B        2.65     0.30     0.850     56
PUBLIC PARK            B        1.16     0.30     0.850     56
RESIDENTIAL
"5-7 DWELLINGS/ACRE" B        0.47     0.30     0.500     56
RESIDENTIAL
"5-7 DWELLINGS/ACRE" B        0.25     0.30     0.500     56
AGRICULTURAL POOR COVER
"ROW CROPS,STRAIGHT ROW" B 20.24     0.30     1.000     81
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.963
SUBAREA AREA(ACRES) = 25.21      SUBAREA RUNOFF(CFS) = 16.43
EFFECTIVE AREA(ACRES) = 2447.77  AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30  AREA-AVERAGED Ap = 0.92
TOTAL AREA(ACRES) = 3705.4      PEAK FLOW RATE(CFS) = 1651.13
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

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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<<<<
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=====
MAINLINE Tc(MIN.) = 44.11
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.013
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/      SCS SOIL  AREA      Fp        Ap      SCS
LAND USE              GROUP  (ACRES)  (INCH/HR)  (DECIMAL)  CN
USER-DEFINED          -        7.08     0.30     1.000     -
USER-DEFINED          -        6.75     0.30     1.000     -
USER-DEFINED          -        0.02     0.30     1.000     -
USER-DEFINED          -        0.93     0.30     1.000     -

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SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA AREA(ACRES) = 14.78 SUBAREA RUNOFF(CFS) = 9.48
 EFFECTIVE AREA(ACRES) = 2462.55 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.92
 TOTAL AREA(ACRES) = 3720.2 PEAK FLOW RATE(CFS) = 1651.13
 NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

 FLOW PROCESS FROM NODE 13682.00 TO NODE 13683.00 IS CODE = 56

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

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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.

 FLOW PROCESS FROM NODE 13683.00 TO NODE 13683.00 IS CODE = 81

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

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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

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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PVIOUS 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.

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):

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 groups and 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) = 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.

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 **

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 for different stream segments.

END OF RATIONAL METHOD ANALYSIS

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 S37- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV37.DAT
TIME/DATE OF STUDY: 10:13 06/14/2019

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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; 3.709
- 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- / 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

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

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PEAK FLOWRATE TABLE FILE NAME: RI10EV34.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16739.04	31.28	0.30 (0.25)	0.84	7191.7	110.00
2	18140.66	40.69	0.30 (0.26)	0.85	9935.1	10100.00
3	19149.22	48.03	0.30 (0.26)	0.86	12164.2	12741.00
4	20357.09	56.45	0.30 (0.26)	0.88	15393.9	600.00
5	20816.62	60.39	0.30 (0.27)	0.89	17011.5	31100.00
6	22476.40	73.78	0.30 (0.27)	0.91	22498.1	40100.00
7	23517.41	82.79	0.30 (0.27)	0.92	26123.8	11801.00
8	25585.70	103.79	0.30 (0.28)	0.93	36192.1	11000.00
9	27096.22	113.58	0.30 (0.28)	0.94	42622.4	11330.00
10	27746.26	121.67	0.30 (0.28)	0.95	47709.6	10630.00
11	27528.68	127.27	0.30 (0.28)	0.95	50299.4	12330.00
12	27297.54	133.90	0.30 (0.29)	0.95	53441.9	11600.00
13	26942.26	139.71	0.30 (0.29)	0.95	55676.2	11111.00
14	26544.34	145.88	0.30 (0.29)	0.95	57610.1	12201.00
15	25651.71	154.90	0.30 (0.29)	0.95	59698.3	12231.00
16	24838.92	162.48	0.30 (0.29)	0.95	61109.9	10400.00
17	24233.44	173.63	0.30 (0.29)	0.96	62730.6	10320.00
18	23791.33	178.43	0.30 (0.29)	0.96	62956.1	10210.00
19	23326.73	183.29	0.30 (0.29)	0.96	63118.5	12000.00
20	20549.38	212.68	0.30 (0.29)	0.96	63735.5	10100.00
TOTAL AREA (ACRES) =						63735.5

FLOW PROCESS FROM NODE 13700.00 TO NODE 13700.00 IS CODE = 14.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	16739.04	31.28	0.30 (0.25)	0.84	7191.7	110.00
2	18140.66	40.69	0.30 (0.26)	0.85	9935.1	10100.00
3	19149.22	48.03	0.30 (0.26)	0.86	12164.2	12741.00
4	20357.09	56.45	0.30 (0.26)	0.88	15393.9	600.00
5	20816.62	60.39	0.30 (0.27)	0.89	17011.5	31100.00
6	22476.40	73.78	0.30 (0.27)	0.91	22498.1	40100.00
7	23517.41	82.79	0.30 (0.27)	0.92	26123.8	11801.00
8	25585.70	103.79	0.30 (0.28)	0.93	36192.1	11000.00
9	27096.22	113.58	0.30 (0.28)	0.94	42622.4	11330.00
10	27746.26	121.67	0.30 (0.28)	0.95	47709.6	10630.00
11	27528.68	127.27	0.30 (0.28)	0.95	50299.4	12330.00
12	27297.54	133.90	0.30 (0.29)	0.95	53441.9	11600.00
13	26942.26	139.71	0.30 (0.29)	0.95	55676.2	11111.00

14	26544.34	145.88	0.30	(0.29)	0.95	57610.1	12201.00
15	25651.71	154.90	0.30	(0.29)	0.95	59698.3	12231.00
16	24838.92	162.48	0.30	(0.29)	0.95	61109.9	10400.00
17	24233.44	173.63	0.30	(0.29)	0.96	62730.6	10320.00
18	23791.33	178.43	0.30	(0.29)	0.96	62956.1	10210.00
19	23326.73	183.29	0.30	(0.29)	0.96	63118.5	12000.00
20	20549.38	212.68	0.30	(0.29)	0.96	63735.5	10100.00
TOTAL AREA (ACRES) =							63735.5

FLOW PROCESS FROM NODE 13700.00 TO NODE 13720.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 170.00 DOWNSTREAM(FEET) = 165.51
 CHANNEL LENGTH THRU SUBAREA(FEET) = 1891.83 CHANNEL SLOPE = 0.0024
 GIVEN CHANNEL BASE(FEET) = 200.00 CHANNEL FREEBOARD(FEET) = 0.0
 "Z" FACTOR = 5.000 MANNING'S FACTOR = 0.030
 *ESTIMATED CHANNEL HEIGHT(FEET) = 10.68
 CHANNEL FLOW THRU SUBAREA(CFS) = 27746.26
 FLOW VELOCITY(FEET/SEC.) = 10.25 FLOW DEPTH(FEET) = 10.68
 TRAVEL TIME(MIN.) = 3.07 Tc(MIN.) = 124.75
 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: 0506102E.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	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
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	16739.04	34.91	1.153	0.30 (0.25)	0.84	7191.7	110.00
2	18140.66	44.22	1.010	0.30 (0.26)	0.85	9935.1	10100.00
3	19149.22	51.50	0.929	0.30 (0.26)	0.86	12164.2	12741.00

4	20357.09	59.85	0.855	0.30 (0.26)	0.88	15393.9	600.00
5	20816.62	63.77	0.835	0.30 (0.27)	0.89	17011.5	31100.00
6	22476.40	77.07	0.770	0.30 (0.27)	0.91	22498.1	40100.00
7	23517.41	86.03	0.726	0.30 (0.27)	0.92	26123.8	11801.00
8	25585.70	106.95	0.657	0.30 (0.28)	0.93	36192.1	11000.00
9	27096.22	116.67	0.630	0.30 (0.28)	0.94	42622.4	11330.00
10	27746.26	124.75	0.612	0.30 (0.28)	0.95	47709.6	10630.00
11	27528.68	130.35	0.603	0.30 (0.28)	0.95	50299.4	12330.00
12	27297.54	136.99	0.591	0.30 (0.29)	0.95	53441.9	11600.00
13	26942.26	142.81	0.582	0.30 (0.29)	0.95	55676.2	11111.00
14	26544.34	149.00	0.571	0.30 (0.29)	0.95	57610.1	12201.00
15	25651.71	158.05	0.556	0.30 (0.29)	0.95	59698.3	12231.00
16	24838.92	165.67	0.543	0.30 (0.29)	0.95	61109.9	10400.00
17	24233.44	176.84	0.524	0.30 (0.29)	0.96	62730.6	10320.00
18	23791.33	181.66	0.518	0.30 (0.29)	0.96	62956.1	10210.00
19	23326.73	186.54	0.514	0.30 (0.29)	0.96	63118.5	12000.00
20	20549.38	216.07	0.491	0.30 (0.29)	0.96	63735.5	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 NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13401.29	16.06	1.791	0.30 (0.26)	0.85	3503.6	10230.00
2	15272.50	25.14	1.377	0.30 (0.25)	0.85	5420.6	10250.00
3	15340.91	25.45	1.369	0.30 (0.25)	0.85	5485.6	10200.00
4	15966.30	29.41	1.259	0.30 (0.25)	0.85	6305.8	10220.00
5	16918.11	34.91	1.153	0.30 (0.25)	0.85	7438.0	110.00
6	18290.19	44.22	1.010	0.30 (0.26)	0.86	10181.4	10100.00
7	19281.95	51.50	0.929	0.30 (0.26)	0.86	12410.5	12741.00
8	20474.65	59.85	0.855	0.30 (0.26)	0.88	15640.1	600.00
9	20930.06	63.77	0.835	0.30 (0.27)	0.89	17257.8	31100.00
10	22576.29	77.07	0.770	0.30 (0.27)	0.91	22744.3	40100.00
11	23608.18	86.03	0.726	0.30 (0.27)	0.92	26370.1	11801.00
12	25662.39	106.95	0.657	0.30 (0.28)	0.93	36438.4	11000.00
13	27167.15	116.67	0.630	0.30 (0.28)	0.94	42868.7	11330.00
14	27813.56	124.75	0.612	0.30 (0.28)	0.95	47955.8	10630.00
15	27594.04	130.35	0.603	0.30 (0.28)	0.95	50545.7	12330.00
16	27360.59	136.99	0.591	0.30 (0.29)	0.95	53688.1	11600.00
17	27003.29	142.81	0.582	0.30 (0.29)	0.95	55922.5	11111.00
18	26603.22	149.00	0.571	0.30 (0.29)	0.95	57856.3	12201.00
19	25707.44	158.05	0.556	0.30 (0.29)	0.95	59944.6	12231.00
20	24892.01	165.67	0.543	0.30 (0.29)	0.95	61356.1	10400.00
21	24282.64	176.84	0.524	0.30 (0.29)	0.96	62976.9	10320.00
22	23839.17	181.66	0.518	0.30 (0.29)	0.96	63202.4	10210.00
23	23373.78	186.54	0.514	0.30 (0.29)	0.96	63364.7	12000.00
24	20591.68	216.07	0.491	0.30 (0.29)	0.96	63981.7	10100.00
TOTAL AREA (ACRES) =							63981.7

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 27813.56 Tc(MIN.) = 124.749
 EFFECTIVE AREA(ACRES) = 47955.83 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.91
 TOTAL AREA(ACRES) = 63981.7
 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) = 10.97
 CHANNEL FLOW THRU SUBAREA(CFS) = 27813.56
 FLOW VELOCITY(FEET/SEC.) = 9.95 FLOW DEPTH(FEET) = 10.97
 TRAVEL TIME(MIN.) = 3.46 Tc(MIN.) = 128.21
 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: 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

>>>>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	13401.29	20.47	1.561	0.30(0.26)	0.85	3503.6	10230.00
2	15272.50	29.36	1.261	0.30(0.25)	0.85	5420.6	10250.00
3	15340.91	29.66	1.252	0.30(0.25)	0.85	5485.6	10200.00
4	15966.30	33.56	1.178	0.30(0.25)	0.85	6305.8	10220.00
5	16918.11	38.98	1.079	0.30(0.25)	0.85	7438.0	110.00

6	18290.19	48.19	0.963	0.30(0.26)	0.86	10181.4	10100.00
7	19281.95	55.41	0.894	0.30(0.26)	0.86	12410.5	12741.00
8	20474.65	63.67	0.836	0.30(0.26)	0.88	15640.1	600.00
9	20930.06	67.57	0.817	0.30(0.27)	0.89	17257.8	31100.00
10	22576.29	80.78	0.751	0.30(0.27)	0.91	22744.3	40100.00
11	23608.18	89.68	0.708	0.30(0.27)	0.92	26370.1	11801.00
12	25662.39	110.50	0.647	0.30(0.28)	0.93	36438.4	11000.00
13	27167.15	120.17	0.620	0.30(0.28)	0.94	42868.7	11330.00
14	27813.56	128.21	0.606	0.30(0.28)	0.95	47955.8	10630.00
15	27594.04	133.82	0.597	0.30(0.28)	0.95	50545.7	12330.00
16	27360.59	140.47	0.586	0.30(0.29)	0.95	53688.1	11600.00
17	27003.29	146.31	0.576	0.30(0.29)	0.95	55922.5	11111.00
18	26603.22	152.51	0.565	0.30(0.29)	0.95	57856.3	12201.00
19	25707.44	161.61	0.550	0.30(0.29)	0.95	59944.6	12231.00
20	24892.01	169.26	0.537	0.30(0.29)	0.95	61356.1	10400.00
21	24282.64	180.46	0.519	0.30(0.29)	0.96	62976.9	10320.00
22	23839.17	185.30	0.515	0.30(0.29)	0.96	63202.4	10210.00
23	23373.78	190.20	0.511	0.30(0.29)	0.96	63364.7	12000.00
24	20591.68	219.89	0.488	0.30(0.29)	0.96	63981.7	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	13671.78	19.32	1.617	0.30(0.25)	0.84	3707.9	10300.00
2	13780.04	20.03	1.579	0.30(0.25)	0.84	3841.7	10380.00
3	13889.88	20.47	1.561	0.30(0.25)	0.84	3921.0	10230.00
4	14367.85	22.78	1.469	0.30(0.25)	0.84	4443.3	10320.00
5	14750.29	24.67	1.394	0.30(0.25)	0.84	4861.1	10360.00
6	15343.27	27.62	1.309	0.30(0.25)	0.84	5506.5	10340.00
7	15689.83	29.36	1.261	0.30(0.25)	0.84	5881.4	10250.00
8	15754.87	29.66	1.252	0.30(0.25)	0.84	5946.4	10200.00
9	16350.09	33.56	1.178	0.30(0.25)	0.84	6766.6	10220.00
10	17261.80	38.98	1.079	0.30(0.25)	0.84	7898.8	110.00
11	18587.25	48.19	0.963	0.30(0.26)	0.85	10642.2	10100.00
12	19551.11	55.41	0.894	0.30(0.26)	0.86	12871.3	12741.00
13	20720.13	63.67	0.836	0.30(0.26)	0.88	16100.9	600.00
14	21167.77	67.57	0.817	0.30(0.27)	0.88	17718.6	31100.00
15	22787.63	80.78	0.751	0.30(0.27)	0.90	23205.1	40100.00
16	23801.75	89.68	0.708	0.30(0.27)	0.91	26830.9	11801.00
17	25831.55	110.50	0.647	0.30(0.28)	0.93	36899.2	11000.00
18	27325.19	120.17	0.620	0.30(0.28)	0.94	43329.5	11330.00
19	27966.12	128.21	0.606	0.30(0.28)	0.94	48416.6	10630.00
20	27742.78	133.82	0.597	0.30(0.28)	0.95	51006.5	12330.00
21	27504.80	140.47	0.586	0.30(0.28)	0.95	54148.9	11600.00
22	27143.52	146.31	0.576	0.30(0.29)	0.95	56383.3	11111.00
23	26739.24	152.51	0.565	0.30(0.29)	0.95	58317.1	12201.00
24	25837.26	161.61	0.550	0.30(0.29)	0.95	60405.4	12231.00

25 25016.62 169.26 0.537 0.30(0.29) 0.95 61816.9 10400.00
 26 24399.79 180.46 0.519 0.30(0.29) 0.95 63437.7 10320.00
 27 23954.79 185.30 0.515 0.30(0.29) 0.95 63663.2 10210.00
 28 23487.87 190.20 0.511 0.30(0.29) 0.95 63825.5 12000.00
 29 20696.43 219.89 0.488 0.30(0.29) 0.96 64442.5 10100.00
 TOTAL AREA (ACRES) = 64442.5

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 27966.12 Tc(MIN.) = 128.212
 EFFECTIVE AREA(ACRES) = 48416.63 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.88
 TOTAL AREA(ACRES) = 64442.5
 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

>>>>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) = 6.37
 CHANNEL FLOW THRU SUBAREA(CFS) = 27966.12
 FLOW VELOCITY(FEET/SEC.) = 35.02 FLOW DEPTH(FEET) = 6.37
 TRAVEL TIME(MIN.) = 0.17 Tc(MIN.) = 128.39
 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

>>>>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	13671.78	19.54	1.605	0.30(0.25)	0.84	3707.9	10300.00

2	13780.04	20.25	1.570	0.30(0.25)	0.84	3841.7	10380.00
3	13889.88	20.69	1.553	0.30(0.25)	0.84	3921.0	10230.00
4	14367.85	22.99	1.461	0.30(0.25)	0.84	4443.3	10320.00
5	14750.29	24.88	1.386	0.30(0.25)	0.84	4861.1	10360.00
6	15343.27	27.83	1.303	0.30(0.25)	0.84	5506.5	10340.00
7	15689.83	29.57	1.255	0.30(0.25)	0.84	5881.4	10250.00
8	15754.87	29.87	1.247	0.30(0.25)	0.84	5946.4	10200.00
9	16350.09	33.77	1.174	0.30(0.25)	0.84	6766.6	10220.00
10	17261.80	39.18	1.075	0.30(0.25)	0.84	7898.8	110.00
11	18587.25	48.39	0.961	0.30(0.26)	0.85	10642.2	10100.00
12	19551.11	55.60	0.893	0.30(0.26)	0.86	12871.3	12741.00
13	20720.13	63.86	0.835	0.30(0.26)	0.88	16100.9	600.00
14	21167.77	67.75	0.816	0.30(0.27)	0.88	17718.6	31100.00
15	22787.63	80.96	0.751	0.30(0.27)	0.90	23205.1	40100.00
16	23801.75	89.86	0.707	0.30(0.27)	0.91	26830.9	11801.00
17	25831.55	110.68	0.647	0.30(0.28)	0.93	36899.2	11000.00
18	27325.19	120.34	0.619	0.30(0.28)	0.94	43329.5	11330.00
19	27966.12	128.39	0.606	0.30(0.28)	0.94	48416.6	10630.00
20	27742.78	134.00	0.596	0.30(0.28)	0.95	51006.5	12330.00
21	27504.80	140.65	0.585	0.30(0.28)	0.95	54148.9	11600.00
22	27143.52	146.48	0.575	0.30(0.29)	0.95	56383.3	11111.00
23	26739.24	152.69	0.565	0.30(0.29)	0.95	58317.1	12201.00
24	25837.26	161.78	0.550	0.30(0.29)	0.95	60405.4	12231.00
25	25016.62	169.44	0.537	0.30(0.29)	0.95	61816.9	10400.00
26	24399.79	180.64	0.519	0.30(0.29)	0.95	63437.7	10320.00
27	23954.79	185.48	0.515	0.30(0.29)	0.95	63663.2	10210.00
28	23487.87	190.38	0.511	0.30(0.29)	0.95	63825.5	12000.00
29	20696.43	220.08	0.488	0.30(0.29)	0.96	64442.5	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	13720.05	19.54	1.605	0.30(0.25)	0.84	3749.7	10300.00
2	13828.80	20.25	1.570	0.30(0.25)	0.84	3885.0	10380.00
3	13939.04	20.69	1.553	0.30(0.25)	0.84	3965.2	10230.00
4	13948.88	20.74	1.551	0.30(0.25)	0.84	3976.0	10400.00
5	14413.68	22.99	1.461	0.30(0.25)	0.84	4487.6	10320.00
6	14793.30	24.88	1.386	0.30(0.25)	0.84	4905.4	10360.00
7	15383.17	27.83	1.303	0.30(0.25)	0.84	5550.8	10340.00
8	15727.93	29.57	1.255	0.30(0.25)	0.84	5925.7	10250.00
9	15792.66	29.87	1.247	0.30(0.25)	0.84	5990.7	10200.00
10	16385.15	33.77	1.174	0.30(0.25)	0.84	6810.9	10220.00
11	17293.15	39.18	1.075	0.30(0.25)	0.84	7943.1	110.00
12	18614.32	48.39	0.961	0.30(0.26)	0.85	10686.5	10100.00
13	19575.62	55.60	0.893	0.30(0.26)	0.86	12915.6	12741.00
14	20742.47	63.86	0.835	0.30(0.26)	0.88	16145.2	600.00
15	21189.39	67.75	0.816	0.30(0.27)	0.88	17762.9	31100.00
16	22806.81	80.96	0.751	0.30(0.27)	0.90	23249.4	40100.00
17	23819.28	89.86	0.707	0.30(0.27)	0.91	26875.2	11801.00
18	25846.83	110.68	0.647	0.30(0.28)	0.93	36943.5	11000.00
19	27339.45	120.34	0.619	0.30(0.28)	0.94	43373.8	11330.00

20	27979.87	128.39	0.606	0.30	(0.28)	0.94	48460.9	10630.00
21	27756.17	134.00	0.596	0.30	(0.28)	0.95	51050.8	12330.00
22	27517.78	140.65	0.585	0.30	(0.28)	0.95	54193.2	11600.00
23	27156.13	146.48	0.575	0.30	(0.29)	0.95	56427.6	11111.00
24	26751.45	152.69	0.565	0.30	(0.29)	0.95	58361.4	12201.00
25	25848.90	161.78	0.550	0.30	(0.29)	0.95	60449.7	12231.00
26	25027.77	169.44	0.537	0.30	(0.29)	0.95	61861.2	10400.00
27	24410.26	180.64	0.519	0.30	(0.29)	0.95	63482.0	10320.00
28	23965.12	185.48	0.515	0.30	(0.29)	0.95	63707.5	10210.00
29	23498.05	190.38	0.511	0.30	(0.29)	0.95	63869.8	12000.00
30	20705.75	220.08	0.488	0.30	(0.29)	0.96	64486.8	10100.00

TOTAL AREA (ACRES) = 64486.8

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 27979.87 Tc (MIN.) = 128.385
EFFECTIVE AREA (ACRES) = 48460.93 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64486.8
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) = 13.11
CHANNEL FLOW THRU SUBAREA (CFS) = 27979.87
FLOW VELOCITY (FEET/SEC.) = 14.00 FLOW DEPTH (FEET) = 13.11
TRAVEL TIME (MIN.) = 1.83 Tc (MIN.) = 130.21
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: 0506105L.DNA

MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	263.73	15.21	0.30 (0.27)	0.90	203.7	10520.00
2	303.03	33.18	0.30 (0.28)	0.93	403.6	10500.00
TOTAL AREA (ACRES) =						403.6

FLOW PROCESS FROM NODE 13802.00 TO NODE 13802.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	13720.05	21.80	1.509	0.30 (0.25)	0.84	3749.7	10300.00
2	13828.80	22.50	1.480	0.30 (0.25)	0.84	3885.0	10380.00
3	13939.04	22.93	1.463	0.30 (0.25)	0.84	3965.2	10230.00
4	13948.88	22.98	1.461	0.30 (0.25)	0.84	3976.0	10400.00
5	14413.68	25.22	1.375	0.30 (0.25)	0.84	4487.6	10320.00
6	14793.30	27.09	1.323	0.30 (0.25)	0.84	4905.4	10360.00
7	15383.17	30.01	1.243	0.30 (0.25)	0.84	5550.8	10340.00
8	15727.93	31.73	1.211	0.30 (0.25)	0.84	5925.7	10250.00
9	15792.66	32.03	1.206	0.30 (0.25)	0.84	5990.7	10200.00
10	16385.15	35.91	1.135	0.30 (0.25)	0.84	6810.9	10220.00
11	17293.15	41.29	1.045	0.30 (0.25)	0.84	7943.1	110.00
12	18614.32	50.45	0.938	0.30 (0.26)	0.85	10686.5	10100.00
13	19575.62	57.63	0.875	0.30 (0.26)	0.86	12915.6	12741.00
14	20742.47	65.86	0.825	0.30 (0.26)	0.88	16145.2	600.00
15	21189.39	69.74	0.806	0.30 (0.27)	0.88	17762.9	31100.00
16	22806.81	82.90	0.741	0.30 (0.27)	0.90	23249.4	40100.00
17	23819.28	91.78	0.701	0.30 (0.27)	0.91	26875.2	11801.00
18	25846.83	112.55	0.641	0.30 (0.28)	0.93	36943.5	11000.00
19	27339.45	122.18	0.616	0.30 (0.28)	0.94	43373.8	11330.00
20	27979.87	130.21	0.603	0.30 (0.28)	0.94	48460.9	10630.00
21	27756.17	135.83	0.593	0.30 (0.28)	0.95	51050.8	12330.00
22	27517.78	142.48	0.582	0.30 (0.28)	0.95	54193.2	11600.00
23	27156.13	148.32	0.572	0.30 (0.29)	0.95	56427.6	11111.00
24	26751.45	154.54	0.562	0.30 (0.29)	0.95	58361.4	12201.00
25	25848.90	163.65	0.547	0.30 (0.29)	0.95	60449.7	12231.00
26	25027.77	171.32	0.534	0.30 (0.29)	0.95	61861.2	10400.00
27	24410.26	182.54	0.517	0.30 (0.29)	0.95	63482.0	10320.00
28	23965.12	187.39	0.513	0.30 (0.29)	0.95	63707.5	10210.00
29	23498.05	192.31	0.509	0.30 (0.29)	0.95	63869.8	12000.00
30	20705.75	222.07	0.486	0.30 (0.29)	0.96	64486.8	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	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	12339.69	15.21	1.837	0.30 (0.25)	0.84	2820.8	10520.00
2	13998.18	21.80	1.509	0.30 (0.25)	0.84	4026.6	10300.00
3	14108.48	22.50	1.480	0.30 (0.25)	0.84	4169.8	10380.00
4	14219.66	22.93	1.463	0.30 (0.25)	0.85	4254.8	10230.00
5	14229.60	22.98	1.461	0.30 (0.25)	0.85	4266.2	10400.00
6	14699.29	25.22	1.375	0.30 (0.25)	0.85	4802.6	10320.00
7	15083.01	27.09	1.323	0.30 (0.25)	0.85	5241.2	10360.00
8	15679.26	30.01	1.243	0.30 (0.25)	0.85	5919.1	10340.00
9	16027.79	31.73	1.211	0.30 (0.25)	0.85	6313.2	10250.00
10	16093.17	32.03	1.206	0.30 (0.25)	0.85	6381.5	10200.00

11	16271.51	33.18	1.185	0.30	(0.25)	0.85	6637.7	10500.00		
12	16671.51	35.91	1.135	0.30	(0.25)	0.85	7214.5	10220.00		
13	17549.41	41.29	1.045	0.30	(0.25)	0.85	8346.7	110.00		
14	18834.91	50.45	0.938	0.30	(0.26)	0.85	11090.1	10100.00		
15	19775.09	57.63	0.875	0.30	(0.26)	0.86	13319.2	12741.00		
16	20925.31	65.86	0.825	0.30	(0.26)	0.88	16548.8	600.00		
17	21365.84	69.74	0.806	0.30	(0.27)	0.89	18166.5	31100.00		
18	22961.55	82.90	0.741	0.30	(0.27)	0.91	23653.0	40100.00		
19	23960.61	91.78	0.701	0.30	(0.27)	0.91	27278.8	11801.00		
20	25968.27	112.55	0.641	0.30	(0.28)	0.93	37347.1	11000.00		
21	27452.51	122.18	0.616	0.30	(0.28)	0.94	43777.4	11330.00		
22	28088.42	130.21	0.603	0.30	(0.28)	0.94	48864.5	10630.00		
23	27861.56	135.83	0.593	0.30	(0.28)	0.95	51454.4	12330.00		
24	27619.42	142.48	0.582	0.30	(0.28)	0.95	54596.9	11600.00		
25	27254.49	148.32	0.572	0.30	(0.28)	0.95	56831.2	11111.00		
26	26846.32	154.54	0.562	0.30	(0.29)	0.95	58765.0	12201.00		
27	25938.64	163.65	0.547	0.30	(0.29)	0.95	60853.3	12231.00		
28	25113.20	171.32	0.534	0.30	(0.29)	0.95	62264.8	10400.00		
29	24490.14	182.54	0.517	0.30	(0.29)	0.95	63885.6	10320.00		
30	24043.74	187.39	0.513	0.30	(0.29)	0.95	64111.1	10210.00		
31	23575.39	192.31	0.509	0.30	(0.29)	0.95	64273.4	12000.00		
32	20775.35	222.07	0.486	0.30	(0.29)	0.95	64890.4	10100.00		
TOTAL AREA (ACRES) =		64890.4								

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 28088.42 Tc (MIN.) = 130.211
EFFECTIVE AREA (ACRES) = 48864.54 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
TOTAL AREA (ACRES) = 64890.4
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) = 10.32
CHANNEL FLOW THRU SUBAREA (CFS) = 28088.42
FLOW VELOCITY (FEET/SEC.) = 19.27 FLOW DEPTH (FEET) = 10.32
TRAVEL TIME (MIN.) = 0.18 Tc (MIN.) = 130.39
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 130.39
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 0.603
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
RESIDENTIAL

"1 DWELLING/ACRE" B 48.80 0.30 0.800 56
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.800
SUBAREA AREA (ACRES) = 48.80 SUBAREA RUNOFF (CFS) = 15.92
EFFECTIVE AREA (ACRES) = 48913.34 AREA-AVERAGED Fm (INCH/HR) = 0.28
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 64939.2 PEAK FLOW RATE (CFS) = 28088.42
NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

FLOW PROCESS FROM NODE 13802.00 TO NODE 13803.00 IS CODE = 12

>>>>CLEAR MEMORY BANK # 3 <<<<<

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 15.1

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

PEAK FLOWRATE TABLE FILE NAME: 0506106E.DNA
MEMORY BANK # 3 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	45.15	18.06	0.30 (0.20)	0.67	36.9	10600.00
TOTAL AREA (ACRES) =		36.9				

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12339.69	15.44	1.824	0.30 (0.25)	0.84	2869.6	10520.00
2	13998.18	22.02	1.500	0.30 (0.25)	0.84	4075.4	10300.00
3	14108.48	22.73	1.472	0.30 (0.25)	0.84	4218.6	10380.00
4	14219.66	23.16	1.454	0.30 (0.25)	0.84	4303.6	10230.00
5	14229.60	23.20	1.453	0.30 (0.25)	0.84	4315.0	10400.00
6	14699.29	25.44	1.369	0.30 (0.25)	0.85	4851.4	10320.00
7	15083.01	27.31	1.317	0.30 (0.25)	0.85	5290.0	10360.00
8	15679.26	30.23	1.239	0.30 (0.25)	0.85	5967.9	10340.00
9	16027.79	31.95	1.207	0.30 (0.25)	0.85	6362.0	10250.00
10	16093.17	32.25	1.202	0.30 (0.25)	0.85	6430.3	10200.00
11	16271.51	33.40	1.181	0.30 (0.25)	0.85	6686.5	10500.00
12	16671.51	36.12	1.131	0.30 (0.25)	0.85	7263.3	10220.00
13	17549.41	41.49	1.042	0.30 (0.25)	0.85	8395.5	110.00
14	18834.91	50.65	0.936	0.30 (0.26)	0.85	11138.9	10100.00
15	19775.09	57.83	0.873	0.30 (0.26)	0.86	13368.0	12741.00
16	20925.31	66.05	0.824	0.30 (0.26)	0.88	16597.6	600.00
17	21365.84	69.93	0.805	0.30 (0.27)	0.88	18215.3	31100.00
18	22961.55	83.09	0.740	0.30 (0.27)	0.90	23701.8	40100.00
19	23960.61	91.97	0.700	0.30 (0.27)	0.91	27327.6	11801.00
20	25968.27	112.73	0.641	0.30 (0.28)	0.93	37395.9	11000.00
21	27452.51	122.36	0.616	0.30 (0.28)	0.94	43826.2	11330.00
22	28088.42	130.39	0.603	0.30 (0.28)	0.94	48913.3	10630.00

23 27861.56 136.01 0.593 0.30(0.28) 0.95 51503.2 12330.00
 24 27619.42 142.66 0.582 0.30(0.28) 0.95 54645.7 11600.00
 25 27254.49 148.51 0.572 0.30(0.28) 0.95 56880.0 11111.00
 26 26846.32 154.72 0.562 0.30(0.29) 0.95 58813.8 12201.00
 27 25938.64 163.84 0.546 0.30(0.29) 0.95 60902.1 12231.00
 28 25113.20 171.51 0.533 0.30(0.29) 0.95 62313.6 10400.00
 29 24490.14 182.72 0.517 0.30(0.29) 0.95 63934.4 10320.00
 30 24043.74 187.58 0.513 0.30(0.29) 0.95 64159.9 10210.00
 31 23575.39 192.49 0.509 0.30(0.29) 0.95 64322.2 12000.00
 32 20775.35 222.27 0.486 0.30(0.29) 0.95 64939.2 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	12381.95	15.44	1.824	0.30(0.25)	0.84	2901.2	10520.00
2	13046.24	18.06	1.684	0.30(0.25)	0.84	3387.4	10600.00
3	14037.73	22.02	1.500	0.30(0.25)	0.84	4112.3	10300.00
4	14147.17	22.73	1.472	0.30(0.25)	0.84	4255.5	10380.00
5	14257.83	23.16	1.454	0.30(0.25)	0.84	4340.5	10230.00
6	14267.71	23.20	1.453	0.30(0.25)	0.84	4351.9	10400.00
7	14734.86	25.44	1.369	0.30(0.25)	0.84	4888.3	10320.00
8	15117.00	27.31	1.317	0.30(0.25)	0.84	5326.9	10360.00
9	15710.87	30.23	1.239	0.30(0.25)	0.85	6004.8	10340.00
10	16058.44	31.95	1.207	0.30(0.25)	0.85	6398.9	10250.00
11	16123.65	32.25	1.202	0.30(0.25)	0.85	6467.2	10200.00
12	16301.35	33.40	1.181	0.30(0.25)	0.85	6723.4	10500.00
13	16699.83	36.12	1.131	0.30(0.25)	0.85	7300.2	10220.00
14	17575.04	41.49	1.042	0.30(0.25)	0.85	8432.4	110.00
15	18857.31	50.65	0.936	0.30(0.26)	0.85	11175.8	10100.00
16	19795.56	57.83	0.873	0.30(0.26)	0.86	13404.9	12741.00
17	20944.29	66.05	0.824	0.30(0.26)	0.88	16634.5	600.00
18	21384.23	69.93	0.805	0.30(0.27)	0.88	18252.2	31100.00
19	22977.96	83.09	0.740	0.30(0.27)	0.90	23738.7	40100.00
20	23975.82	91.97	0.700	0.30(0.27)	0.91	27364.5	11801.00
21	25981.66	112.73	0.641	0.30(0.28)	0.93	37432.8	11000.00
22	27465.15	122.36	0.616	0.30(0.28)	0.94	43863.1	11330.00
23	28100.65	130.39	0.603	0.30(0.28)	0.94	48950.2	10630.00
24	27873.50	136.01	0.593	0.30(0.28)	0.95	51540.1	12330.00
25	27631.02	142.66	0.582	0.30(0.28)	0.95	54682.6	11600.00
26	27265.79	148.51	0.572	0.30(0.28)	0.95	56916.9	11111.00
27	26857.30	154.72	0.562	0.30(0.29)	0.95	58850.7	12201.00
28	25949.15	163.84	0.546	0.30(0.29)	0.95	60939.0	12231.00
29	25123.32	171.51	0.533	0.30(0.29)	0.95	62350.5	10400.00
30	24499.76	182.72	0.517	0.30(0.29)	0.95	63971.3	10320.00
31	24053.25	187.58	0.513	0.30(0.29)	0.95	64196.8	10210.00
32	23584.78	192.49	0.509	0.30(0.29)	0.95	64359.1	12000.00
33	20784.04	222.27	0.486	0.30(0.29)	0.95	64976.1	10100.00

TOTAL AREA (ACRES) = 64976.1

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 28100.65 Tc (MIN.) = 130.390

EFFECTIVE AREA (ACRES) = 48950.23 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 64976.1
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13803.00 = 130616.05 FEET.

END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 64976.1 TC (MIN.) = 130.39
 EFFECTIVE AREA (ACRES) = 48950.23 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.944
 PEAK FLOW RATE (CFS) = 28100.65

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12381.95	15.44	1.824	0.30(0.25)	0.84	2901.2	10520.00
2	13046.24	18.06	1.684	0.30(0.25)	0.84	3387.4	10600.00
3	14037.73	22.02	1.500	0.30(0.25)	0.84	4112.3	10300.00
4	14147.17	22.73	1.472	0.30(0.25)	0.84	4255.5	10380.00
5	14257.83	23.16	1.454	0.30(0.25)	0.84	4340.5	10230.00
6	14267.71	23.20	1.453	0.30(0.25)	0.84	4351.9	10400.00
7	14734.86	25.44	1.369	0.30(0.25)	0.84	4888.3	10320.00
8	15117.00	27.31	1.317	0.30(0.25)	0.84	5326.9	10360.00
9	15710.87	30.23	1.239	0.30(0.25)	0.85	6004.8	10340.00
10	16058.44	31.95	1.207	0.30(0.25)	0.85	6398.9	10250.00
11	16123.65	32.25	1.202	0.30(0.25)	0.85	6467.2	10200.00
12	16301.35	33.40	1.181	0.30(0.25)	0.85	6723.4	10500.00
13	16699.83	36.12	1.131	0.30(0.25)	0.85	7300.2	10220.00
14	17575.04	41.49	1.042	0.30(0.25)	0.85	8432.4	110.00
15	18857.31	50.65	0.936	0.30(0.26)	0.85	11175.8	10100.00
16	19795.56	57.83	0.873	0.30(0.26)	0.86	13404.9	12741.00
17	20944.29	66.05	0.824	0.30(0.26)	0.88	16634.5	600.00
18	21384.23	69.93	0.805	0.30(0.27)	0.88	18252.2	31100.00
19	22977.96	83.09	0.740	0.30(0.27)	0.90	23738.7	40100.00
20	23975.82	91.97	0.700	0.30(0.27)	0.91	27364.5	11801.00
21	25981.66	112.73	0.641	0.30(0.28)	0.93	37432.8	11000.00
22	27465.15	122.36	0.616	0.30(0.28)	0.94	43863.1	11330.00
23	28100.65	130.39	0.603	0.30(0.28)	0.94	48950.2	10630.00
24	27873.50	136.01	0.593	0.30(0.28)	0.95	51540.1	12330.00
25	27631.02	142.66	0.582	0.30(0.28)	0.95	54682.6	11600.00
26	27265.79	148.51	0.572	0.30(0.28)	0.95	56916.9	11111.00
27	26857.30	154.72	0.562	0.30(0.29)	0.95	58850.7	12201.00
28	25949.15	163.84	0.546	0.30(0.29)	0.95	60939.0	12231.00
29	25123.32	171.51	0.533	0.30(0.29)	0.95	62350.5	10400.00
30	24499.76	182.72	0.517	0.30(0.29)	0.95	63971.3	10320.00
31	24053.25	187.58	0.513	0.30(0.29)	0.95	64196.8	10210.00
32	23584.78	192.49	0.509	0.30(0.29)	0.95	64359.1	12000.00
33	20784.04	222.27	0.486	0.30(0.29)	0.95	64976.1	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
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***** DESCRIPTION OF STUDY *****
* RANCHO MISSION VIEJO - PA3 & PA4 ROMP *
* REGIONAL WATERSHED S38- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV38.DAT
TIME/DATE OF STUDY: 10:13 06/14/2019

=====

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

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

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PEAK FLOWRATE TABLE FILE NAME: RI10EV37.DNA
MEMORY BANK # 1 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14267.71	23.20	0.30 (0.25)	0.84	4351.9	10400.00
2	15710.87	30.23	0.30 (0.25)	0.85	6004.8	10340.00
3	17575.04	41.49	0.30 (0.25)	0.85	8432.4	110.00
4	18857.31	50.65	0.30 (0.26)	0.85	11175.8	10100.00
5	19795.56	57.83	0.30 (0.26)	0.86	13404.9	12741.00
6	21384.23	69.93	0.30 (0.27)	0.88	18252.2	31100.00
7	22977.96	83.09	0.30 (0.27)	0.90	23738.7	40100.00
8	23975.82	91.97	0.30 (0.27)	0.91	27364.5	11801.00
9	25981.66	112.73	0.30 (0.28)	0.93	37432.8	11000.00
10	27465.15	122.36	0.30 (0.28)	0.94	43863.1	11330.00
11	28100.65	130.39	0.30 (0.28)	0.94	48950.2	10630.00
12	27873.50	136.01	0.30 (0.28)	0.95	51540.1	12330.00
13	27631.02	142.66	0.30 (0.28)	0.95	54682.6	11600.00
14	27265.79	148.51	0.30 (0.28)	0.95	56916.9	11111.00
15	26857.30	154.72	0.30 (0.29)	0.95	58850.7	12201.00
16	25949.15	163.84	0.30 (0.29)	0.95	60939.0	12231.00
17	25123.32	171.51	0.30 (0.29)	0.95	62350.5	10400.00
18	24499.76	182.72	0.30 (0.29)	0.95	63971.3	10320.00
19	23584.78	192.49	0.30 (0.29)	0.95	64359.1	12000.00
20	20784.04	222.27	0.30 (0.29)	0.95	64976.1	10100.00
TOTAL AREA (ACRES) =						64976.1

FLOW PROCESS FROM NODE 13803.00 TO NODE 13803.00 IS CODE = 14.0

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

=====

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14267.71	23.20	0.30 (0.25)	0.84	4351.9	10400.00
2	15710.87	30.23	0.30 (0.25)	0.85	6004.8	10340.00
3	17575.04	41.49	0.30 (0.25)	0.85	8432.4	110.00
4	18857.31	50.65	0.30 (0.26)	0.85	11175.8	10100.00
5	19795.56	57.83	0.30 (0.26)	0.86	13404.9	12741.00
6	21384.23	69.93	0.30 (0.27)	0.88	18252.2	31100.00
7	22977.96	83.09	0.30 (0.27)	0.90	23738.7	40100.00
8	23975.82	91.97	0.30 (0.27)	0.91	27364.5	11801.00
9	25981.66	112.73	0.30 (0.28)	0.93	37432.8	11000.00
10	27465.15	122.36	0.30 (0.28)	0.94	43863.1	11330.00
11	28100.65	130.39	0.30 (0.28)	0.94	48950.2	10630.00
12	27873.50	136.01	0.30 (0.28)	0.95	51540.1	12330.00
13	27631.02	142.66	0.30 (0.28)	0.95	54682.6	11600.00

14 27265.79 148.51 0.30(0.28) 0.95 56916.9 11111.00
 15 26857.30 154.72 0.30(0.29) 0.95 58850.7 12201.00
 16 25949.15 163.84 0.30(0.29) 0.95 60939.0 12231.00
 17 25123.32 171.51 0.30(0.29) 0.95 62350.5 10400.00
 18 24499.76 182.72 0.30(0.29) 0.95 63971.3 10320.00
 19 23584.78 192.49 0.30(0.29) 0.95 64359.1 12000.00
 20 20784.04 222.27 0.30(0.29) 0.95 64976.1 10100.00
 TOTAL AREA (ACRES) = 64976.1

FLOW PROCESS FROM NODE 13803.00 TO NODE 13820.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 140.00 DOWNSTREAM(FEET) = 137.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 926.91 CHANNEL SLOPE = 0.0032
 GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 13.81

* 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 0.983

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28104.96

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.10

AVERAGE FLOW DEPTH(FEET) = 13.81 TRAVEL TIME(MIN.) = 1.18

Tc(MIN.) = 131.57

SUBAREA AREA(ACRES) = 31.44 SUBAREA RUNOFF(CFS) = 8.62

EFFECTIVE AREA(ACRES) = 48981.68 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 65007.6 PEAK FLOW RATE(CFS) = 28100.65

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) = 13.81

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 13.81 FLOW VELOCITY(FEET/SEC.) = 13.10

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.) = 131.57

RAINFALL INTENSITY(INCH/HR) = 0.60

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 48981.68

TOTAL STREAM AREA(ACRES) = 65007.55

PEAK FLOW RATE(CFS) AT CONFLUENCE = 28100.65

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	56	12.29

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS 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

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/ 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) = 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.


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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) = 0.83
* 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

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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) = 77.16
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.93 FLOW VELOCITY(FEET/SEC.) = 7.01
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13813.00 = 3308.42 FEET.

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 31
-----
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 259.72 DOWNSTREAM(FEET) = 137.00
FLOW LENGTH(FEET) = 2412.88 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 36.000
DEPTH OF FLOW IN 36.0 INCH PIPE IS 18.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.58
ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 77.16
PIPE TRAVEL TIME(MIN.) = 1.95 Tc(MIN.) = 22.19
LONGEST FLOWPATH FROM NODE 13810.00 TO NODE 13820.00 = 5721.30 FEET.

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 22.19
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.491
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/    SCS SOIL  AREA      Fp      Ap    SCS
LAND USE            GROUP  (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED        -      83.64    0.30    0.570  -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.570
SUBAREA AREA(ACRES) = 83.64 SUBAREA RUNOFF(CFS) = 99.35
EFFECTIVE AREA(ACRES) = 150.29 AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.73
TOTAL AREA(ACRES) = 150.3 PEAK FLOW RATE(CFS) = 171.84

*****
FLOW PROCESS FROM NODE 13813.00 TO NODE 13820.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 22.19
RAINFALL INTENSITY(INCH/HR) = 1.49
AREA-AVERAGED Fm(INCH/HR) = 0.22
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.73
EFFECTIVE STREAM AREA(ACRES) = 150.29

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TOTAL STREAM AREA(ACRES) = 150.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 171.84

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14267.71	24.64	1.393	0.30 (0.25)	0.84	4383.3	10400.00
1	15710.87	31.63	1.212	0.30 (0.25)	0.85	6036.2	10340.00
1	17575.04	42.85	1.025	0.30 (0.25)	0.85	8463.8	110.00
1	18857.31	51.97	0.923	0.30 (0.26)	0.85	11207.2	10100.00
1	19795.56	59.13	0.860	0.30 (0.26)	0.86	13436.3	12741.00
1	21384.23	71.21	0.797	0.30 (0.27)	0.88	18283.6	31100.00
1	22977.96	84.34	0.732	0.30 (0.27)	0.90	23770.2	40100.00
1	23975.82	93.20	0.695	0.30 (0.27)	0.91	27395.9	11801.00
1	25981.66	113.94	0.636	0.30 (0.28)	0.93	37464.2	11000.00
1	27465.15	123.55	0.613	0.30 (0.28)	0.94	43894.5	11330.00
1	28100.65	131.57	0.599	0.30 (0.28)	0.94	48981.7	10630.00
1	27873.50	137.19	0.590	0.30 (0.28)	0.95	51571.5	12330.00
1	27631.02	143.85	0.578	0.30 (0.28)	0.95	54714.0	11600.00
1	27265.79	149.70	0.569	0.30 (0.28)	0.95	56948.3	11111.00
1	26857.30	155.91	0.558	0.30 (0.29)	0.95	58882.2	12201.00
1	25949.15	165.04	0.542	0.30 (0.29)	0.95	60970.4	12231.00
1	25123.32	172.72	0.529	0.30 (0.29)	0.95	62382.0	10400.00
1	24499.76	183.95	0.514	0.30 (0.29)	0.95	64002.7	10320.00
1	23584.78	193.73	0.506	0.30 (0.29)	0.95	64390.6	12000.00
1	20784.04	223.55	0.483	0.30 (0.29)	0.95	65007.6	10100.00
2	171.84	22.19	1.491	0.30 (0.22)	0.73	150.3	13810.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14120.07	22.19	1.491	0.30 (0.25)	0.84	4097.8	13810.00
2	14426.37	24.64	1.393	0.30 (0.25)	0.84	4533.6	10400.00
3	15845.04	31.63	1.212	0.30 (0.25)	0.84	6186.5	10340.00
4	17683.94	42.85	1.025	0.30 (0.25)	0.84	8614.1	110.00
5	18952.42	51.97	0.923	0.30 (0.26)	0.85	11357.5	10100.00
6	19882.06	59.13	0.860	0.30 (0.26)	0.86	13586.6	12741.00
7	21462.20	71.21	0.797	0.30 (0.26)	0.88	18433.9	31100.00
8	23047.17	84.34	0.732	0.30 (0.27)	0.90	23920.5	40100.00
9	24040.03	93.20	0.695	0.30 (0.27)	0.91	27546.2	11801.00
10	26037.92	113.94	0.636	0.30 (0.28)	0.93	37614.5	11000.00
11	27518.27	123.55	0.613	0.30 (0.28)	0.94	44044.8	11330.00
12	28151.92	131.57	0.599	0.30 (0.28)	0.94	49132.0	10630.00
13	27923.48	137.19	0.590	0.30 (0.28)	0.95	51721.8	12330.00
14	27679.47	143.85	0.578	0.30 (0.28)	0.95	54864.3	11600.00
15	27312.89	149.70	0.569	0.30 (0.28)	0.95	57098.6	11111.00
16	26902.97	155.91	0.558	0.30 (0.29)	0.95	59032.5	12201.00
17	25992.73	165.04	0.542	0.30 (0.29)	0.95	61120.7	12231.00
18	25165.13	172.72	0.529	0.30 (0.29)	0.95	62532.3	10400.00
19	24539.48	183.95	0.514	0.30 (0.29)	0.95	64153.0	10320.00
20	23623.49	193.73	0.506	0.30 (0.29)	0.95	64540.9	12000.00
21	20819.62	223.55	0.483	0.30 (0.29)	0.95	65157.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28151.92 Tc(MIN.) = 131.57

EFFECTIVE AREA(ACRES) = 49131.96 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65157.8
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) = 13.90

* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.597

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	-	31.60	0.30	0.683	-
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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) = 28157.49

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.01

AVERAGE FLOW DEPTH(FEET) = 13.90 TRAVEL TIME(MIN.) = 1.62

Tc(MIN.) = 133.18

SUBAREA AREA(ACRES) = 31.60 SUBAREA RUNOFF(CFS) = 11.14

EFFECTIVE AREA(ACRES) = 49163.57 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 65189.4 PEAK FLOW RATE(CFS) = 28151.92

NOTE: PEAK FLOW RATE DEFAULTED TO UPSTREAM VALUE

GIVEN CHANNEL BASE(FEET) = 100.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 4.000 MANNING'S FACTOR = 0.030

*ESTIMATED CHANNEL HEIGHT(FEET) = 13.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 13.90 FLOW VELOCITY(FEET/SEC.) = 13.02

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.) = 133.18

RAINFALL INTENSITY(INCH/HR) = 0.60

AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30

AREA-AVERAGED Ap = 0.94

EFFECTIVE STREAM AREA(ACRES) = 49163.57

TOTAL STREAM AREA(ACRES) = 65189.45

PEAK FLOW RATE(CFS) AT CONFLUENCE = 28151.92

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
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.990
SUBAREA Tc AND LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
NATURAL FAIR COVER
"CHAPARRAL, BROADLEAF" - 5.06 0.30 1.000 56 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

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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) = 0.55
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.716
SUBAREA LOSS RATE DATA (AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 32.57 0.30 1.000 -
SUBAREA AVERAGE 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

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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.

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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) = 0.81
* 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
SUBAREA AVERAGE PVIOUS 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

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*ESTIMATED CHANNEL HEIGHT (FEET) = 1.08
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 1.08 FLOW VELOCITY (FEET/SEC.) = 7.46
LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13834.00 = 4648.78 FEET.

FLOW PROCESS FROM NODE 13834.00 TO NODE 13835.00 IS CODE = 56

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

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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/ 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) = 140.67

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.45

AVERAGE FLOW DEPTH (FEET) = 1.46 TRAVEL TIME (MIN.) = 3.69

Tc (MIN.) = 27.70

SUBAREA AREA (ACRES) = 94.21 SUBAREA RUNOFF (CFS) = 85.23

EFFECTIVE AREA (ACRES) = 191.58 AREA-AVERAGED Fm (INCH/HR) = 0.30

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA (ACRES) = 191.6 PEAK FLOW RATE (CFS) = 173.31

GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 1.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 1.64 FLOW VELOCITY (FEET/SEC.) = 7.94

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13835.00 = 6296.23 FEET.

FLOW PROCESS FROM NODE 13835.00 TO NODE 13836.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 347.06 DOWNSTREAM (FEET) = 269.29
CHANNEL LENGTH THRU SUBAREA (FEET) = 1696.71 CHANNEL SLOPE = 0.0458
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 2.44

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.216

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 269.53
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.59
AVERAGE FLOW DEPTH (FEET) = 2.40 TRAVEL TIME (MIN.) = 3.72
Tc (MIN.) = 31.42
SUBAREA AREA (ACRES) = 233.25 SUBAREA RUNOFF (CFS) = 192.31
EFFECTIVE AREA (ACRES) = 424.83 AREA-AVERAGED Fm (INCH/HR) = 0.30
AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA (ACRES) = 424.8 PEAK FLOW RATE (CFS) = 350.25
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT (FEET) = 2.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH (FEET) = 2.76 FLOW VELOCITY (FEET/SEC.) = 8.18

LONGEST FLOWPATH FROM NODE 13830.00 TO NODE 13836.00 = 7992.94 FEET.

FLOW PROCESS FROM NODE 13836.00 TO NODE 13837.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) = 269.29 DOWNSTREAM (FEET) = 191.87
CHANNEL LENGTH THRU SUBAREA (FEET) = 2529.21 CHANNEL SLOPE = 0.0306
GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 3.31

* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.111

SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/ 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) = 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	14120.07	24.17	1.412	0.30 (0.25)	0.84	4129.4	13810.00
1	14426.37	26.61	1.335	0.30 (0.25)	0.84	4565.2	10400.00
1	15845.04	33.54	1.177	0.30 (0.25)	0.84	6218.1	10340.00
1	17683.94	44.70	1.004	0.30 (0.25)	0.84	8645.7	110.00
1	18952.42	53.79	0.907	0.30 (0.26)	0.85	11389.1	10100.00
1	19882.06	60.92	0.847	0.30 (0.26)	0.86	13618.2	12741.00
1	21462.20	72.95	0.788	0.30 (0.26)	0.88	18465.5	31100.00
1	23047.17	86.05	0.723	0.30 (0.27)	0.90	23952.1	40100.00
1	24040.03	94.89	0.690	0.30 (0.27)	0.91	27577.8	11801.00
1	26037.92	115.59	0.631	0.30 (0.28)	0.93	37646.1	11000.00
1	27518.27	125.17	0.610	0.30 (0.28)	0.94	44076.4	11330.00
1	28151.92	133.18	0.597	0.30 (0.28)	0.94	49163.6	10630.00

1	27923.48	138.81	0.587	0.30 (0.28)	0.95	51753.4	12330.00
1	27679.47	145.47	0.576	0.30 (0.28)	0.95	54895.9	11600.00
1	27312.89	151.32	0.566	0.30 (0.28)	0.95	57130.2	11111.00
1	26902.97	157.55	0.555	0.30 (0.29)	0.95	59064.1	12201.00
1	25992.73	166.69	0.540	0.30 (0.29)	0.95	61152.3	12231.00
1	25165.13	174.39	0.527	0.30 (0.29)	0.95	62563.9	10400.00
1	24539.48	185.63	0.513	0.30 (0.29)	0.95	64184.6	10320.00
1	23623.49	195.43	0.505	0.30 (0.29)	0.95	64572.5	12000.00
1	20819.62	225.32	0.482	0.30 (0.29)	0.95	65189.4	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	14486.12	24.17	1.412	0.30 (0.25)	0.85	4491.1	13810.00
2	14801.65	26.61	1.335	0.30 (0.25)	0.85	4963.4	10400.00
3	16246.67	33.54	1.177	0.30 (0.26)	0.85	6720.0	10340.00
4	16958.18	37.79	1.099	0.30 (0.26)	0.85	7708.1	13830.00
5	18047.86	44.70	1.004	0.30 (0.26)	0.85	9211.2	110.00
6	19267.23	53.79	0.907	0.30 (0.26)	0.86	11954.6	10100.00
7	20166.34	60.92	0.847	0.30 (0.26)	0.86	14183.7	12741.00
8	21716.20	72.95	0.788	0.30 (0.27)	0.89	19031.0	31100.00
9	23268.21	86.05	0.723	0.30 (0.27)	0.90	24517.6	40100.00
10	24244.06	94.89	0.690	0.30 (0.27)	0.91	28143.3	11801.00
11	26212.04	115.59	0.631	0.30 (0.28)	0.93	38211.6	11000.00
12	27681.53	125.17	0.610	0.30 (0.28)	0.94	44641.9	11330.00
13	28308.23	133.18	0.597	0.30 (0.28)	0.94	49729.1	10630.00
14	28074.92	138.81	0.587	0.30 (0.28)	0.95	52318.9	12330.00
15	27825.13	145.47	0.576	0.30 (0.28)	0.95	55461.4	11600.00
16	27453.47	151.32	0.566	0.30 (0.28)	0.95	57695.7	11111.00
17	27038.16	157.55	0.555	0.30 (0.29)	0.95	59629.6	12201.00
18	26119.98	166.69	0.540	0.30 (0.29)	0.95	61717.8	12231.00
19	25285.71	174.39	0.527	0.30 (0.29)	0.95	63129.4	10400.00
20	24652.98	185.63	0.513	0.30 (0.29)	0.95	64750.1	10320.00
21	23733.12	195.43	0.505	0.30 (0.29)	0.95	65138.0	12000.00
22	20917.48	225.32	0.482	0.30 (0.29)	0.95	65754.9	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE (CFS) = 28308.23 Tc (MIN.) = 133.18
 EFFECTIVE AREA (ACRES) = 49729.07 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65754.9
 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) = 12.65

* 10 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 - 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) = 28309.13
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 14.86
 AVERAGE FLOW DEPTH (FEET) = 12.65 TRAVEL TIME (MIN.) = 0.73
 Tc (MIN.) = 133.92
 SUBAREA AREA (ACRES) = 6.61 SUBAREA RUNOFF (CFS) = 1.80
 EFFECTIVE AREA (ACRES) = 49735.68 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA (ACRES) = 65761.6 PEAK FLOW RATE (CFS) = 28308.23
 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) = 12.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 12.65 FLOW VELOCITY (FEET/SEC.) = 14.86
 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.) = 133.92
 RAINFALL INTENSITY (INCH/HR) = 0.60
 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.94
 EFFECTIVE STREAM AREA (ACRES) = 49735.68
 TOTAL STREAM AREA (ACRES) = 65761.55
 PEAK FLOW RATE (CFS) AT CONFLUENCE = 28308.23

 FLOW PROCESS FROM NODE 13850.00 TO NODE 13851.00 IS CODE = 21

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

INITIAL SUBAREA FLOW-LENGTH (FEET) = 617.57
 ELEVATION DATA: UPSTREAM (FEET) = 646.95 DOWNSTREAM (FEET) = 490.10

Tc = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20
 SUBAREA ANALYSIS USED MINIMUM Tc (MIN.) = 12.137
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.206
 SUBAREA Tc AND LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS Tc
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN (MIN.)
 NATURAL FAIR COVER
 "CHAPARRAL, BROADLEAF" - 4.95 0.30 1.000 56 12.14
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 SUBAREA RUNOFF (CFS) = 8.49
 TOTAL AREA (ACRES) = 4.95 PEAK FLOW RATE (CFS) = 8.49

 FLOW PROCESS FROM NODE 13851.00 TO NODE 13851.50 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 490.10 DOWNSTREAM (FEET) = 440.98
 CHANNEL LENGTH THRU SUBAREA (FEET) = 351.14 CHANNEL SLOPE = 0.1399
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.29
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.015

SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 4.02 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 11.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.85
 AVERAGE FLOW DEPTH (FEET) = 0.29 TRAVEL TIME (MIN.) = 1.52
 Tc (MIN.) = 13.66

SUBAREA AREA (ACRES) = 4.02 SUBAREA RUNOFF (CFS) = 6.20
 EFFECTIVE AREA (ACRES) = 8.97 AREA-AVERAGED Fm (INCH/HR) = 0.30
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
 TOTAL AREA (ACRES) = 9.0 PEAK FLOW RATE (CFS) = 13.84
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 0.32 FLOW VELOCITY (FEET/SEC.) = 4.10
 LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13851.50 = 968.71 FEET.

 FLOW PROCESS FROM NODE 13851.50 TO NODE 13852.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 440.98 DOWNSTREAM (FEET) = 395.76
 CHANNEL LENGTH THRU SUBAREA (FEET) = 512.91 CHANNEL SLOPE = 0.0882
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.45
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.803

SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 7.17 0.30 1.000 -

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 18.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.98

AVERAGE FLOW DEPTH(FEET) = 0.43 TRAVEL TIME(MIN.) = 2.15
Tc(MIN.) = 15.80
SUBAREA AREA(ACRES) = 7.17 SUBAREA RUNOFF(CFS) = 9.70
EFFECTIVE AREA(ACRES) = 16.14 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00
TOTAL AREA(ACRES) = 16.1 PEAK FLOW RATE(CFS) = 21.83
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.48 FLOW VELOCITY(FEET/SEC.) = 4.19
LONGEST FLOWPATH FROM NODE 13850.00 TO NODE 13852.00 = 1481.62 FEET.

FLOW PROCESS FROM NODE 13852.00 TO NODE 13853.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM(FEET) = 395.76 DOWNSTREAM(FEET) = 354.94
CHANNEL LENGTH THRU SUBAREA(FEET) = 443.69 CHANNEL SLOPE = 0.0920
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 0.52
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.715

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ 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) = 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.

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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.

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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.) = 26.35
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.342
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 43.41 0.30 0.707 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.707
SUBAREA AREA(ACRES) = 43.41 SUBAREA RUNOFF(CFS) = 44.14
EFFECTIVE AREA(ACRES) = 123.22 AREA-AVERAGED Fm(INCH/HR) = 0.26
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.86
TOTAL AREA(ACRES) = 123.2 PEAK FLOW RATE(CFS) = 120.26

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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<<<<
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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

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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 14486.12 25.07 1.377 0.30( 0.25) 0.85 4497.7 13810.00
1 14801.65 27.50 1.310 0.30( 0.25) 0.85 4970.0 10400.00
1 16246.67 34.40 1.161 0.30( 0.26) 0.85 6726.6 10340.00
1 16958.18 38.64 1.084 0.30( 0.26) 0.85 7714.7 13830.00

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1 18047.86 45.54 0.994 0.30( 0.26) 0.85 9217.8 110.00
1 19267.23 54.61 0.900 0.30( 0.26) 0.86 11961.2 10100.00
1 20166.34 61.73 0.843 0.30( 0.26) 0.86 14190.3 12741.00
1 21716.20 73.75 0.784 0.30( 0.27) 0.89 19037.6 31100.00
1 23268.21 86.83 0.720 0.30( 0.27) 0.90 24524.2 40100.00
1 24244.06 95.66 0.688 0.30( 0.27) 0.91 28149.9 11801.00
1 26212.04 116.34 0.629 0.30( 0.28) 0.93 38218.2 11000.00
1 27681.53 125.91 0.609 0.30( 0.28) 0.94 44648.5 11330.00
1 28308.23 133.92 0.595 0.30( 0.28) 0.94 49735.7 10630.00
1 28074.92 139.54 0.586 0.30( 0.28) 0.95 52325.5 12330.00
1 27825.13 146.21 0.574 0.30( 0.28) 0.95 55468.0 11600.00
1 27453.47 152.06 0.564 0.30( 0.28) 0.95 57702.3 11111.00
1 27038.16 158.29 0.554 0.30( 0.29) 0.95 59636.2 12201.00
1 26119.98 167.45 0.538 0.30( 0.29) 0.95 61724.4 12231.00
1 25285.71 175.15 0.525 0.30( 0.29) 0.95 63136.0 10400.00
1 24652.98 186.40 0.512 0.30( 0.29) 0.95 64756.7 10320.00
1 23733.12 196.21 0.504 0.30( 0.29) 0.95 65144.6 12000.00
1 20917.48 226.12 0.481 0.30( 0.29) 0.95 65761.6 10100.00
2 120.26 26.35 1.342 0.30( 0.26) 0.86 123.2 13850.00

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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	14604.23	25.07	1.377	0.30(0.25)	0.85	4615.0	13810.00
2	14772.77	26.35	1.342	0.30(0.25)	0.85	4870.0	13850.00
3	14918.42	27.50	1.310	0.30(0.25)	0.85	5093.3	10400.00
4	16346.90	34.40	1.161	0.30(0.26)	0.85	6849.9	10340.00
5	17049.81	38.64	1.084	0.30(0.26)	0.85	7837.9	13830.00
6	18129.49	45.54	0.994	0.30(0.26)	0.85	9341.0	110.00
7	19338.48	54.61	0.900	0.30(0.26)	0.86	12084.5	10100.00
8	20231.32	61.73	0.843	0.30(0.26)	0.86	14313.5	12741.00
9	21774.60	73.75	0.784	0.30(0.27)	0.89	19160.8	31100.00
10	23319.45	86.83	0.720	0.30(0.27)	0.90	24647.4	40100.00
11	24291.79	95.66	0.688	0.30(0.27)	0.91	28273.1	11801.00
12	26253.27	116.34	0.629	0.30(0.28)	0.93	38341.4	11000.00
13	27720.50	125.91	0.609	0.30(0.28)	0.94	44771.8	11330.00
14	28345.69	133.92	0.595	0.30(0.28)	0.94	49858.9	10630.00
15	28111.32	139.54	0.586	0.30(0.28)	0.95	52448.8	12330.00
16	27860.27	146.21	0.574	0.30(0.28)	0.95	55591.2	11600.00
17	27487.51	152.06	0.564	0.30(0.28)	0.95	57825.5	11111.00
18	27071.02	158.29	0.554	0.30(0.29)	0.95	59759.4	12201.00
19	26151.12	167.45	0.538	0.30(0.29)	0.95	61847.6	12231.00
20	25315.39	175.15	0.525	0.30(0.29)	0.95	63259.2	10400.00
21	24681.21	186.40	0.512	0.30(0.29)	0.95	64879.9	10320.00
22	23760.50	196.21	0.504	0.30(0.29)	0.95	65267.8	12000.00
23	20942.31	226.12	0.481	0.30(0.29)	0.95	65884.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

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PEAK FLOW RATE(CFS) = 28345.69 Tc(MIN.) = 133.92
EFFECTIVE AREA(ACRES) = 49858.89 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 65884.8
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

>>>>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) = 9.13

* 10 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 - 4.89 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) = 28346.34

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 22.75

AVERAGE FLOW DEPTH(FEET) = 9.13 TRAVEL TIME(MIN.) = 0.45

Tc(MIN.) = 134.37

SUBAREA AREA(ACRES) = 4.89 SUBAREA RUNOFF(CFS) = 1.30

EFFECTIVE AREA(ACRES) = 49863.79 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94

TOTAL AREA(ACRES) = 65889.7 PEAK FLOW RATE(CFS) = 28345.69

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) = 9.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 9.13 FLOW VELOCITY(FEET/SEC.) = 22.75

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.) = 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 = 0.94

EFFECTIVE STREAM AREA(ACRES) = 49863.79

TOTAL STREAM AREA(ACRES) = 65889.66

PEAK FLOW RATE(CFS) AT CONFLUENCE = 28345.69

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 56 15.70

SUBAREA AVERAGE PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS 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 PVIOUS LOSS RATE, Fp(INCH/HR) = 0.30

SUBAREA AVERAGE PVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.77

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.27

AVERAGE FLOW DEPTH(FEET) = 0.39 TRAVEL TIME(MIN.) = 3.23

Tc(MIN.) = 18.93

SUBAREA AREA(ACRES) = 13.01 SUBAREA RUNOFF(CFS) = 15.63

EFFECTIVE AREA(ACRES) = 20.33 AREA-AVERAGED Fm(INCH/HR) = 0.30

AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 20.3 PEAK FLOW RATE(CFS) = 24.43

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT(FEET) = 0.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.46 FLOW VELOCITY(FEET/SEC.) = 4.83

LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13872.00 = 1700.60 FEET.

FLOW PROCESS FROM NODE 13872.00 TO NODE 13873.00 IS CODE = 56

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

>>>>TRAVELTIME THRU SUBAREA<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 337.62 DOWNSTREAM(FEET) = 253.88

CHANNEL LENGTH THRU SUBAREA(FEET) = 1049.16 CHANNEL SLOPE = 0.0798

GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0

"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060

*ESTIMATED CHANNEL HEIGHT (FEET) = 0.74
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.485
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 32.99 0.30 0.923 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.923
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 42.38
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 5.13
 AVERAGE FLOW DEPTH (FEET) = 0.72 TRAVEL TIME (MIN.) = 3.41
 Tc (MIN.) = 22.34
 SUBAREA AREA (ACRES) = 32.99 SUBAREA RUNOFF (CFS) = 35.86
 EFFECTIVE AREA (ACRES) = 53.32 AREA-AVERAGED Fm (INCH/HR) = 0.29
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.95
 TOTAL AREA (ACRES) = 53.3 PEAK FLOW RATE (CFS) = 57.54
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.060
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.86

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 0.86 FLOW VELOCITY (FEET/SEC.) = 5.67
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13873.00 = 2749.76 FEET.

 FLOW PROCESS FROM NODE 13873.00 TO NODE 13874.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 253.88 DOWNSTREAM (FEET) = 160.73
 CHANNEL LENGTH THRU SUBAREA (FEET) = 1518.60 CHANNEL SLOPE = 0.0613
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.86
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.358
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 30.94 0.30 0.900 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.900
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 72.69
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 7.37
 AVERAGE FLOW DEPTH (FEET) = 0.84 TRAVEL TIME (MIN.) = 3.43
 Tc (MIN.) = 25.78
 SUBAREA AREA (ACRES) = 30.94 SUBAREA RUNOFF (CFS) = 30.29
 EFFECTIVE AREA (ACRES) = 84.26 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
 TOTAL AREA (ACRES) = 84.3 PEAK FLOW RATE (CFS) = 81.74
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 0.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 0.90 FLOW VELOCITY (FEET/SEC.) = 7.67
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13874.00 = 4268.36 FEET.

 FLOW PROCESS FROM NODE 13874.00 TO NODE 13875.00 IS CODE = 56

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

ELEVATION DATA: UPSTREAM (FEET) = 160.73 DOWNSTREAM (FEET) = 158.14
 CHANNEL LENGTH THRU SUBAREA (FEET) = 582.74 CHANNEL SLOPE = 0.0044
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 2.31
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.281
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
 LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 73.67 0.30 0.930 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.930
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) = 114.96
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) = 3.46
 AVERAGE FLOW DEPTH (FEET) = 2.28 TRAVEL TIME (MIN.) = 2.81
 Tc (MIN.) = 28.59
 SUBAREA AREA (ACRES) = 73.67 SUBAREA RUNOFF (CFS) = 66.42
 EFFECTIVE AREA (ACRES) = 157.93 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.93
 TOTAL AREA (ACRES) = 157.9 PEAK FLOW RATE (CFS) = 142.31
 GIVEN CHANNEL BASE (FEET) = 10.00 CHANNEL FREEBOARD (FEET) = 0.0
 "Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
 *ESTIMATED CHANNEL HEIGHT (FEET) = 2.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH (FEET) = 2.56 FLOW VELOCITY (FEET/SEC.) = 3.68
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13875.00 = 4851.10 FEET.

 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 =====

ELEVATION DATA: UPSTREAM (FEET) = 158.14 DOWNSTREAM (FEET) = 120.57
 FLOW LENGTH (FEET) = 1855.67 MANNING'S N = 0.013
 DEPTH OF FLOW IN 45.0 INCH PIPE IS 32.5 INCHES
 PIPE-FLOW VELOCITY (FEET/SEC.) = 16.65
 ESTIMATED PIPE DIAMETER (INCH) = 45.00 NUMBER OF PIPES = 1
 PIPE-FLOW (CFS) = 142.31
 PIPE TRAVEL TIME (MIN.) = 1.86 Tc (MIN.) = 30.45
 LONGEST FLOWPATH FROM NODE 13870.00 TO NODE 13880.00 = 6706.77 FEET.

 FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 81

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

MAINLINE Tc (MIN.) = 30.45
 * 10 YEAR RAINFALL INTENSITY (INCH/HR) = 1.234
 SUBAREA LOSS RATE DATA (AMC II):
 DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS

LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
 USER-DEFINED - 34.90 0.30 0.743 -
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.743
 SUBAREA AREA(ACRES) = 34.90 SUBAREA RUNOFF(CFS) = 31.76
 EFFECTIVE AREA(ACRES) = 192.83 AREA-AVERAGED Fm(INCH/HR) = 0.27
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.90
 TOTAL AREA(ACRES) = 192.8 PEAK FLOW RATE(CFS) = 167.41

FLOW PROCESS FROM NODE 13875.00 TO NODE 13880.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 30.45
 RAINFALL INTENSITY(INCH/HR) = 1.23
 AREA-AVERAGED Fm(INCH/HR) = 0.27
 AREA-AVERAGED Fp(INCH/HR) = 0.30
 AREA-AVERAGED Ap = 0.90
 EFFECTIVE STREAM AREA(ACRES) = 192.83
 TOTAL STREAM AREA(ACRES) = 192.83
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 167.41

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14604.23	25.62	1.362	0.30(0.25)	0.85	4619.9	13810.00
1	14772.77	26.90	1.327	0.30(0.25)	0.85	4874.9	13850.00
1	14918.42	28.05	1.295	0.30(0.25)	0.85	5098.1	10400.00
1	16346.90	34.94	1.152	0.30(0.26)	0.85	6854.7	10340.00
1	17049.81	39.17	1.074	0.30(0.26)	0.85	7842.8	13830.00
1	18129.49	46.05	0.988	0.30(0.26)	0.85	9345.9	110.00
1	19338.48	55.11	0.896	0.30(0.26)	0.86	12089.4	10100.00
1	20231.32	62.23	0.841	0.30(0.26)	0.86	14318.4	12741.00
1	21774.60	74.23	0.782	0.30(0.27)	0.89	19165.7	31100.00
1	23319.45	87.31	0.717	0.30(0.27)	0.90	24652.3	40100.00
1	24291.79	96.13	0.687	0.30(0.27)	0.91	28278.0	11801.00
1	26253.27	116.80	0.628	0.30(0.28)	0.93	38346.3	11000.00
1	27720.50	126.36	0.608	0.30(0.28)	0.94	44776.6	11330.00
1	28345.69	134.37	0.595	0.30(0.28)	0.94	49863.8	10630.00
1	28111.32	139.99	0.585	0.30(0.28)	0.95	52453.7	12330.00
1	27860.27	146.66	0.574	0.30(0.28)	0.95	55596.1	11600.00
1	27487.51	152.52	0.564	0.30(0.28)	0.95	57830.4	11111.00
1	27071.02	158.75	0.553	0.30(0.29)	0.95	59764.3	12201.00
1	26151.12	167.90	0.538	0.30(0.29)	0.95	61852.5	12231.00
1	25315.39	175.61	0.524	0.30(0.29)	0.95	63264.1	10400.00
1	24681.21	186.86	0.512	0.30(0.29)	0.95	64884.8	10320.00
1	23760.50	196.68	0.504	0.30(0.29)	0.95	65272.7	12000.00
1	20942.31	226.61	0.481	0.30(0.29)	0.95	65889.7	10100.00
2	167.41	30.45	1.234	0.30(0.27)	0.90	192.8	13870.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14763.83	25.62	1.362	0.30(0.26)	0.85	4782.1	13810.00
2	14934.96	26.90	1.327	0.30(0.26)	0.85	5045.3	13850.00
3	15082.50	28.05	1.295	0.30(0.26)	0.85	5275.8	10400.00
4	15582.92	30.45	1.234	0.30(0.26)	0.85	5902.2	13870.00
5	16500.05	34.94	1.152	0.30(0.26)	0.85	7047.6	10340.00
6	17189.53	39.17	1.074	0.30(0.26)	0.85	8035.6	13830.00
7	18254.17	46.05	0.988	0.30(0.26)	0.85	9538.7	110.00
8	19447.17	55.11	0.896	0.30(0.26)	0.86	12282.2	10100.00
9	20330.55	62.23	0.841	0.30(0.26)	0.86	14511.2	12741.00
10	21863.56	74.23	0.782	0.30(0.27)	0.89	19358.5	31100.00
11	23397.22	87.31	0.717	0.30(0.27)	0.90	24845.1	40100.00
12	24364.24	96.13	0.687	0.30(0.27)	0.91	28470.8	11801.00
13	26315.55	116.80	0.628	0.30(0.28)	0.93	38539.2	11000.00
14	27779.33	126.36	0.608	0.30(0.28)	0.94	44969.5	11330.00
15	28402.16	134.37	0.595	0.30(0.28)	0.94	50056.6	10630.00
16	28166.13	139.99	0.585	0.30(0.28)	0.95	52646.5	12330.00
17	27913.11	146.66	0.574	0.30(0.28)	0.95	55788.9	11600.00
18	27538.62	152.52	0.564	0.30(0.28)	0.95	58023.3	11111.00
19	27120.29	158.75	0.553	0.30(0.28)	0.95	59957.1	12201.00
20	26197.70	167.90	0.538	0.30(0.29)	0.95	62045.4	12231.00
21	25359.69	175.61	0.524	0.30(0.29)	0.95	63456.9	10400.00
22	24723.29	186.86	0.512	0.30(0.29)	0.95	65077.7	10320.00
23	23801.27	196.68	0.504	0.30(0.29)	0.95	65465.5	12000.00
24	20979.07	226.61	0.481	0.30(0.29)	0.95	66082.5	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28402.16 Tc(MIN.) = 134.37
 EFFECTIVE AREA(ACRES) = 50056.61 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66082.5
 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) = 20.35
 * 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 PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.724
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28421.92
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.70
 AVERAGE FLOW DEPTH(FEET) = 20.35 TRAVEL TIME(MIN.) = 2.58
 Tc(MIN.) = 136.94
 SUBAREA AREA(ACRES) = 117.69 SUBAREA RUNOFF(CFS) = 39.51
 EFFECTIVE AREA(ACRES) = 50174.30 AREA-AVERAGED Fm(INCH/HR) = 0.28

AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA (ACRES) = 66200.2 PEAK FLOW RATE (CFS) = 28402.16
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) = 20.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 20.34 FLOW VELOCITY (FEET/SEC.) = 7.70
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.) =	136.94
RAINFALL INTENSITY (INCH/HR) =	0.59
AREA-AVERAGED Fm (INCH/HR) =	0.28
AREA-AVERAGED Fp (INCH/HR) =	0.30
AREA-AVERAGED Ap =	0.94
EFFECTIVE STREAM AREA (ACRES) =	50174.30
TOTAL STREAM AREA (ACRES) =	66200.18
PEAK FLOW RATE (CFS) AT CONFLUENCE =	28402.16

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	56	6.98
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) =	0.30					
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.960					
SUBAREA RUNOFF (CFS) =	7.98					
TOTAL AREA (ACRES) =	3.03					
PEAK FLOW RATE (CFS) =	7.98					

FLOW PROCESS FROM NODE 13890.00 TO NODE 13891.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) =	421.92
DOWNSTREAM (FEET) =	392.64
CHANNEL LENGTH THRU SUBAREA (FEET) =	435.33
CHANNEL SLOPE =	0.0673
GIVEN CHANNEL BASE (FEET) =	10.00
CHANNEL FREEBOARD (FEET) =	0.0
"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.040

*ESTIMATED CHANNEL HEIGHT (FEET) = 0.37
* 10 YEAR RAINFALL INTENSITY (INCH/HR) = 2.825
SUBAREA LOSS RATE DATA (AMC II):

DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	8.12	0.30	0.986	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) =	0.30				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	0.986				
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) =	17.27				
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) =	4.56				
AVERAGE FLOW DEPTH (FEET) =	0.35				
TRAVEL TIME (MIN.) =	1.59				
Tc (MIN.) =	8.57				
SUBAREA AREA (ACRES) =	8.12				
SUBAREA RUNOFF (CFS) =	18.49				
EFFECTIVE AREA (ACRES) =	11.15				
AREA-AVERAGED Fm (INCH/HR) =	0.29				
AREA-AVERAGED Fp (INCH/HR) =	0.30				
AREA-AVERAGED Ap =	0.98				
TOTAL AREA (ACRES) =	11.1				
PEAK FLOW RATE (CFS) =	25.41				
GIVEN CHANNEL BASE (FEET) =	10.00				
CHANNEL FREEBOARD (FEET) =	0.0				
"Z" FACTOR =	2.000				
MANNING'S FACTOR =	0.040				
*ESTIMATED CHANNEL HEIGHT (FEET) =	0.45				

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.45 FLOW VELOCITY (FEET/SEC.) = 5.24
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13891.00 = 883.22 FEET.

FLOW PROCESS FROM NODE 13891.00 TO NODE 13892.00 IS CODE = 56

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

=====

ELEVATION DATA: UPSTREAM (FEET) =	392.64				
DOWNSTREAM (FEET) =	324.46				
CHANNEL LENGTH THRU SUBAREA (FEET) =	662.40				
CHANNEL SLOPE =	0.1029				
GIVEN CHANNEL BASE (FEET) =	10.00				
CHANNEL FREEBOARD (FEET) =	0.0				
"Z" FACTOR =	2.000				
MANNING'S FACTOR =	0.040				
*ESTIMATED CHANNEL HEIGHT (FEET) =	0.51				
* 10 YEAR RAINFALL INTENSITY (INCH/HR) =	2.455				
SUBAREA LOSS RATE DATA (AMC II):					
DEVELOPMENT TYPE/	SCS SOIL	AREA	Fp	Ap	SCS
LAND USE	GROUP	(ACRES)	(INCH/HR)	(DECIMAL)	CN
USER-DEFINED	-	12.50	0.30	1.000	-
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp (INCH/HR) =	0.30				
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =	1.000				
TRAVEL TIME COMPUTED USING ESTIMATED FLOW (CFS) =	37.55				
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY (FEET/SEC.) =	6.93				
AVERAGE FLOW DEPTH (FEET) =	0.49				
TRAVEL TIME (MIN.) =	1.59				
Tc (MIN.) =	10.16				
SUBAREA AREA (ACRES) =	12.50				
SUBAREA RUNOFF (CFS) =	24.24				
EFFECTIVE AREA (ACRES) =	23.65				
AREA-AVERAGED Fm (INCH/HR) =	0.30				
AREA-AVERAGED Fp (INCH/HR) =	0.30				
AREA-AVERAGED Ap =	0.99				
TOTAL AREA (ACRES) =	23.6				
PEAK FLOW RATE (CFS) =	45.93				
GIVEN CHANNEL BASE (FEET) =	10.00				
CHANNEL FREEBOARD (FEET) =	0.0				
"Z" FACTOR =	2.000				
MANNING'S FACTOR =	0.040				
*ESTIMATED CHANNEL HEIGHT (FEET) =	0.55				

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH (FEET) = 0.55 FLOW VELOCITY (FEET/SEC.) = 7.46
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13892.00 = 1545.62 FEET.

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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) = 0.70
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.187
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 15.87 0.30 1.000 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 59.42
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.67
AVERAGE FLOW DEPTH(FEET) = 0.68 TRAVEL TIME(MIN.) = 2.13
Tc(MIN.) = 12.29
SUBAREA AREA(ACRES) = 15.87 SUBAREA RUNOFF(CFS) = 26.95
EFFECTIVE AREA(ACRES) = 39.52 AREA-AVERAGED Fm(INCH/HR) = 0.30
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 39.5 PEAK FLOW RATE(CFS) = 67.18
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 7.97
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13893.00 = 2525.65 FEET.
*****
FLOW PROCESS FROM NODE 13893.00 TO NODE 13894.00 IS CODE = 56
-----
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<
>>>>TRAVELTIME THRU SUBAREA<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 240.82 DOWNSTREAM(FEET) = 163.04
CHANNEL LENGTH THRU SUBAREA(FEET) = 1144.35 CHANNEL SLOPE = 0.0680
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.94
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.891
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 28.41 0.30 0.985 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.985
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 87.63
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.12
AVERAGE FLOW DEPTH(FEET) = 0.91 TRAVEL TIME(MIN.) = 2.35
Tc(MIN.) = 14.64
SUBAREA AREA(ACRES) = 28.41 SUBAREA RUNOFF(CFS) = 40.81
EFFECTIVE AREA(ACRES) = 67.93 AREA-AVERAGED Fm(INCH/HR) = 0.30

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AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.99
TOTAL AREA(ACRES) = 67.9 PEAK FLOW RATE(CFS) = 97.48
GIVEN CHANNEL BASE(FEET) = 10.00 CHANNEL FREEBOARD(FEET) = 0.0
"Z" FACTOR = 2.000 MANNING'S FACTOR = 0.040
*ESTIMATED CHANNEL HEIGHT(FEET) = 0.97

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.97 FLOW VELOCITY(FEET/SEC.) = 8.40
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13894.00 = 3670.00 FEET.
*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 31
-----
>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 163.04 DOWNSTREAM(FEET) = 119.70
FLOW LENGTH(FEET) = 1899.01 MANNING'S N = 0.013
DEPTH OF FLOW IN 39.0 INCH PIPE IS 27.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 15.93
ESTIMATED PIPE DIAMETER(INCH) = 39.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 97.48
PIPE TRAVEL TIME(MIN.) = 1.99 Tc(MIN.) = 16.63
LONGEST FLOWPATH FROM NODE 13889.00 TO NODE 13910.00 = 5569.01 FEET.
*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 81
-----
>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<
=====
MAINLINE Tc(MIN.) = 16.63
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 1.759
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
USER-DEFINED - 11.69 0.30 0.634 -
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.30
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.634
SUBAREA AREA(ACRES) = 11.69 SUBAREA RUNOFF(CFS) = 16.50
EFFECTIVE AREA(ACRES) = 79.62 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 79.6 PEAK FLOW RATE(CFS) = 105.88
*****
FLOW PROCESS FROM NODE 13894.00 TO NODE 13910.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 16.63
RAINFALL INTENSITY(INCH/HR) = 1.76
AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30
AREA-AVERAGED Ap = 0.94
EFFECTIVE STREAM AREA(ACRES) = 79.62
TOTAL STREAM AREA(ACRES) = 79.62

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PEAK FLOW RATE(CFS) AT CONFLUENCE = 105.88

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	14763.83	28.71	1.277	0.30 (0.25)	0.85	4899.8	13810.00
1	14934.96	29.98	1.242	0.30 (0.25)	0.85	5163.0	13850.00
1	15082.50	31.12	1.221	0.30 (0.25)	0.85	5393.5	10400.00
1	15582.92	33.49	1.178	0.30 (0.25)	0.85	6019.9	13870.00
1	16500.05	37.93	1.097	0.30 (0.26)	0.85	7165.3	10340.00
1	17189.53	42.13	1.034	0.30 (0.26)	0.85	8153.3	13830.00
1	18254.17	48.96	0.953	0.30 (0.26)	0.85	9656.4	110.00
1	19447.17	57.97	0.870	0.30 (0.26)	0.86	12399.9	10100.00
1	20330.55	65.05	0.827	0.30 (0.26)	0.86	14628.9	12741.00
1	21863.56	77.00	0.768	0.30 (0.27)	0.88	19476.2	31100.00
1	23397.22	90.02	0.704	0.30 (0.27)	0.90	24962.8	40100.00
1	24364.24	98.82	0.679	0.30 (0.27)	0.91	28588.5	11801.00
1	26315.55	119.43	0.621	0.30 (0.28)	0.93	38656.9	11000.00
1	27779.33	128.95	0.604	0.30 (0.28)	0.94	45087.2	11330.00
1	28402.16	136.94	0.590	0.30 (0.28)	0.94	50174.3	10630.00
1	28166.13	142.57	0.581	0.30 (0.28)	0.94	52764.2	12330.00
1	27913.11	149.25	0.569	0.30 (0.28)	0.95	55906.6	11600.00
1	27538.62	155.12	0.559	0.30 (0.28)	0.95	58140.9	11111.00
1	27120.29	161.36	0.549	0.30 (0.28)	0.95	60074.8	12201.00
1	26197.70	170.54	0.533	0.30 (0.29)	0.95	62163.0	12231.00
1	25359.69	178.27	0.520	0.30 (0.29)	0.95	63574.6	10400.00
1	24723.29	189.54	0.510	0.30 (0.29)	0.95	65195.4	10320.00
1	23801.27	199.39	0.502	0.30 (0.29)	0.95	65583.2	12000.00
1	20979.07	229.41	0.479	0.30 (0.29)	0.95	66200.2	10100.00
2	105.88	16.63	1.759	0.30 (0.28)	0.94	79.6	13889.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12679.89	16.63	1.759	0.30 (0.26)	0.85	2916.9	13889.00
2	14835.20	28.71	1.277	0.30 (0.25)	0.85	4979.4	13810.00
3	15003.84	29.98	1.242	0.30 (0.25)	0.85	5242.6	13850.00
4	15149.87	31.12	1.221	0.30 (0.26)	0.85	5473.1	10400.00
5	15647.18	33.49	1.178	0.30 (0.26)	0.85	6099.6	13870.00
6	16558.49	37.93	1.097	0.30 (0.26)	0.85	7244.9	10340.00
7	17243.45	42.13	1.034	0.30 (0.26)	0.85	8233.0	13830.00
8	18302.31	48.96	0.953	0.30 (0.26)	0.85	9736.0	110.00
9	19489.36	57.97	0.870	0.30 (0.26)	0.86	12479.5	10100.00
10	20369.66	65.05	0.827	0.30 (0.26)	0.86	14708.6	12741.00
11	21898.44	77.00	0.768	0.30 (0.27)	0.88	19555.9	31100.00
12	23427.50	90.02	0.704	0.30 (0.27)	0.90	25042.4	40100.00
13	24392.74	98.82	0.679	0.30 (0.27)	0.91	28668.2	11801.00
14	26339.87	119.43	0.621	0.30 (0.28)	0.93	38736.5	11000.00
15	27802.44	128.95	0.604	0.30 (0.28)	0.94	45166.8	11330.00
16	28424.29	136.94	0.590	0.30 (0.28)	0.94	50253.9	10630.00
17	28187.58	142.57	0.581	0.30 (0.28)	0.94	52843.8	12330.00
18	27933.75	149.25	0.569	0.30 (0.28)	0.95	55986.2	11600.00
19	27558.54	155.12	0.559	0.30 (0.28)	0.95	58220.6	11111.00
20	27139.46	161.36	0.549	0.30 (0.28)	0.95	60154.4	12201.00
21	26215.74	170.54	0.533	0.30 (0.29)	0.95	62242.7	12231.00

22	25376.79	178.27	0.520	0.30 (0.29)	0.95	63654.2	10400.00
23	24739.65	189.54	0.510	0.30 (0.29)	0.95	65275.0	10320.00
24	23817.09	199.39	0.502	0.30 (0.29)	0.95	65662.8	12000.00
25	20993.22	229.41	0.479	0.30 (0.29)	0.95	66279.8	10100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28424.29 Tc(MIN.) = 136.94
EFFECTIVE AREA(ACRES) = 50253.93 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66279.8
LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 13910.00 = 135259.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 66279.8 TC(MIN.) = 136.94
EFFECTIVE AREA(ACRES) = 50253.93 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.942
PEAK FLOW RATE(CFS) = 28424.29

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12679.89	16.63	1.759	0.30 (0.26)	0.85	2916.9	13889.00
2	14835.20	28.71	1.277	0.30 (0.25)	0.85	4979.4	13810.00
3	15003.84	29.98	1.242	0.30 (0.25)	0.85	5242.6	13850.00
4	15149.87	31.12	1.221	0.30 (0.26)	0.85	5473.1	10400.00
5	15647.18	33.49	1.178	0.30 (0.26)	0.85	6099.6	13870.00
6	16558.49	37.93	1.097	0.30 (0.26)	0.85	7244.9	10340.00
7	17243.45	42.13	1.034	0.30 (0.26)	0.85	8233.0	13830.00
8	18302.31	48.96	0.953	0.30 (0.26)	0.85	9736.0	110.00
9	19489.36	57.97	0.870	0.30 (0.26)	0.86	12479.5	10100.00
10	20369.66	65.05	0.827	0.30 (0.26)	0.86	14708.6	12741.00
11	21898.44	77.00	0.768	0.30 (0.27)	0.88	19555.9	31100.00
12	23427.50	90.02	0.704	0.30 (0.27)	0.90	25042.4	40100.00
13	24392.74	98.82	0.679	0.30 (0.27)	0.91	28668.2	11801.00
14	26339.87	119.43	0.621	0.30 (0.28)	0.93	38736.5	11000.00
15	27802.44	128.95	0.604	0.30 (0.28)	0.94	45166.8	11330.00
16	28424.29	136.94	0.590	0.30 (0.28)	0.94	50253.9	10630.00
17	28187.58	142.57	0.581	0.30 (0.28)	0.94	52843.8	12330.00
18	27933.75	149.25	0.569	0.30 (0.28)	0.95	55986.2	11600.00
19	27558.54	155.12	0.559	0.30 (0.28)	0.95	58220.6	11111.00
20	27139.46	161.36	0.549	0.30 (0.28)	0.95	60154.4	12201.00
21	26215.74	170.54	0.533	0.30 (0.29)	0.95	62242.7	12231.00
22	25376.79	178.27	0.520	0.30 (0.29)	0.95	63654.2	10400.00
23	24739.65	189.54	0.510	0.30 (0.29)	0.95	65275.0	10320.00
24	23817.09	199.39	0.502	0.30 (0.29)	0.95	65662.8	12000.00
25	20993.22	229.41	0.479	0.30 (0.29)	0.95	66279.8	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 S39- COMPLEX - PHASE CONDITION NO PA5 *
* 10-YR RM EV JUNE 2019 ROKAMOTO *

FILE NAME: RI10EV39.DAT
TIME/DATE OF STUDY: 10:13 06/14/2019

=====

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 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	56	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: RI10EV38.DNA

MEMORY BANK # 2 DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12679.89	16.63	0.30 (0.26)	0.85	2916.9	13889.00
2	17243.45	42.13	0.30 (0.26)	0.85	8233.0	13830.00
3	18302.31	48.96	0.30 (0.26)	0.85	9736.0	110.00
4	19489.36	57.97	0.30 (0.26)	0.86	12479.5	10100.00
5	20369.66	65.05	0.30 (0.26)	0.86	14708.6	12741.00
6	21898.44	77.00	0.30 (0.27)	0.88	19555.9	31100.00
7	23427.50	90.02	0.30 (0.27)	0.90	25042.4	40100.00
8	24392.74	98.82	0.30 (0.27)	0.91	28668.2	11801.00
9	26339.87	119.43	0.30 (0.28)	0.93	38736.5	11000.00
10	27802.44	128.95	0.30 (0.28)	0.94	45166.8	11330.00
11	28424.29	136.94	0.30 (0.28)	0.94	50253.9	10630.00
12	28187.58	142.57	0.30 (0.28)	0.94	52843.8	12330.00
13	27933.75	149.25	0.30 (0.28)	0.95	55986.2	11600.00
14	27558.54	155.12	0.30 (0.28)	0.95	58220.6	11111.00
15	27139.46	161.36	0.30 (0.28)	0.95	60154.4	12201.00
16	26215.74	170.54	0.30 (0.29)	0.95	62242.7	12231.00
17	25376.79	178.27	0.30 (0.29)	0.95	63654.2	10400.00
18	24739.65	189.54	0.30 (0.29)	0.95	65275.0	10320.00
19	23817.09	199.39	0.30 (0.29)	0.95	65662.8	12000.00
20	20993.22	229.41	0.30 (0.29)	0.95	66279.8	10100.00
TOTAL AREA (ACRES) =						66279.8

FLOW PROCESS FROM NODE 13910.00 TO NODE 13910.00 IS CODE = 14.0

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

MAIN-STREAM MEMORY DEFINED AS FOLLOWS:

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12679.89	16.63	0.30 (0.26)	0.85	2916.9	13889.00
2	17243.45	42.13	0.30 (0.26)	0.85	8233.0	13830.00
3	18302.31	48.96	0.30 (0.26)	0.85	9736.0	110.00
4	19489.36	57.97	0.30 (0.26)	0.86	12479.5	10100.00
5	20369.66	65.05	0.30 (0.26)	0.86	14708.6	12741.00
6	21898.44	77.00	0.30 (0.27)	0.88	19555.9	31100.00
7	23427.50	90.02	0.30 (0.27)	0.90	25042.4	40100.00
8	24392.74	98.82	0.30 (0.27)	0.91	28668.2	11801.00
9	26339.87	119.43	0.30 (0.28)	0.93	38736.5	11000.00
10	27802.44	128.95	0.30 (0.28)	0.94	45166.8	11330.00
11	28424.29	136.94	0.30 (0.28)	0.94	50253.9	10630.00
12	28187.58	142.57	0.30 (0.28)	0.94	52843.8	12330.00
13	27933.75	149.25	0.30 (0.28)	0.95	55986.2	11600.00
14	27558.54	155.12	0.30 (0.28)	0.95	58220.6	11111.00
15	27139.46	161.36	0.30 (0.28)	0.95	60154.4	12201.00
16	26215.74	170.54	0.30 (0.29)	0.95	62242.7	12231.00
17	25376.79	178.27	0.30 (0.29)	0.95	63654.2	10400.00
18	24739.65	189.54	0.30 (0.29)	0.95	65275.0	10320.00
19	23817.09	199.39	0.30 (0.29)	0.95	65662.8	12000.00
20	20993.22	229.41	0.30 (0.29)	0.95	66279.8	10100.00
TOTAL AREA (ACRES) =						66279.8

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) = 17.83
* 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) = 28442.65
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.31
AVERAGE FLOW DEPTH(FEET) = 17.83 TRAVEL TIME(MIN.) = 2.46
Tc(MIN.) = 139.41
SUBAREA AREA(ACRES) = 96.09 SUBAREA RUNOFF(CFS) = 36.72
EFFECTIVE AREA(ACRES) = 50350.02 AREA-AVERAGED Fm(INCH/HR) = 0.28
AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
TOTAL AREA(ACRES) = 66375.9 PEAK FLOW RATE(CFS) = 28424.29
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

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 17.83 FLOW VELOCITY(FEET/SEC.) = 9.31

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	12679.89	19.73	1.592	0.30 (0.25)	0.84	3013.0	13889.00
2	17243.45	44.97	1.000	0.30 (0.25)	0.85	8329.0	13830.00
3	18302.31	51.75	0.925	0.30 (0.25)	0.85	9832.1	110.00
4	19489.36	60.71	0.848	0.30 (0.26)	0.85	12575.6	10100.00
5	20369.66	67.76	0.814	0.30 (0.26)	0.86	14804.6	12741.00
6	21898.44	79.65	0.755	0.30 (0.26)	0.88	19651.9	31100.00
7	23427.50	92.62	0.696	0.30 (0.27)	0.90	25138.5	40100.00
8	24392.74	101.39	0.671	0.30 (0.27)	0.91	28764.2	11801.00
9	26339.87	121.95	0.615	0.30 (0.28)	0.93	38832.6	11000.00
10	27802.44	131.43	0.599	0.30 (0.28)	0.94	45262.9	11330.00
11	28424.29	139.41	0.585	0.30 (0.28)	0.94	50350.0	10630.00
12	28187.58	145.04	0.575	0.30 (0.28)	0.94	52939.9	12330.00
13	27933.75	151.72	0.564	0.30 (0.28)	0.95	56082.3	11600.00
14	27558.54	157.60	0.554	0.30 (0.28)	0.95	58316.7	11111.00
15	27139.46	163.85	0.543	0.30 (0.28)	0.95	60250.5	12201.00
16	26215.74	173.06	0.528	0.30 (0.28)	0.95	62338.8	12231.00

17 25376.79 180.82 0.515 0.30(0.29) 0.95 63750.3 10400.00
 18 24739.65 192.10 0.507 0.30(0.29) 0.95 65371.1 10320.00
 19 23817.09 201.97 0.499 0.30(0.29) 0.95 65758.9 12000.00
 20 20993.22 232.10 0.476 0.30(0.29) 0.95 66375.9 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	12374.12	17.46	1.713	0.30(0.25)	0.84	2768.2	13900.00
2	12801.74	19.73	1.592	0.30(0.25)	0.84	3114.1	13889.00
3	17311.43	44.97	1.000	0.30(0.25)	0.85	8430.2	13830.00
4	18363.51	51.75	0.925	0.30(0.25)	0.85	9933.3	110.00
5	19543.55	60.71	0.848	0.30(0.26)	0.85	12676.7	10100.00
6	20420.69	67.76	0.814	0.30(0.26)	0.86	14905.8	12741.00
7	21944.13	79.65	0.755	0.30(0.26)	0.88	19753.1	31100.00
8	23467.86	92.62	0.696	0.30(0.27)	0.90	25239.6	40100.00
9	24430.81	101.39	0.671	0.30(0.27)	0.91	28865.4	11801.00
10	26372.78	121.95	0.615	0.30(0.28)	0.93	38933.7	11000.00
11	27833.89	131.43	0.599	0.30(0.28)	0.94	45364.0	11330.00
12	28454.51	139.41	0.585	0.30(0.28)	0.94	50451.2	10630.00
13	28216.92	145.04	0.575	0.30(0.28)	0.94	53041.0	12330.00
14	27962.05	151.72	0.564	0.30(0.28)	0.95	56183.5	11600.00
15	27585.94	157.60	0.554	0.30(0.28)	0.95	58417.8	11111.00
16	27165.88	163.85	0.543	0.30(0.28)	0.95	60351.6	12201.00
17	26240.74	173.06	0.528	0.30(0.28)	0.95	62439.9	12231.00
18	25400.66	180.82	0.515	0.30(0.29)	0.95	63851.4	10400.00
19	24762.73	192.10	0.507	0.30(0.29)	0.95	65472.2	10320.00
20	23839.47	201.97	0.499	0.30(0.29)	0.95	65860.0	12000.00
21	21013.49	232.10	0.476	0.30(0.29)	0.95	66477.0	10100.00

TOTAL AREA (ACRES) = 66477.0

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 28454.51 Tc(MIN.) = 139.407
 EFFECTIVE AREA(ACRES) = 50451.16 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66477.0
 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

>>>>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) = 10.90
 * 10 YEAR RAINFALL INTENSITY(INCH/HR) = 0.584
 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) = 28477.90
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 18.20
 AVERAGE FLOW DEPTH(FEET) = 10.90 TRAVEL TIME(MIN.) = 0.31
 Tc(MIN.) = 139.71
 SUBAREA AREA(ACRES) = 134.30 SUBAREA RUNOFF(CFS) = 46.79
 EFFECTIVE AREA(ACRES) = 50585.46 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66611.3 PEAK FLOW RATE(CFS) = 28454.51
 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) = 10.89

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 10.89 FLOW VELOCITY(FEET/SEC.) = 18.20
 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<<<<<

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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) = 10.05
 * 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) = 28470.35
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 20.22
 AVERAGE FLOW DEPTH(FEET) = 10.05 TRAVEL TIME(MIN.) = 1.15
 Tc(MIN.) = 140.86
 SUBAREA AREA(ACRES) = 96.27 SUBAREA RUNOFF(CFS) = 31.68
 EFFECTIVE AREA(ACRES) = 50681.73 AREA-AVERAGED Fm(INCH/HR) = 0.28
 AREA-AVERAGED Fp(INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.94
 TOTAL AREA(ACRES) = 66707.6 PEAK FLOW RATE(CFS) = 28454.51
 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) = 10.04

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 10.04 FLOW VELOCITY(FEET/SEC.) = 20.21
 LONGEST FLOWPATH FROM NODE 10100.00 TO NODE 14010.00 = 138367.48 FEET.

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END OF STUDY SUMMARY:

TOTAL AREA (ACRES) = 66707.6 TC (MIN.) = 140.86
 EFFECTIVE AREA (ACRES) = 50681.73 AREA-AVERAGED Fm (INCH/HR) = 0.28
 AREA-AVERAGED Fp (INCH/HR) = 0.30 AREA-AVERAGED Ap = 0.940
 PEAK FLOW RATE (CFS) = 28454.51

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp (Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	12374.12	19.35	1.612	0.30 (0.25)	0.83	2998.8	13900.00
2	12801.74	21.59	1.514	0.30 (0.25)	0.83	3344.7	13889.00
3	17311.43	46.66	0.980	0.30 (0.25)	0.84	8660.8	13830.00
4	18363.51	53.42	0.911	0.30 (0.25)	0.84	10163.8	110.00
5	19543.55	62.35	0.840	0.30 (0.26)	0.85	12907.3	10100.00
6	20420.69	69.37	0.806	0.30 (0.26)	0.86	15136.4	12741.00
7	21944.13	81.23	0.747	0.30 (0.26)	0.88	19983.7	31100.00
8	23467.86	94.17	0.692	0.30 (0.27)	0.90	25470.2	40100.00
9	24430.81	102.91	0.667	0.30 (0.27)	0.91	29096.0	11801.00
10	26372.78	123.44	0.612	0.30 (0.28)	0.93	39164.3	11000.00
11	27833.89	132.90	0.596	0.30 (0.28)	0.93	45594.6	11330.00
12	28454.51	140.86	0.583	0.30 (0.28)	0.94	50681.7	10630.00
13	28216.92	146.50	0.573	0.30 (0.28)	0.94	53271.6	12330.00
14	27962.05	153.19	0.562	0.30 (0.28)	0.95	56414.0	11600.00
15	27585.94	159.07	0.552	0.30 (0.28)	0.95	58648.4	11111.00
16	27165.88	165.33	0.541	0.30 (0.28)	0.95	60582.2	12201.00
17	26240.74	174.55	0.525	0.30 (0.28)	0.95	62670.5	12231.00
18	25400.66	182.32	0.514	0.30 (0.28)	0.95	64082.0	10400.00
19	24762.73	193.62	0.505	0.30 (0.29)	0.95	65702.8	10320.00
20	23839.47	203.51	0.498	0.30 (0.29)	0.95	66090.6	12000.00
21	21013.49	233.70	0.475	0.30 (0.29)	0.95	66707.6	10100.00

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 END OF RATIONAL METHOD ANALYSIS
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