



CEQA DRAINAGE STUDY

VALIANO

PDS2013-SP-13-001, PDS2013-GPA-13-011,
PDS2013-STP-13-003, PDS2013-TM-5575,
PDS2013-REZ-13-001, PDS2013-ER-12-08-002

MARCH 2015

County of San Diego, California

prepared for:

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CEQA Drainage Study

For

Valiano

County of San Diego, CA

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March 2015

Prepared for

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 3/18/15
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EXP. 12-31-15

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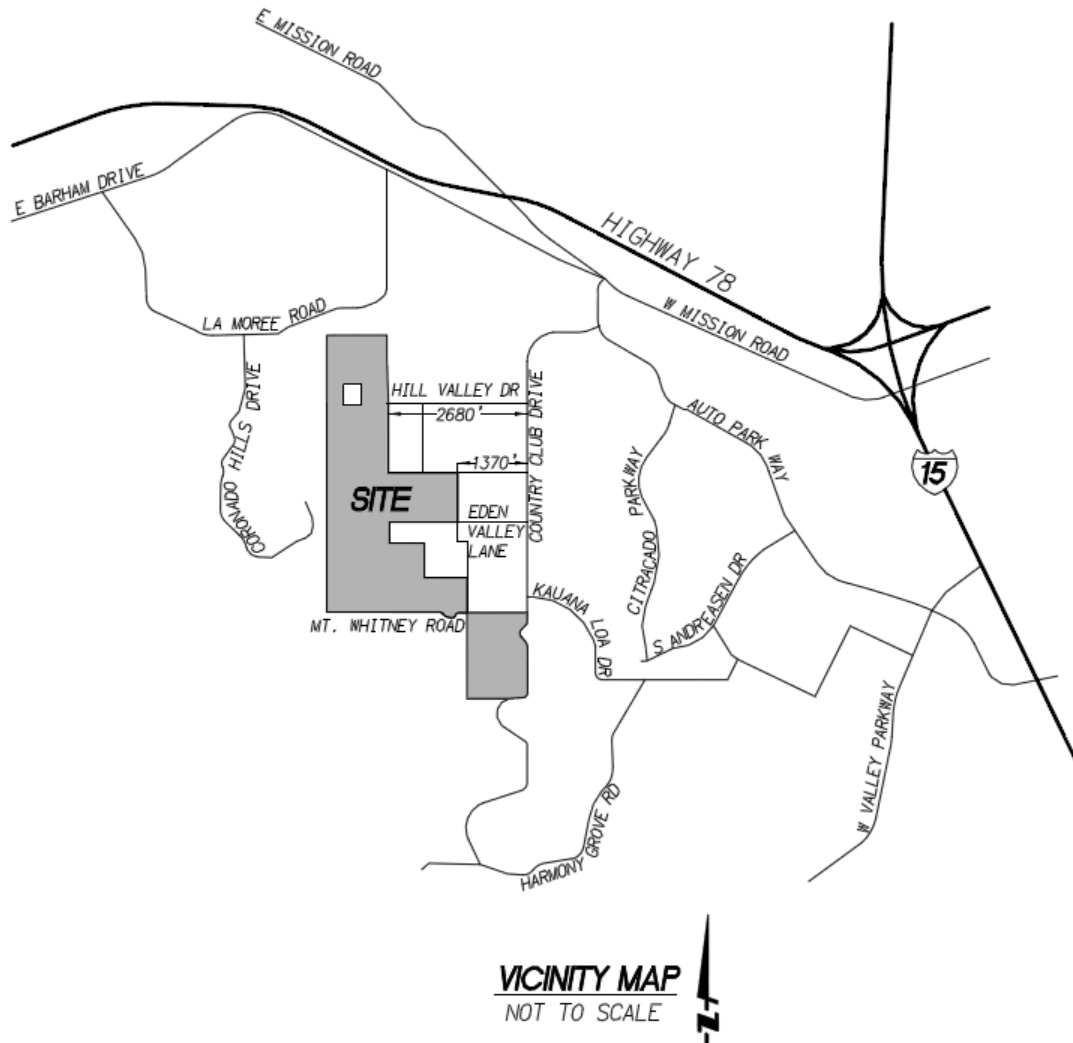
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INTRODUCTION

Project Description:

The Valiano project proposes to construct 326 single family dwelling units on 6 parcels with a cumulative area of 239 acres in the County of San Diego, California. The existing site consists of flat and mountainous terrain and is located on the southwestern corner of Country Club Drive and Hill Valley Drive. The site is located in the unincorporated community of "Eden Valley", primarily comprised of single family residential and equestrian land uses. Reference the Vicinity Map below for a detailed map of the project site.



Private streets within the project consist of one main road that traverses the project from North to South and connects each of the four neighborhoods, and numerous private streets that provide access to the lots within each neighborhood. The two primary access points to the project will be from Eden Valley Lane and Mt. Whitney Road. The southeasterly portion of the project is accessed via private roads from Country Club Drive.

Existing Conditions:

Due to the hillside nature of the site, runoff from the project site splits into several major drainage basins. These basins are delineated in the Existing Hydrology Exhibit in Appendix H.

Basin A encompasses the southwesterly corner of the project site, and includes offsite areas to the west of the project. Flows in this basin drain to the south in a natural drainage channel. This channel continues south through agricultural and undeveloped land, including multiple agricultural ponds, before discharging to Escondido Creek south of the project site.

Basin B consists of the south-central and southeasterly portions of the project site. Basin B includes offsite areas to the west of the project boundary and areas adjacent to the southeasterly portion of the project. Runoff from this basin is collected a natural channel which runs roughly southeasterly through the site, and exits the site near the southeasterly corner. From there, the channel runs south to a confluence point with Basin A and eventually to Escondido Creek. Like Basin A, runoff from Basin B flows through agricultural and undeveloped land, including agricultural ponds, on its path the Escondido Creek.

Basin C originates near the high point of the mountains to the west of the project site, and flows easterly through the central portion of the project site. Runoff from Basin C exits the project site at the easterly property line in the central portion of the site. From there, it flows southeasterly to a confluence with Basin B, and then ultimately to Escondido Creek. Basin C consists of undeveloped, agricultural, and residential land. Runoff in Basin C travels primarily through natural and unlined channels, with culverts at road crossings downstream of the project site.

Basin D encompasses the northerly portion of the project site, and drains in an easterly direction. After exiting the project site, runoff flows in a southeasterly direction to an offsite confluence with flows from Basin C, and ultimately to Escondido Creek.

Proposed Conditions:

Due to the project's location on the hills bordering a valley, the site accepts runoff from the adjacent hills to the west. There is also a good deal of open space which will be preserved within the project, as well as graded slopes which will have no impervious area. Where possible, the offsite drainages and onsite pervious areas will be provided with separate drainage systems, which will prevent the mingling of runoff from these areas with runoff from the developed areas of the site.

The drainage management strategy for the project utilizes multifunction extended detention basins to provide water quality treatment, hydromodification mitigation, and peak detention for the developed portions of the site. At locations where the project proposes to increase un-mitigated post-development flows to a project discharge point, an extended detention basin was then designed to mitigate the impacts of the increase. The detention basins then discharge to the natural drainage courses. Where it discharges to a natural drainage course, appropriately sized energy dissipation will be provided. Energy dissipation will be sized at the time of final engineering.

Geotechnical Conditions:

Geotechnical investigations were prepared for the project site by Geocon, dated September 12, 2012 and December 12, 2012. The surficial site soils encountered include undocumented fill, topsoil, colluvium, alluvium, and Terrace Deposits. These were underlain by formational materials consisting of the Santiago Formation, granitic rock, and metamorphic rock. The formational materials were generally encountered at depths of 1-15' below the ground surface. To determine the Hydrologic Soils Group for the project, data from the Natural Resources Conservation Service (NRCS) was utilized. According to NRCS data, Hydrologic Soil Groups B, C, and D are present within the project.

In order to conservatively size the storm drain facilities and in consideration of the shallow bedrock with is present under much of the developed area, Hydrologic Soil Group D is assumed for the entire project.

METHODOLOGY

Runoff calculations for the Valiano project have been performed in accordance with the 2003 County of San Diego Hydrology Manual (Manual). The AES-2012 computer program was used to calculate the peak runoff from the 100-year, 6 hour storm event using the rational method. Please refer to Appendix C for pertinent excerpts from the Manual, and Appendix D for the results of these calculations.

Rational Method:

As mentioned above, runoff on the project site was calculated for the 100-year storm event. Runoff was calculated using the Rational Method which is given by the following equation:

$$Q = C \times I \times A$$

Where:

Q = Flow rate in cubic feet per second (cfs)

C = Runoff coefficient

I = Rainfall Intensity in inches per hour (in/hr)

A = Drainage basin area in acres, (ac)

Rational Method calculations were performed using the AES-2012 computer program. To perform the hydrology routing, the total watershed area is divided into sub-areas which discharge at designated nodes. The procedure for the sub-area summation model is as follows:

- (1) Subdivide the watershed into an initial sub-area (generally 1 lot) and subsequent sub-areas, which are generally less than 10 acres in size. Assign upstream and downstream node numbers to each sub-area.
- (2) Estimate an initial T_c by using the appropriate nomograph or overland flow velocity estimation. The minimum T_c considered is 5.0 minutes.
- (3) Using the initial T_c , determine the corresponding values of I. Then $Q = CIA$.
- (4) Using Q, estimate the travel time between this node and the next by Manning's equation as applied to particular channel or conduit linking the two nodes. Then, repeat the calculation for Q based on the revised intensity (which is a function of the revised time of concentration)

The nodes are joined together by links, which may be street gutter flows, drainage swales, drainage ditches, pipe flow, or various channel flows. The AES-2010 computer sub-area menu is as follows:

SUBAREA HYDROLOGIC PROCESS

1. Confluence analysis at node.
2. Initial sub-area analysis (including time of concentration calculation).
3. Pipe flow travel time (computer estimated).

4. Pipe flow travel time (user specified).
5. Trapezoidal channel travel time.
6. Street flow analysis through sub-area.
7. User-specified information at node.
8. Addition of sub-area runoff to main line.
9. V-gutter flow through area.
10. Copy main stream data to memory bank
11. Confluence main stream data with a memory bank
12. Clear a memory bank

At the confluence point of two or more basins, the following procedure is used to combine peak flow rates to account for differences in the basin's times of concentration. This adjustment is based on the assumption that each basin's hydrographs are triangular in shape.

- (1). If the collection streams have the same times of concentration, then the Q values are directly summed,

$$Q_p = Q_a + Q_b; T_p = T_a = T_b$$

- (2). If the collection streams have different times of concentration, the smaller of the tributary Q values may be adjusted as follows:

- (i). The most frequent case is where the collection stream with the longer time of concentration has the larger Q. The smaller Q value is adjusted by a ratio of rainfall intensities.

$$Q_p = Q_b + Q_a (I_b/I_a); T_p = T_a$$

- (ii). In some cases, the collection stream with the shorter time of concentration has the larger Q. Then the smaller Q is adjusted by a ratio of the T values.

$$Q_p = Q_b + Q_a (T_b/T_a); T_p = T_b$$

Runoff Coefficient:

The runoff coefficient for the project was calculated using the following formula given in Section 3.1.2 of the Manual:

$$C = 0.90 \times (\% \text{ Impervious}) + [C_p \times (1 - \% \text{ Impervious})]$$

The value of C_p varies based on the hydrologic soil group of the underlying soils. Hydrologic soil group D was assumed for all areas as this is the prevalent soil group near the project site. Group D soils have very slow infiltration rates when thoroughly wetted. Consisting chiefly of clay soils with a high swelling potential, soils with a high permanent water table, soils with clay pan or clay layer at or near the surface, and shallow soils over nearly impervious materials, Group D soils have a very slow rate of water transmission. The value of C_p for Group D soils is 0.35.

Of the total developed area, approximately 65% is impervious. This includes the buildings, roads, sidewalks, and other various hardscape. A corresponding C factor of 0.71 was used for all developed areas.

For the offsite tributary area to the Hill Valley Road crossing, a C value was selected based on the housing densities allowed in the General Plan. Per the San Dieguito Community Plan Area map included in Appendix G, the land use designations for this area are SR-1 and SR-2. The maximum density allowed in these land uses is 1 du/acre. The soils in this offsite basin are primarily Group C. The runoff coefficient which corresponds to a density of 1 du/acre and Group C soils is 0.36.

Rainfall Intensity:

Rainfall intensity was calculated using the following equation, which is given in the Manual:

$$I = 7.44 \times P_6 \times (T_c^{-0.645})$$

Where:

I = Rainfall Intensity in inches per hour (in/hr)

P₆ = Rainfall in inches for the 6-hour storm event = 3.2 inches

T_c = Time of concentration in minutes

Travel times between hydrology nodes were calculated by the AES-2012 computer program. For pipe flow, a Manning's N value of 0.013 was used to reflect the use of HDPE pipe. For flows in concrete ditches and streets, an N value of 0.015 was used.

Tributary Area:

Drainage basins are delineated on the Major Hydrologic Basin Exhibit found in Appendix B which graphically portrays the tributary area for each basin. The project was graded in a manner such that the proposed drainage patterns closely match that of the existing conditions.

Hydrologic Basin	Existing Area (ac)	Proposed Area (ac)	Δ
A	26.8	26.8	0
B	214.8	217.7	+2.9
C	173.5	173.3	-0.2
D	49.1	46.4	-2.7

Extended Detention Basins are located throughout the site which will be used for Hydromodification and 100 year storm attenuation to ensure that the runoff will be greater than or equal to the runoff in the existing condition.

CALCULATIONS/RESULTS

Hydrologic Basin Flowrates:

AES was used to calculate both the existing and proposed flows during a 100 year storm. As you can see in the tables below, each hydrologic basin sees an increase in 100 year flow if no detention is present. This increase in flow will be mitigated through the use of a system of extended detention basins which will be used for both hydromodification and detaining 100 year storms.

Hydrologic Basin A: AES Results at Discharge from Project (Proposed Node 115)

	Existing	Proposed	Δ
A	26.8 ac	26.7 ac	-0.1 ac
T _c	10.3 min	10.0 min	-0.3 min
Q ₁₀₀	48.1 cfs	55.7 cfs	+7.6 cfs

Hydrologic Basin B: AES Results at Discharge from Project (Proposed Node 2200)

	Existing	Proposed	Δ
A	214.8 ac	217.7 ac	+2.8 ac
T _c	18.8 min	14.3 min	-4.5 min
Q ₁₀₀	297.4 cfs	465.6 cfs	+168.2 cfs

Hydrologic Basin C: AES Results at Discharge from Project (Proposed Node 3013)

	Existing	Proposed	Δ
A	173.5 ac	173.3 ac	-0.2 ac
T _c	16.8 min	13.3 min	-3.5 min
Q ₁₀₀	237.9 cfs	349.5 cfs	+111.6 cfs

Hydrologic Basin D: AES Results at Discharge from Project (Proposed Node 439)

	Existing	Proposed	Δ
A	49.1 ac	46.4 ac	-2.7 ac
T _c	12.1 min	9.8 min	-2.3 min
Q ₁₀₀	82.0 cfs	112.6 cfs	+30.6 cfs

Detention Basin Design

The Valiano project is subject to hydromodification mitigation under the Final Hydromodification Management Plan for the County of San Diego, dated March 2011. The goal of hydromodification mitigation is to reduce erosion in downstream receiving waters from increased runoff rates and durations during small and medium sized storm events. The Valiano project proposes to use extended detention ponds with a bioretention layer as Low Impact Development (LID) BMPs to mitigate the effects of hydromodification. These LID BMPs have been sized for both water quality treatment and hydromodification flow control. A detailed analysis of the hydromodification flow control aspects of the LID BMPs can be found in the project's Hydromodification Management Study, dated November 2014, by Fuscoe Engineering.

Once the extended detention ponds were sized per hydromodification criteria, using Brown and Caldwell's "Hydromodification Calculator", the basin was analyzed to see how it would perform during a 100 year storm event. A model storm event was created for each basin by inputting the AES hydrology results into Rick Rat Hydro. This information was used in the "Retarding Basin Routing Analysis" module of AES to define a basin inflow hydrograph. Stage, storage and discharge information was defined based off of contour areas for each foot of depth, orifice size and depth per the Hydromodification Calculator results, as well as weir heights and length. The basin routing module was then run, providing an outflow hydrograph which included post-detention output for each basin, maximum depths of ponding and the corresponding time periods required for each to occur. A table summarizing these results is shown below. Refer to Appendix E for the full results.

Hydraflow Detention Basin Analysis Results**Hydrologic Basin A**

Extended Detention Basin	Undetained Peak Q (cfs)	Detained Peak Q (cfs)	ΔQ Peak (cfs)	Max Depth (feet)	Time to peak (hrs)
1	15.2	1.5	-13.7	3.0	4.4 hrs
Total attenuation			-13.7 cfs		

Hydrologic Basin B

Extended Detention Basin	Undetained Peak Q (cfs)	Detained Peak Q (cfs)	ΔQ Peak (cfs)	Max Depth (feet)	Time to peak (hrs)
2A	15.6	1.4	-14.2	2.9	4.4
2B	27.6	9.3	-18.3	4.1	4.2
2C	55.2	13.3	-41.9	4.7	4.2
2D	8.9	2.8	-6.1	2.1	4.2
2E	29.1	9.7	-19.4	4.2	4.4
5A	42.5	6.1	-36.4	3.1	4.3
5B	24.5	7.9	-16.6	3.9	4.2
5C	20.6	7.3	-13.3	2.5	4.3
5D	18.6	16.5	-2.1	3.7	4.4
Total attenuation			-168.3 cfs		

Hydrologic Basin C

Basin	Undetained Peak Q (cfs)	Detained Peak Q (cfs)	ΔQ Peak (cfs)	Max Depth (feet)	Time to peak (hrs)
3A	19.0	10.6	-8.4	2.5	4.2 hrs
3B	45.0	17.1	-27.9	4.8	4.2 hrs
3C	40.4	10.6	-29.8	4.1	4.2 hrs
3D	56.4	5.5	-50.9	3.1	4.4 hrs
Total attenuation			-117 cfs		

Hydrologic Basin D

Basin	Undetained Peak Q (cfs)	Detained Peak Q (cfs)	ΔQ Peak (cfs)	Max Depth (feet)	Time to peak (hrs)
4A	30.1	8.0	-22.1	4.2	4.3
4B	13.2	2.8	-10.4	1.7	4.3
Total attenuation			-32.5 cfs		

As you can see in the results above, the extended detention ponds designed for hydromodification were capable of storing and discharging the 100 year storm event. As shown in the summary below, the attenuation provided by the detention basins was greater than the increase in flow expected from the development of the site, thus no downstream impacts are expected.

Summary of Detention Provided

Hydrologic Basin A
Increase in Q_{100} due to development = +7.6 cfs
Decrease in Q_{100} from extended detention basin attenuation = -13.7 cfs
Hydrologic Basin B
Increase in Q_{100} due to development = +168.2 cfs
Decrease in Q_{100} from extended detention basin attenuation = -168.3 cfs
Hydrologic Basin C
Increase in Q_{100} due to development = +111.6 cfs
Decrease in Q_{100} from extended detention basin attenuation = -117.0 cfs
Hydrologic Basin D
Increase in Q_{100} due to development = +30.6 cfs
Decrease in Q_{100} from extended detention basin attenuation = -32.5 cfs

100 Year Floodplain Analysis

A HEC-RAS analysis was completed for all areas of the project site with drainage basins larger than 100 acres. This includes the creek which crosses Mt. Whitney Road in the easterly portion of the project and runs through Neighborhood 5, as well as for the natural channel running through Neighborhood 3. For Neighborhood 5, cross sections were defined in HEC-RAS 4.1 for both the existing and proposed grading. The 100-year storm event flow ($Q_{100}=1,636$ cfs) was taken from the report entitled: "Final Design Onsite Drainage Study for Harmony Grove Village" by Rick Engineering dated October 13, 2011. Excerpts from this report can be found in Appendix F. The system of extended detention basins will detain flows such that the proposed condition will have runoff less than or equal to the existing condition; thus the same 100-year flows were used in both cases.

The existing creek has irregular wide side slopes and runs through a eucalyptus grove. The Manning's coefficient for the existing condition was estimated to be 0.10. In the proposed condition, some areas will be fuel management area, thus there will be less foliage and more weeds and small brush. The Manning's coefficient for the thinned areas was estimated to be 0.08. For protected areas of biological open space, the existing condition n value of 0.10 was used.

	Existing	Proposed (Biological Open Space)	Proposed (thinned)
Q_{100}	1,636	1,636	1,636
Mannings n	n=0.10	n=0.10	N=0.08

During the HEC-RAS analysis, it was determined that to ensure the roadway was not overtopped, a triple 12'x6' box culvert is required at the Mt. Whitney Road crossing, a triple 10'x6' box culvert at the northern Street 5A crossing and a Consplan bridge (20' span, 7' rise) at the southern Street 5A crossing is required. Water surface elevations were calculated at each cross section, and pad elevations were checked to ensure that they were all a minimum of 12" above the flood water surface elevation. Additionally, the water surface elevations on the adjacent properties upstream of Mt. Whitney Road were compared to ensure that there is no impact in 100-year water surface elevations on the adjacent properties. The installation of the triple 12'x6' box culverts under the proposed Mt. Whitney Road will result in negligible impacts to the water surface elevations at the existing structures to the north. Thus, the project will not impact flooding risk on these properties. The existing and

proposed 100 year floodplains, along with their respective water surface elevations resulting from the HEC-RAS study are shown on the "Valiano Neighborhood 5 100 Year Storm Inundation Exhibit" which can be found in Appendix F. HEC-RAS files have also been provided in Appendix F for reference.

For the Neighborhood 3 floodplain analysis, only the proposed condition cross sections were analyzed in HEC-RAS. The flow rate was determined by the Basin C hydrology analysis. According to the AES analysis, node 390 at the upstream end of the channel has a proposed flow rate of 272.42 cfs, ignoring detention. We analyzed the culvert crossing in HY-8 to determine a "Known Water Surface Elevation" (692.48) to be used in the HEC-RAS analysis. For the HEC-RAS analysis, the flow was routed through cross sections generated from the existing topography and, where applicable, the proposed grading. Water surface elevations were calculated at each cross section, and pad elevations were checked to ensure that they were all a minimum of 12" above the flood water surface elevation. The proposed 100 year floodplains, along with water surface elevations resulting from the HEC-RAS study are shown on the "Valiano Neighborhood 3 100 Year Storm Inundation Exhibit" which can be found in Appendix F. HEC-RAS files have also been provided in Appendix F for reference.

Hill Valley Drive Analysis

To provide access to the northerly emergency access route to the site, the project proposes to pave the existing dirt road, Hill Valley Drive, from the project boundary east to the existing paved portion of Hill Valley Drive. As part of this work, the road will be raised six inches and paved with concrete at an existing dip section in the road where there is a 24" culvert crossing. To ensure that the proposed condition does not create adverse impacts, a hydrology and hydraulics analysis has been performed on this crossing. The hydrology calculations were performed in AES using the procedure described above. The total tributary area to the crossing is approximately 48.1 acres, and the 100-year peak flow is about 61.1 cfs. AES results and a hydrology exhibit for the Hill Valley Drive crossing can be found in Appendix G.

Both the existing and proposed road crossings were analyzed to determine the performance of the culvert. The culvert analysis was performed using the HY-8 software program, and the results are presented in Appendix G.

Under the existing conditions, the road acts as a dipped section per County of San Diego Design Standard DS-14 with a 24" diameter culvert, although it is substandard due to it not being paved. During a 100 year storm event the road is overtopped by 3 inches and has an upstream water surface elevation of 703.75.

In the proposed condition, the 24" culvert will remain in place and the road will continue to function as a dipped section per DS-14 although the road will be raised six inches and paved with concrete, thus bringing it up to standard. The concrete will reduce the potential of erosion and increase road safety. Under peak flow conditions the road again will be overtopped by 3 inches, and have an upstream water surface elevation of 704.24. The depth of overtopping multiplied by the velocity will be 2.2, which is in accordance with the DS-14 standard which requires it to be less than 6. The slight increase in upstream water surface elevation will have no impacts on the existing residences to the north.

CONCLUSION

The project's hydrologic basins were modeled in AES for both the existing and proposed conditions during a 100 year storm. AES results can be found in Appendix D. For the proposed condition, runoff from developed areas was routed to extended detention basins. Where possible, runoff from undeveloped areas was bypassed around the extended detention basins to avoid mingling until post-treatment. As shown in the Hydromodification Study, these basins were sized for both water quality treatment and hydromodification mitigation. The detention basins were analyzed and it was determined that they were all adequately sized to also be used for 100 year storm event attenuation. Results for the detention basin analysis can be found in Appendix E. Through the use of the detention basins, the flows leaving the site will be less than or equal to the existing condition. All proposed storm water facilities will be privately maintained by the project's homeowner's association.

A HEC-RAS study was conducted for the creek running through Neighborhood 5, as well as Neighborhood 3. It was determined that a triple 12'x6' box culvert is required at the Mt. Whitney Road crossing, a triple 10'x6' box culvert at the northern Street 5A crossing and a Conspan bridge (20' span, 7' rise) at the southern Street 5A crossings. Water surface elevations were determined to check that the pad elevations were set sufficiently high enough to avoid any flooding during 100-year storms, and the water surface elevations will not have an impact on adjacent properties. Results from the HEC-RAS analysis can be found in Appendix F. The proposed road crossing on Hill Valley Drive was also analyzed. It was found that the proposed dipped road crossing will be in conformance with County Standards. Results of the Hill Valley Drive culvert analysis can be found in Appendix G.

Appendix A

Declaration of Responsible Charge

"DECLARATION OF RESPONSIBLE CHARGE"

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

FUSCOE ENGINEERING, INC.
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SAN DIEGO, CALIFORNIA 92122
(858) 554-1500



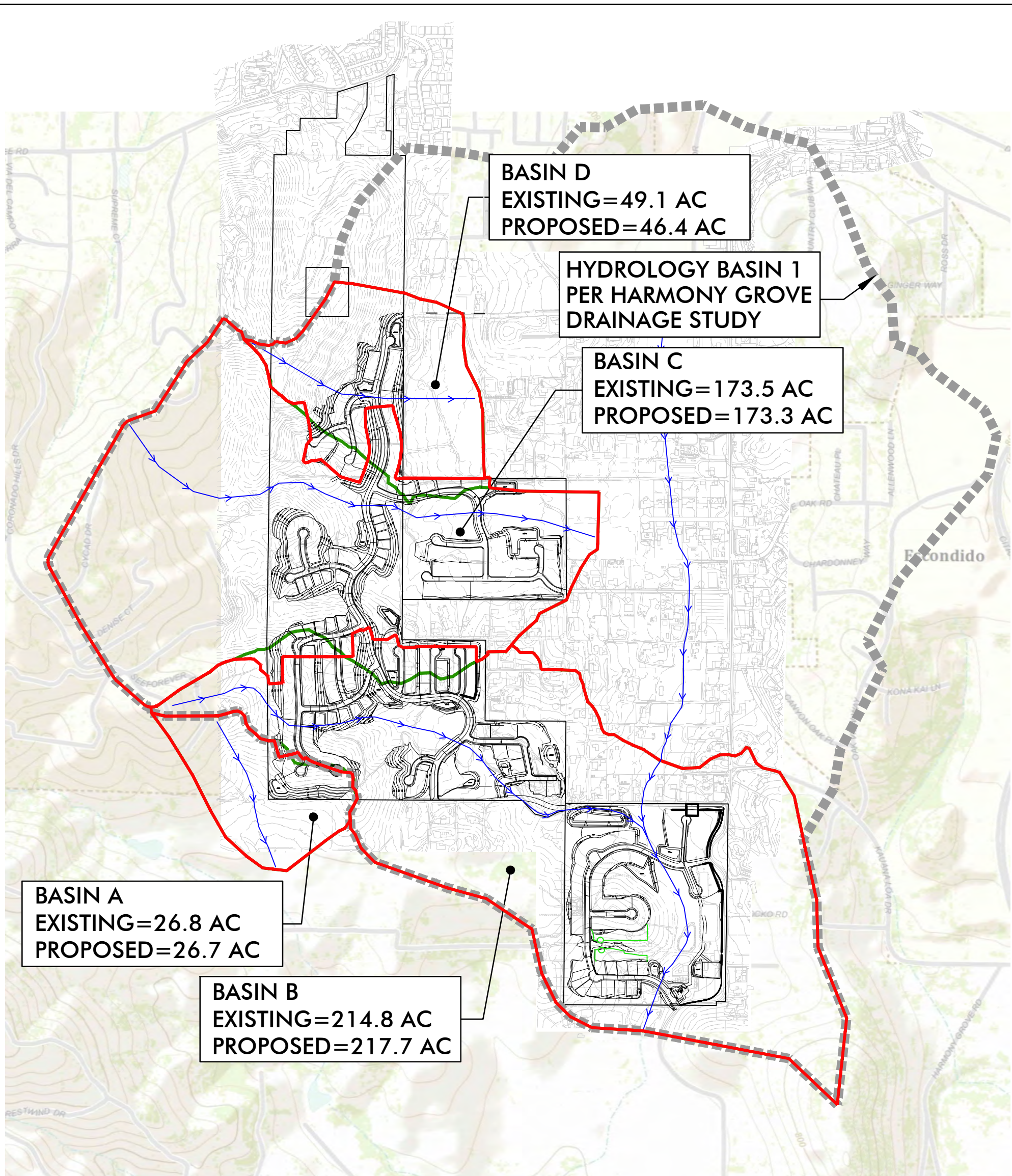
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REGISTRATION EXPIRATION DATE: DECEMBER 31, 2015

Appendix B

Major Hydrologic Basin Exhibit



LEGEND

EXISTING BASIN BOUNDARY



EXISTING DRAINAGE PATTERN



PROPOSED BASIN BOUNDARY



BASIN 1 PER HARMONY GROVE
DRAINAGE STUDY



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VALIANO
MAJOR HYDROLOGIC
BASIN EXHIBIT

Appendix C

Hydrology Manual Excerpts

100 Year, 6 Hour Isopluvial Map
100 Year, 24 Hour Isopluvial Map
Table 3-1

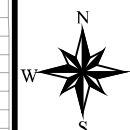
County of San Diego Hydrology Manual



Rainfall Isoplethials

100 Year Rainfall Event - 6 Hours

Isoplethial (inches)

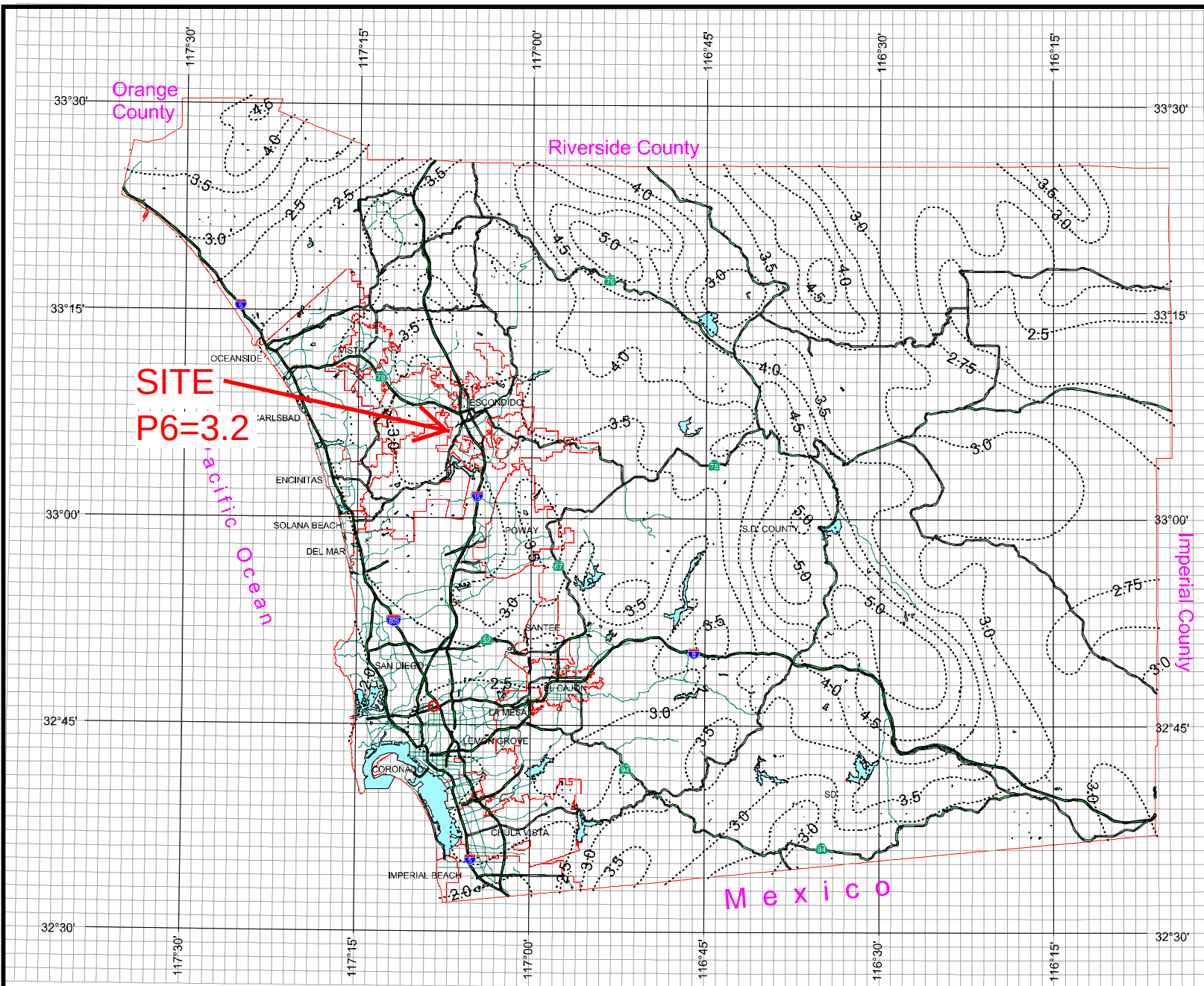


3 0 3 Miles

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County of San Diego Hydrology Manual



Rainfall Isopluvials

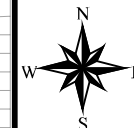
100 Year Rainfall Event - 24 Hours

Isopluvial (inches)

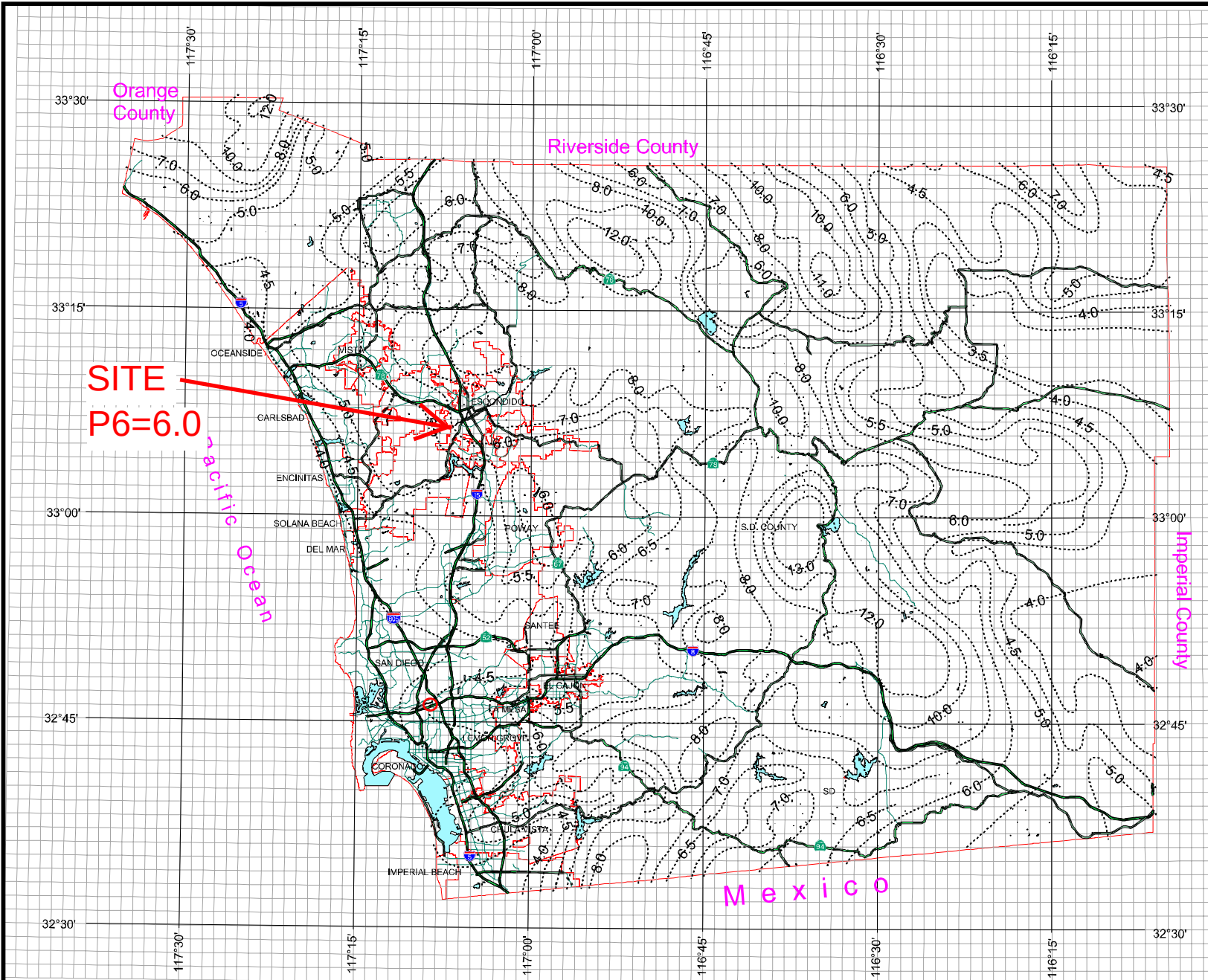


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3 0 3 Miles



**Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS**

Land Use		Runoff Coefficient "C"				
NRCS Elements	County Elements	% IMPER.	Soil Type			
			A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, C_p , for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).

DU/A = dwelling units per acre

NRCS = National Resources Conservation Service

Appendix D

AES Analysis

Existing Conditions Coding Summary

Existing Conditions AES Output

Proposed Conditions Coding Summary

Proposed Conditions AES Output

BASIN A



Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Date: Aug 2013
EDEN100.DAT
Run Name: 100 Series

Page: 1

Node to Node	Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
100 101	2	1015.0	1000.0	107.61	0.35	0.10	
101 102	5	1000.0	950.0	307.50	0.35	1.35	Mtn. Channel
102 103	5	950.0	863.0	386.75	0.350	2.280	
103 104	5	863.0	832.0	199.49	0.35	0.43	
104 104	1	-	-	-	-	-	1 of 3
105 106	2	975.0	967.0	98.40	0.350	0.10	
106 107	5	967.0	918.0	218.70	0.35	0.92	
107 104	5	918.0	832.0	384.60	0.35	1.58	
104 104	1	-	-	-	-	-	2 of 3
108 109	2	900.0	896.0	75.00	0.35	0.10	
109 104	5	896.0	832.0	333.40	0.35	1.37	
104 104	1	-	-	-	-	-	3 of 3
104 110	5	832.0	816.0	151.10	0.35	0.89	
110 111	5	816.0	786.0	372.90	0.35	2.58	
111 111	1	-	-	-	-	-	1 of 2
112 113	2	975.0	950.0	128.40	0.350	0.11	
113 114	5	950.0	875.0	395.10	0.35	1.25	
114 111	5	875.0	786.0	668.60	0.35	2.75	
111 111		-	-	-	-	-	2 of 2
111 115	5	786.0	775.0	254.80	0.35	0.86	
115 115	1	-	-	-	-	-	1 of 2
116 117	2	880.0	852.0	103.20	0.35	0.10	
117 115	5	852.0	775.0	665.80	0.35	2.29	
115 115	1	-	-	-	-	-	2 of 2
115 115	10	-	-	-	-	-	Save to Bank 1
118 119	2	902.0	899.0	75.00	0.35	0.11	
119 120	5	899.0	805.0	497.10	0.35	1.49	
120 120	1	-	-	-	-	-	1 of 3
121 122	2	869.0	866.0	81.00	0.35	0.11	
122 120	5	866.0	805.0	459.00	0.35	1.70	
120 120	1	-	-	-	-	-	2 of 3

[illegible]

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
2003,1985,1981 HYDROLOGY MANUAL
(c) Copyright 1982-2012 Advanced Engineering Software (aes)
Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fuscoe Engineering
6390 Greenwich Dr.
Suite 170
San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
* EDEN HILLS *
* EXISTING HYDROLOGY STUDY - 100 SERIES *
* OCTOBER 20, 2014 *

FILE NAME: EDEN100.DAT
TIME/DATE OF STUDY: 10:06 10/20/2014

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350

NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

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

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

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

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

*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 107.61
UPSTREAM ELEVATION(FEET) = 1015.00
DOWNSTREAM ELEVATION(FEET) = 1000.00
ELEVATION DIFFERENCE(FEET) = 15.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

```

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      THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
      (Reference: Table 3-1B of Hydrology Manual)
      THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
      SUBAREA RUNOFF(CFS) = 0.26
      TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

*****
      FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 51
      -----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
      >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
      =====
      ELEVATION DATA: UPSTREAM(FEET) = 1000.00 DOWNSTREAM(FEET) = 950.00
      CHANNEL LENGTH THRU SUBAREA(FEET) = 307.50 CHANNEL SLOPE = 0.1626
      CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
      MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.571
      *USER SPECIFIED(GLOBAL):
      NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
      S.C.S. CURVE NUMBER (AMC II) = 85
      TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.81
      TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.69
      AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 1.09
      Tc(MIN.) = 7.36
      SUBAREA AREA(ACRES) = 1.35 SUBAREA RUNOFF(CFS) = 3.10
      AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
      TOTAL AREA(ACRES) = 1.5 PEAK FLOW RATE(CFS) = 3.33

      END OF SUBAREA CHANNEL FLOW HYDRAULICS:
      DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 5.77
      LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 415.11 FEET.

*****
      FLOW PROCESS FROM NODE 102.00 TO NODE 103.00 IS CODE = 51
      -----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
      >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
      =====
      ELEVATION DATA: UPSTREAM(FEET) = 950.00 DOWNSTREAM(FEET) = 863.00
      CHANNEL LENGTH THRU SUBAREA(FEET) = 386.75 CHANNEL SLOPE = 0.2250
      CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
      MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.130
      *USER SPECIFIED(GLOBAL):
      NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
      S.C.S. CURVE NUMBER (AMC II) = 85
      TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.78
      TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.70
      AVERAGE FLOW DEPTH(FEET) = 0.22 TRAVEL TIME(MIN.) = 0.84
      Tc(MIN.) = 8.20
      SUBAREA AREA(ACRES) = 2.28 SUBAREA RUNOFF(CFS) = 4.89
      AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
      TOTAL AREA(ACRES) = 3.7 PEAK FLOW RATE(CFS) = 8.00

      END OF SUBAREA CHANNEL FLOW HYDRAULICS:
      DEPTH(FEET) = 0.26 FLOW VELOCITY(FEET/SEC.) = 8.59
      LONGEST FLOWPATH FROM NODE 100.00 TO NODE 103.00 = 801.86 FEET.

*****
      FLOW PROCESS FROM NODE 103.00 TO NODE 104.00 IS CODE = 51
      -----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

```

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 863.00 DOWNSTREAM(FEET) = 832.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 199.49 CHANNEL SLOPE = 0.1554
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.931

```

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.45

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.75

AVERAGE FLOW DEPTH(FEET) = 0.30 TRAVEL TIME(MIN.) = 0.43

Tc(MIN.) = 8.63

SUBAREA AREA(ACRES) = 0.43 SUBAREA RUNOFF(CFS) = 0.89

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 4.2 PEAK FLOW RATE(CFS) = 8.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.31 FLOW VELOCITY(FEET/SEC.) = 7.75

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 104.00 = 1001.35 FEET.

FLOW PROCESS FROM NODE 104.00 TO NODE 104.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 8.63

RAINFALL INTENSITY(INCH/HR) = 5.93

TOTAL STREAM AREA(ACRES) = 4.16

PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.64

FLOW PROCESS FROM NODE 105.00 TO NODE 106.00 IS CODE = 21

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

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

INITIAL SUBAREA FLOW-LENGTH(FEET) = 98.40

UPSTREAM ELEVATION(FEET) = 975.00

DOWNSTREAM ELEVATION(FEET) = 967.00

ELEVATION DIFFERENCE(FEET) = 8.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.660

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.008

SUBAREA RUNOFF(CFS) = 0.25

TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.25

FLOW PROCESS FROM NODE 106.00 TO NODE 107.00 IS CODE = 51

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 967.00 DOWNSTREAM(FEET) = 918.00

```

CHANNEL LENGTH THRU SUBAREA(FEET) = 218.70 CHANNEL SLOPE = 0.2241

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.517

*USER SPECIFIED(GLOBAL):

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NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          1.29
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.59
AVERAGE FLOW DEPTH(FEET) =    0.09   TRAVEL TIME(MIN.) =    0.79
Tc(MIN.) =    7.45
SUBAREA AREA(ACRES) =    0.92           SUBAREA RUNOFF(CFS) =    2.10
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    1.0             PEAK FLOW RATE(CFS) =    2.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    0.13   FLOW VELOCITY(FEET/SEC.) =    5.64
LONGEST FLOWPATH FROM NODE    105.00 TO NODE    107.00 =    317.10 FEET.

*****
FLOW PROCESS FROM NODE    107.00 TO NODE    104.00 IS CODE =    51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    918.00   DOWNSTREAM(FEET) =    832.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    384.60   CHANNEL SLOPE =    0.2236
CHANNEL BASE(FEET) =    3.00   "Z" FACTOR =    2.000
MANNING'S FACTOR =    0.030   MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    6.027
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          4.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    6.68
AVERAGE FLOW DEPTH(FEET) =    0.18   TRAVEL TIME(MIN.) =    0.96
Tc(MIN.) =    8.41
SUBAREA AREA(ACRES) =    1.58           SUBAREA RUNOFF(CFS) =    3.33
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    2.6             PEAK FLOW RATE(CFS) =    5.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    0.21   FLOW VELOCITY(FEET/SEC.) =    7.61
LONGEST FLOWPATH FROM NODE    105.00 TO NODE    104.00 =    701.70 FEET.

*****
FLOW PROCESS FROM NODE    104.00 TO NODE    104.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) =    8.41
RAINFALL INTENSITY(INCH/HR) =    6.03
TOTAL STREAM AREA(ACRES) =    2.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =    5.48

*****
FLOW PROCESS FROM NODE    108.00 TO NODE    109.00 IS CODE =    21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) =    75.00
UPSTREAM ELEVATION(FEET) =    900.00
DOWNSTREAM ELEVATION(FEET) =    896.00

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 ELEVATION DIFFERENCE(FEET) = 4.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.692
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.986
 SUBAREA RUNOFF(CFS) = 0.24
 TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.24

FLOW PROCESS FROM NODE 109.00 TO NODE 104.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 896.00 DOWNSTREAM(FEET) = 832.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 333.40 CHANNEL SLOPE = 0.1920
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.315
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.76
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.90
 AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 1.14
 Tc(MIN.) = 7.83
 SUBAREA AREA(ACRES) = 1.37 SUBAREA RUNOFF(CFS) = 3.03
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.5 PEAK FLOW RATE(CFS) = 3.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 5.99
 LONGEST FLOWPATH FROM NODE 108.00 TO NODE 104.00 = 408.40 FEET.

FLOW PROCESS FROM NODE 104.00 TO NODE 104.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.83
 RAINFALL INTENSITY(INCH/HR) = 6.31
 TOTAL STREAM AREA(ACRES) = 1.47
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.25

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	8.64	8.63	5.931	4.16
2	5.48	8.41	6.027	2.60
3	3.25	7.83	6.315	1.47

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	16.19	7.83	6.315
2	17.01	8.41	6.027
3	17.09	8.63	5.931

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

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PEAK FLOW RATE(CFS) =      17.09   Tc(MIN.) =      8.63
TOTAL AREA(ACRES) =      8.2
LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =    1001.35 FEET.

*****
FLOW PROCESS FROM NODE    104.00 TO NODE    110.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(Feet) =    832.00  DOWNSTREAM(Feet) =    816.00
CHANNEL LENGTH THRU SUBAREA(Feet) =    151.10  CHANNEL SLOPE =    0.1059
CHANNEL BASE(Feet) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(Feet) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.806
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    17.99
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) =    8.65
AVERAGE FLOW DEPTH(Feet) =    0.52  TRAVEL TIME(MIN.) =    0.29
Tc(MIN.) =    8.92
SUBAREA AREA(ACRES) =    0.89  SUBAREA RUNOFF(CFS) =    1.81
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =    9.1  PEAK FLOW RATE(CFS) =    18.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(Feet) =    0.52  FLOW VELOCITY(Feet/Sec.) =    8.75
LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    1152.45 FEET.

*****
FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(Feet) =    816.00  DOWNSTREAM(Feet) =    786.00
CHANNEL LENGTH THRU SUBAREA(Feet) =    372.90  CHANNEL SLOPE =    0.0805
CHANNEL BASE(Feet) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(Feet) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.508
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    21.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) =    8.21
AVERAGE FLOW DEPTH(Feet) =    0.61  TRAVEL TIME(MIN.) =    0.76
Tc(MIN.) =    9.67
SUBAREA AREA(ACRES) =    2.58  SUBAREA RUNOFF(CFS) =    4.97
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =    11.7  PEAK FLOW RATE(CFS) =    22.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(Feet) =    0.63  FLOW VELOCITY(Feet/Sec.) =    8.40
LONGEST FLOWPATH FROM NODE    100.00 TO NODE    111.00 =    1525.35 FEET.

*****
FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 IS CODE =  1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

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TIME OF CONCENTRATION(MIN.) = 9.67
RAINFALL INTENSITY(INCH/HR) = 5.51
TOTAL STREAM AREA(ACRES) = 11.70
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22.56

*****
FLOW PROCESS FROM NODE 112.00 TO NODE 113.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 128.40
UPSTREAM ELEVATION(FEET) = 975.00
DOWNSTREAM ELEVATION(FEET) = 950.00
ELEVATION DIFFERENCE(FEET) = 25.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.28
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.28

*****
FLOW PROCESS FROM NODE 113.00 TO NODE 114.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 950.00 DOWNSTREAM(FEET) = 875.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 395.10 CHANNEL SLOPE = 0.1898
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.398
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.69
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.70
AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 1.40
Tc(MIN.) = 7.67
SUBAREA AREA(ACRES) = 1.25 SUBAREA RUNOFF(CFS) = 2.80
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.4 PEAK FLOW RATE(CFS) = 3.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 5.84
LONGEST FLOWPATH FROM NODE 112.00 TO NODE 114.00 = 523.50 FEET.

*****
FLOW PROCESS FROM NODE 114.00 TO NODE 111.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 875.00 DOWNSTREAM(FEET) = 786.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 668.60 CHANNEL SLOPE = 0.1331
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.611

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*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.76

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.44

AVERAGE FLOW DEPTH(FEET) = 0.25 TRAVEL TIME(MIN.) = 1.73

Tc(MIN.) = 9.40

SUBAREA AREA(ACRES) = 2.75 SUBAREA RUNOFF(CFS) = 5.40

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 4.1 PEAK FLOW RATE(CFS) = 8.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.31 FLOW VELOCITY(FEET/SEC.) = 7.25

LONGEST FLOWPATH FROM NODE 112.00 TO NODE 111.00 = 1192.10 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 111.00 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.) = 9.40

RAINFALL INTENSITY(INCH/HR) = 5.61

TOTAL STREAM AREA(ACRES) = 4.11

PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.07

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	22.56	9.67	5.508	11.70
2	8.07	9.40	5.611	4.11

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	30.21	9.40	5.611
2	30.48	9.67	5.508

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 30.48 Tc(MIN.) = 9.67

TOTAL AREA(ACRES) = 15.8

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 1525.35 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 115.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 786.00 DOWNSTREAM(FEET) = 775.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 254.80 CHANNEL SLOPE = 0.0432

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.307

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 31.28

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TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.38
 AVERAGE FLOW DEPTH(FEET) = 0.89 TRAVEL TIME(MIN.) = 0.58
 Tc(MIN.) = 10.25
 SUBAREA AREA(ACRES) = 0.86 SUBAREA RUNOFF(CFS) = 1.60
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 16.7 PEAK FLOW RATE(CFS) = 30.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.88 FLOW VELOCITY(FEET/SEC.) = 7.37
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 115.00 = 1780.15 FEET.

FLOW PROCESS FROM NODE 115.00 TO NODE 115.00 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.) = 10.25
 RAINFALL INTENSITY(INCH/HR) = 5.31
 TOTAL STREAM AREA(ACRES) = 16.67
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 30.96

FLOW PROCESS FROM NODE 116.00 TO NODE 117.00 IS CODE = 21

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

=====

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 103.20
 UPSTREAM ELEVATION(FEET) = 880.00
 DOWNSTREAM ELEVATION(FEET) = 852.00
 ELEVATION DIFFERENCE(FEET) = 28.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
 SUBAREA RUNOFF(CFS) = 0.26
 TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

FLOW PROCESS FROM NODE 117.00 TO NODE 115.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 852.00 DOWNSTREAM(FEET) = 775.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 665.80 CHANNEL SLOPE = 0.1157
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.013 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.414
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.85
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.08
 AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 1.37
 Tc(MIN.) = 7.64
 SUBAREA AREA(ACRES) = 2.29 SUBAREA RUNOFF(CFS) = 5.14

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AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 5.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 10.42
LONGEST FLOWPATH FROM NODE 116.00 TO NODE 115.00 = 769.00 FEET.

*****
FLOW PROCESS FROM NODE 115.00 TO NODE 115.00 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.) = 7.64
RAINFALL INTENSITY(INCH/HR) = 6.41
TOTAL STREAM AREA(ACRES) = 2.39
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.36

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 30.96 10.25 5.307 16.67
2 5.36 7.64 6.414 2.39

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

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
1 30.98 7.64 6.414
2 35.40 10.25 5.307

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 35.40 Tc(MIN.) = 10.25
TOTAL AREA(ACRES) = 19.1
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 115.00 = 1780.15 FEET.

*****
FLOW PROCESS FROM NODE 115.00 TO NODE 115.00 IS CODE = 10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====

*****
FLOW PROCESS FROM NODE 118.00 TO NODE 119.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 75.00
UPSTREAM ELEVATION(FEET) = 902.00
DOWNSTREAM ELEVATION(FEET) = 899.00
ELEVATION DIFFERENCE(FEET) = 3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.365
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.567
SUBAREA RUNOFF(CFS) = 0.25
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.25

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 FLOW PROCESS FROM NODE 119.00 TO NODE 120.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 899.00 DOWNSTREAM(FEET) = 805.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 497.10 CHANNEL SLOPE = 0.1891
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.746
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.76
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.89
 AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 1.69
 Tc(MIN.) = 9.06
 SUBAREA AREA(ACRES) = 1.49 SUBAREA RUNOFF(CFS) = 3.00
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.6 PEAK FLOW RATE(CFS) = 3.22

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 5.93
 LONGEST FLOWPATH FROM NODE 118.00 TO NODE 120.00 = 572.10 FEET.

 FLOW PROCESS FROM NODE 120.00 TO NODE 120.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.06
 RAINFALL INTENSITY(INCH/HR) = 5.75
 TOTAL STREAM AREA(ACRES) = 1.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.22

 FLOW PROCESS FROM NODE 121.00 TO NODE 122.00 IS CODE = 21

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

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 81.00
 UPSTREAM ELEVATION(FEET) = 869.00
 DOWNSTREAM ELEVATION(FEET) = 866.00
 ELEVATION DIFFERENCE(FEET) = 3.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.853
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.301
 SUBAREA RUNOFF(CFS) = 0.24
 TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.24

 FLOW PROCESS FROM NODE 122.00 TO NODE 120.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 866.00 DOWNSTREAM(FEET) = 805.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 459.00 CHANNEL SLOPE = 0.1329

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CHANNEL BASE(FEET) =      3.00    "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.537
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      1.90
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.39
AVERAGE FLOW DEPTH(FEET) = 0.13    TRAVEL TIME(MIN.) = 1.74
Tc(MIN.) = 9.60
SUBAREA AREA(ACRES) =      1.70    SUBAREA RUNOFF(CFS) =      3.29
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      1.8    PEAK FLOW RATE(CFS) =      3.51

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.19    FLOW VELOCITY(FEET/SEC.) = 5.53
LONGEST FLOWPATH FROM NODE      121.00 TO NODE      120.00 =      540.00 FEET.

*****
FLOW PROCESS FROM NODE      120.00 TO NODE      120.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.60
RAINFALL INTENSITY(INCH/HR) = 5.54
TOTAL STREAM AREA(ACRES) = 1.81
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.51

*****
FLOW PROCESS FROM NODE      123.00 TO NODE      124.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 86.70
UPSTREAM ELEVATION(FEET) = 847.00
DOWNSTREAM ELEVATION(FEET) = 831.00
ELEVATION DIFFERENCE(FEET) = 16.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.835
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.632
SUBAREA RUNOFF(CFS) = 0.27
TOTAL AREA(ACRES) = 0.10    TOTAL RUNOFF(CFS) = 0.27

*****
FLOW PROCESS FROM NODE      124.00 TO NODE      120.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 831.00    DOWNSTREAM(FEET) = 805.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 274.80    CHANNEL SLOPE = 0.0946
CHANNEL BASE(FEET) = 3.00    "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.580
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.86

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TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.04
 AVERAGE FLOW DEPTH(FEET) = 0.09 TRAVEL TIME(MIN.) = 1.51
 Tc(MIN.) = 7.34
 SUBAREA AREA(ACRES) = 0.51 SUBAREA RUNOFF(CFS) = 1.17
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 0.6 PEAK FLOW RATE(CFS) = 1.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.12 FLOW VELOCITY(FEET/SEC.) = 3.46
 LONGEST FLOWPATH FROM NODE 123.00 TO NODE 120.00 = 361.50 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 120.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.34
 RAINFALL INTENSITY(INCH/HR) = 6.58
 TOTAL STREAM AREA(ACRES) = 0.61
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.40

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	3.22	9.06	5.746	1.60
2	3.51	9.60	5.537	1.81
3	1.40	7.34	6.580	0.61

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	6.70	7.34	6.580
2	7.76	9.06	5.746
3	7.79	9.60	5.537

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 7.79 Tc(MIN.) = 9.60
 TOTAL AREA(ACRES) = 4.0
 LONGEST FLOWPATH FROM NODE 118.00 TO NODE 120.00 = 572.10 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 125.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 805.00 DOWNSTREAM(FEET) = 786.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 260.20 CHANNEL SLOPE = 0.0730
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.279
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.13
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.89
 AVERAGE FLOW DEPTH(FEET) = 0.37 TRAVEL TIME(MIN.) = 0.74

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Tc(MIN.) = 10.33
 SUBAREA AREA(ACRES) = 0.37 SUBAREA RUNOFF(CFS) = 0.68
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 4.4 PEAK FLOW RATE(CFS) = 8.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.37 FLOW VELOCITY(FEET/SEC.) = 5.88
 LONGEST FLOWPATH FROM NODE 118.00 TO NODE 125.00 = 832.30 FEET.

FLOW PROCESS FROM NODE 125.00 TO NODE 125.00 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.) = 10.33
 RAINFALL INTENSITY(INCH/HR) = 5.28
 TOTAL STREAM AREA(ACRES) = 4.39
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.11

FLOW PROCESS FROM NODE 118.00 TO NODE 126.00 IS CODE = 21

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

=====

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 75.00
 UPSTREAM ELEVATION(FEET) = 902.00
 DOWNSTREAM ELEVATION(FEET) = 900.00
 ELEVATION DIFFERENCE(FEET) = 2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.431
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.019
 SUBAREA RUNOFF(CFS) = 0.21
 TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.21

FLOW PROCESS FROM NODE 126.00 TO NODE 127.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 900.00 DOWNSTREAM(FEET) = 803.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 468.90 CHANNEL SLOPE = 0.2069
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.408

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.13
 AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 1.52
 Tc(MIN.) = 9.95
 SUBAREA AREA(ACRES) = 1.83 SUBAREA RUNOFF(CFS) = 3.46
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.9 PEAK FLOW RATE(CFS) = 3.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 6.40
 LONGEST FLOWPATH FROM NODE 118.00 TO NODE 127.00 = 543.90 FEET.

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*****
FLOW PROCESS FROM NODE      127.00 TO NODE      125.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   803.00  DOWNSTREAM(FEET) =   786.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   187.00  CHANNEL SLOPE =   0.0909
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   5.200
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =         4.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    5.00
AVERAGE FLOW DEPTH(FEET) =    0.23  TRAVEL TIME(MIN.) =    0.62
Tc(MIN.) =   10.58
SUBAREA AREA(ACRES) =    0.40      SUBAREA RUNOFF(CFS) =    0.73
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =    2.3      PEAK FLOW RATE(CFS) =    4.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.24  FLOW VELOCITY(FEET/SEC.) =    5.09
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    125.00 =    730.90 FEET.

*****
FLOW PROCESS FROM NODE      125.00 TO NODE      125.00 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.) =   10.58
RAINFALL INTENSITY(INCH/HR) =    5.20
TOTAL STREAM AREA(ACRES) =    2.33
PEAK FLOW RATE(CFS) AT CONFLUENCE =    4.24

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
    1         8.11      10.33         5.279         4.39
    2         4.24      10.58         5.200         2.33

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
    1        12.25      10.33         5.279
    2        12.23      10.58         5.200

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    12.25  Tc(MIN.) =   10.33
TOTAL AREA(ACRES) =    6.7
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    125.00 =    832.30 FEET.

*****
FLOW PROCESS FROM NODE      125.00 TO NODE      128.00 IS CODE =  51
-----

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>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    786.00  DOWNSTREAM(FEET) =    780.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    94.70  CHANNEL SLOPE =    0.0634
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.200
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    12.33
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    6.43
AVERAGE FLOW DEPTH(FEET) =    0.48  TRAVEL TIME(MIN.) =    0.25
Tc(MIN.) =    10.58
SUBAREA AREA(ACRES) =    0.08  SUBAREA RUNOFF(CFS) =    0.15
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    6.8  PEAK FLOW RATE(CFS) =    12.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    0.48  FLOW VELOCITY(FEET/SEC.) =    6.45
LONGEST FLOWPATH FROM NODE    118.00 TO NODE    128.00 =    927.00 FEET.

*****
FLOW PROCESS FROM NODE    128.00 TO NODE    128.00 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.) =    10.58
RAINFALL INTENSITY(INCH/HR) =    5.20
TOTAL STREAM AREA(ACRES) =    6.80
PEAK FLOW RATE(CFS) AT CONFLUENCE =    12.38

*****
FLOW PROCESS FROM NODE    129.00 TO NODE    130.00 IS CODE =    21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) =    106.00
UPSTREAM ELEVATION(FEET) =    814.00
DOWNSTREAM ELEVATION(FEET) =    807.00
ELEVATION DIFFERENCE(FEET) =    7.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.196
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    6.666
SUBAREA RUNOFF(CFS) =    0.23
TOTAL AREA(ACRES) =    0.10  TOTAL RUNOFF(CFS) =    0.23

*****
FLOW PROCESS FROM NODE    130.00 TO NODE    128.00 IS CODE =    51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    807.00  DOWNSTREAM(FEET) =    780.00

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CHANNEL LENGTH THRU SUBAREA(FEET) = 337.30  CHANNEL SLOPE = 0.0800
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.595
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.63
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.50
AVERAGE FLOW DEPTH(FEET) = 0.08  TRAVEL TIME(MIN.) = 2.25
Tc(MIN.) = 9.44
SUBAREA AREA(ACRES) = 0.40  SUBAREA RUNOFF(CFS) = 0.78
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 0.5  PEAK FLOW RATE(CFS) = 0.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.10  FLOW VELOCITY(FEET/SEC.) = 2.94
LONGEST FLOWPATH FROM NODE 129.00 TO NODE 128.00 = 443.30 FEET.

*****
FLOW PROCESS FROM NODE 128.00 TO NODE 128.00 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.) = 9.44
RAINFALL INTENSITY(INCH/HR) = 5.60
TOTAL STREAM AREA(ACRES) = 0.50
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.98

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
1           12.38      10.58      5.200        6.80
2           0.98       9.44       5.595        0.50

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
1           12.48      9.44      5.595
2           13.29     10.58      5.200

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 13.29  Tc(MIN.) = 10.58
TOTAL AREA(ACRES) = 7.3
LONGEST FLOWPATH FROM NODE 118.00 TO NODE 128.00 = 927.00 FEET.

*****
FLOW PROCESS FROM NODE 128.00 TO NODE 115.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 780.00  DOWNSTREAM(FEET) = 775.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 151.00  CHANNEL SLOPE = 0.0331
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.054

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*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 13.66

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 5.27

AVERAGE FLOW DEPTH(Feet) = 0.61 TRAVEL TIME(Min.) = 0.48

Tc(Min.) = 11.06

SUBAREA AREA(ACRES) = 0.42 SUBAREA RUNOFF(CFS) = 0.74

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 7.7 PEAK FLOW RATE(CFS) = 13.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.61 FLOW VELOCITY(Feet/Sec.) = 5.27

LONGEST FLOWPATH FROM NODE 118.00 TO NODE 115.00 = 1078.00 FEET.

FLOW PROCESS FROM NODE 115.00 TO NODE 115.00 IS CODE = 11

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

=====

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (Min.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	13.65	11.06	5.054	7.72

LONGEST FLOWPATH FROM NODE 118.00 TO NODE 115.00 = 1078.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (Min.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	35.40	10.25	5.307	19.06

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 115.00 = 1780.15 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (Min.)	INTENSITY (INCH/HOUR)
1	48.06	10.25	5.307
2	47.37	11.06	5.054

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 48.06 Tc(Min.) = 10.25

TOTAL AREA(ACRES) = 26.8

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 26.8 TC(Min.) = 10.25

PEAK FLOW RATE(CFS) = 48.06

=====

=====

END OF RATIONAL METHOD ANALYSIS

□

BASIN B SEE RUN 500 FOR THE CONTINUATION OF BASIN B



Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Date: Aug 2013
EDEN200.DAT

Page: 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
200	201	2	975.0	962.0	161.80	0.35	0.10	
201	202	5	962.0	923.0	505.90	0.35	1.29	
202	203	5	923.0	906.0	190.30	0.350	0.410	
203	203	1	-	-	-	-	-	1 of 2
204	205	2	1015.0	1007.0	78.00	0.35	0.13	
205	206	5	1000.0	962.0	378.20	0.350	1.71	
206	207	5	962.0	929.0	235.50	0.35	1.46	
207	203	5	929.0	906.0	222.40	0.35	0.74	
203	203	1	-	-	-	-	-	2 of 2
203	208	5	906.0	878.0	199.20	0.35	1.00	
208	209	5	878.0	844.0	316.60	0.35	2.95	
209	210	5	844.0	804.0	297.30	0.35	2.36	
210	211	5	804.0	762.0	252.00	0.350	2.39	
211	211	10	-	-	-	-	-	Save to Bank 1
212	213	2	943.0	929.0	143.50	0.35	0.10	
213	214	5	929.0	913.0	156.60	0.35	0.37	
214	215	5	913.0	856.0	293.30	0.350	0.77	
215	216	5	856.0	842.0	145.30	0.35	1.32	
216	217	5	842.0	832.0	165.20	0.35	2.58	
217	218	5	832.0	804.0	185.30	0.350	0.67	
218	218	1	-	-	-	-	-	1 of 2
219	220	2	914.0	899.0	114.20	0.35	0.10	
220	221	5	899.0	813.0	312.10	0.35	1.15	
221	218	5	813.0	804.0	71.20	0.35	0.55	
218	218	1	-	-	-	-	-	2 of 2
218	222	5	804.0	792.0	76.40	0.35	0.42	
222	211	5	792.0	762.0	237.80	0.35	1.91	
211	211	11	-	-	-	-	-	Confl. w/ Bank 1
211	211	12	-	-	-	-	-	Clean Bank 1
211	223	5	762.0	759.0	77.30	0.35	0.33	
223	224	5	759.0	750.0	131.50	0.35	0.97	
224	225	5	750.0	742.0	125.10	0.35	0.11	
225	225	1	-	-	-	-	-	1 of 3



Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Date: Aug 2013

Run Name: 200 Series

Page: 2

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
226	227	2	854.0	834.0	120.30	0.35	0.10	
227	228	5	834.0	812.0	129.70	0.35	0.31	
228	225	5	812.0	742.0	466.30	0.35	1.38	
225	225	1	-	-	-	-	-	2 of 3
229	230	2	868.0	856.0	79.00	0.35	0.13	
230	231	5	856.0	790.0	205.40	0.35	1.11	
231	232	5	790.0	760.0	182.50	0.35	1.12	
232	225	5	760.0	742.0	160.60	0.35	0.54	
225	225	1	-	-	-	-	-	3 of 3
225	233	5	742.0	724.0	352.60	0.35	1.42	
233	233	1	-	-	-	-	-	1 of 3
234	235	2	804.0	788.0	115.70	0.35	0.10	
235	233	5	788.0	724.0	511.30	0.35	1.42	
233	233	1	-	-	-	-	-	2 of 3
236	237	2	785.0	767.0	121.40	0.35	0.10	
237	238	5	767.0	736.0	294.70	0.35	0.87	
238	233	5	736.0	724.0	191.40	0.35	0.33	
233	233	1	-	-	-	-	-	3 of 3
233	239	5	724.0	723.0	97.20	0.35	0.87	
239	240	5	723.0	714.0	164.70	0.35	1.25	
240	241	5	714.0	704.0	215.20	0.35	1.24	
241	241	1	-	-	-	-	-	1 of 2
242	243	2	808.0	792.0	95.40	0.35	0.11	
243	244	5	792.0	724.0	416.70	0.35	2.34	
244	241	5	724.0	704.0	282.80	0.35	0.67	
241	241	1	-	-	-	-	-	2 of 2
241	245	5	704.0	672.0	390.00	0.35	2.38	
245	245	1	-	-	-	-	-	1 of 2
246	247	2	732.0	726.0	75.00	0.35	0.10	
247	248	5	726.0	686.0	367.60	0.35	2.48	
248	245	5	686.0	672.0	150.80	0.35	1.13	
245	245	1	-	-	-	-	-	2 of 2
245	245	10	-	-	-	-	-	Save to Bank 2



Job Name: Eden Hills

Date: Aug 2013



Job #:

Existing Hydrology
100 year Design Storm
2690-007-02

Run Name: 200 Series

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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
249	250	2	864.0	842.0	124.40	0.41	0.10	
250	251	5	842.0	750.0	602.60	0.41	2.79	
251	252	5	750.0	730.0	251.80	0.41	3.26	
252	253	5	730.0	720.0	155.80	0.41	0.67	
253	253	1	-	-	-	-	-	1 of 3
254	255	2	865.0	862.0	84.80	0.35	0.11	
255	256	5	862.0	744.0	367.50	0.35	1.90	
256	253	5	744.0	720.0	247.60	0.41		
253	253	1	-	-	-	-	-	2 of 3
257	258	2	866.0	858.0	75.00	0.35	0.13	
258	259	5	858.0	774.0	294.70	0.35	0.70	
259	260	5	774.0	762.0	66.30	0.35	0.45	
260	253	5	762.0	720.0	372.30	0.35	0.94	
253	253	1	-	-	-	-	-	3 of 3
253	261	5	720.0	696.0	376.00	0.41	1.73	
261	261	1	-	-	-	-	-	1 of 2
262	263	2	785.0	782.0	109.20	0.41	0.11	
263	264	5	782.0	714.0	597.70	0.41	1.93	
264	261	5	714.0	696.0	195.60	0.41	1.11	
261	261	1	-	-	-	-	-	2 of 2
261	245	5	696.0	672.0	284.70	0.41	0.88	
245	245	11	-	-	-	-	-	Confl. w/ Bank 2
245	266	5	672.0	668.0	184.50	0.41	0.69	
266	266	1	-	-	-	-	-	1 of 3
267	268	2	785.0	782.0	75.00	0.41	0.10	
268	269	5	782.0	758.0	366.00	0.41	1.52	
269	266	5	758.0	668.0	534.40	0.41	2.77	
266	266	1	-	-	-	-	-	2 of 3
270	271	2	724.0	709.0	119.60	0.41	0.10	
271	266	5	709.0	668.0	142.10	0.41	0.46	
266	266	1	-	-	-	-	-	3 of 3
266	538	5	668.0	654.0	290.00	0.41		

EDEN200.TXT

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
2003,1985,1981 HYDROLOGY MANUAL
(c) Copyright 1982-2012 Advanced Engineering Software (aes)
Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fusco Engineering
6390 Greenwich Dr.
Suite 170
San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
* EDEN HILLS *
* EXISTING HYDROLOGY STUDY - 200 SERIES *
* OCTOBER 20, 2014 *

FILE NAME: EDEN200.DAT
TIME/DATE OF STUDY: 10:06 10/20/2014

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

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

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 161.80
UPSTREAM ELEVATION(FEET) = 975.00
DOWNSTREAM ELEVATION(FEET) = 962.00
ELEVATION DIFFERENCE(FEET) = 13.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.741
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

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    THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
    (Reference: Table 3-1B of Hydrology Manual)
    THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.954
    SUBAREA RUNOFF(CFS) = 0.24
    TOTAL AREA(ACRES) = 0.10    TOTAL RUNOFF(CFS) = 0.24

*****
FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 962.00  DOWNSTREAM(FEET) = 923.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 505.90  CHANNEL SLOPE = 0.0771
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.668
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.35
AVERAGE FLOW DEPTH(FEET) = 0.14  TRAVEL TIME(MIN.) = 2.51
Tc(MIN.) = 9.25
SUBAREA AREA(ACRES) = 1.29    SUBAREA RUNOFF(CFS) = 2.56
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.4    PEAK FLOW RATE(CFS) = 2.76

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.19  FLOW VELOCITY(FEET/SEC.) = 4.21
LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 = 667.70 FEET.

*****
FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 923.00  DOWNSTREAM(FEET) = 906.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 190.30  CHANNEL SLOPE = 0.0893
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.411
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.59
AVERAGE FLOW DEPTH(FEET) = 0.20  TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 9.94
SUBAREA AREA(ACRES) = 0.41    SUBAREA RUNOFF(CFS) = 0.78
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.8    PEAK FLOW RATE(CFS) = 3.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.21  FLOW VELOCITY(FEET/SEC.) = 4.78
LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 = 858.00 FEET.

*****
FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 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.) = 9.94
RAINFALL INTENSITY(INCH/HR) = 5.41
TOTAL STREAM AREA(ACRES) = 1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.41
=====
```

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*****
FLOW PROCESS FROM NODE 204.00 TO NODE 205.00 IS CODE = 21
=====
```

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
```

```
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 78.00
UPSTREAM ELEVATION(FEET) = 1015.00
DOWNSTREAM ELEVATION(FEET) = 1007.00
ELEVATION DIFFERENCE(FEET) = 8.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.535
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.897
SUBAREA RUNOFF(CFS) = 0.36
TOTAL AREA(ACRES) = 0.13 TOTAL RUNOFF(CFS) = 0.36
=====
```

```
*****
FLOW PROCESS FROM NODE 205.00 TO NODE 206.00 IS CODE = 51
=====
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 1000.00 DOWNSTREAM(FEET) = 962.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 378.20 CHANNEL SLOPE = 0.1005
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.802
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.41
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.38
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 1.44
Tc(MIN.) = 6.97
SUBAREA AREA(ACRES) = 1.71 SUBAREA RUNOFF(CFS) = 4.07
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 4.38
=====
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.23 FLOW VELOCITY(FEET/SEC.) = 5.41
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 206.00 = 456.20 FEET.
=====
```

```
*****
FLOW PROCESS FROM NODE 206.00 TO NODE 207.00 IS CODE = 51
=====
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 962.00 DOWNSTREAM(FEET) = 929.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 235.50 CHANNEL SLOPE = 0.1401
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.457
=====
```

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*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.03

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.69

AVERAGE FLOW DEPTH(FEET) = 0.26 TRAVEL TIME(MIN.) = 0.59

Tc(MIN.) = 7.56

SUBAREA AREA(ACRES) = 1.46 SUBAREA RUNOFF(CFS) = 3.30

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 3.3 PEAK FLOW RATE(CFS) = 7.46

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.29 FLOW VELOCITY(FEET/SEC.) = 7.27

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 207.00 = 691.70 FEET.

FLOW PROCESS FROM NODE 207.00 TO NODE 203.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 929.00 DOWNSTREAM(FEET) = 906.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 222.40 CHANNEL SLOPE = 0.1034

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.172

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.26

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.77

AVERAGE FLOW DEPTH(FEET) = 0.33 TRAVEL TIME(MIN.) = 0.55

Tc(MIN.) = 8.11

SUBAREA AREA(ACRES) = 0.74 SUBAREA RUNOFF(CFS) = 1.60

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 4.0 PEAK FLOW RATE(CFS) = 8.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.35 FLOW VELOCITY(FEET/SEC.) = 6.83

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 203.00 = 914.10 FEET.

FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 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.) = 8.11

RAINFALL INTENSITY(INCH/HR) = 6.17

TOTAL STREAM AREA(ACRES) = 4.04

PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.73

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	3.41	9.94	5.411	1.80
2	8.73	8.11	6.172	4.04

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

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** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	11.51	8.11	6.172
2	11.06	9.94	5.411

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 11.51 Tc(MIN.) = 8.11
 TOTAL AREA(ACRES) = 5.8
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 203.00 = 914.10 FEET.

FLOW PROCESS FROM NODE 203.00 TO NODE 208.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 906.00 DOWNSTREAM(FEET) = 878.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 199.20 CHANNEL SLOPE = 0.1406

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.987

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.56

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.47

AVERAGE FLOW DEPTH(FEET) = 0.39 TRAVEL TIME(MIN.) = 0.39

Tc(MIN.) = 8.50

SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 2.10

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 6.8 PEAK FLOW RATE(CFS) = 14.33

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.42 FLOW VELOCITY(FEET/SEC.) = 8.82

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 208.00 = 1113.30 FEET.

FLOW PROCESS FROM NODE 208.00 TO NODE 209.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 878.00 DOWNSTREAM(FEET) = 844.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 316.60 CHANNEL SLOPE = 0.1074

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.725

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.29

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.63

AVERAGE FLOW DEPTH(FEET) = 0.50 TRAVEL TIME(MIN.) = 0.61

Tc(MIN.) = 9.11

SUBAREA AREA(ACRES) = 2.95 SUBAREA RUNOFF(CFS) = 5.91

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 9.8 PEAK FLOW RATE(CFS) = 19.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.54 FLOW VELOCITY(FEET/SEC.) = 8.93

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 209.00 = 1429.90 FEET.

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*****
FLOW PROCESS FROM NODE    209.00 TO NODE    210.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    844.00  DOWNSTREAM(FEET) =    804.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    297.30  CHANNEL SLOPE =    0.1345
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.532
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     21.90
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    9.97
AVERAGE FLOW DEPTH(FEET) =    0.54  TRAVEL TIME(MIN.) =    0.50
Tc(MIN.) =    9.61
SUBAREA AREA(ACRES) =    2.36          SUBAREA RUNOFF(CFS) =    4.57
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    12.1          PEAK FLOW RATE(CFS) =    23.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.56  FLOW VELOCITY(FEET/SEC.) =    10.20
LONGEST FLOWPATH FROM NODE    204.00 TO NODE    210.00 =    1727.20 FEET.
*****
FLOW PROCESS FROM NODE    210.00 TO NODE    211.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    804.00  DOWNSTREAM(FEET) =    762.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    252.00  CHANNEL SLOPE =    0.1667
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.399
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     25.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    11.33
AVERAGE FLOW DEPTH(FEET) =    0.55  TRAVEL TIME(MIN.) =    0.37
Tc(MIN.) =    9.98
SUBAREA AREA(ACRES) =    2.39          SUBAREA RUNOFF(CFS) =    4.52
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    14.5          PEAK FLOW RATE(CFS) =    27.47

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.58  FLOW VELOCITY(FEET/SEC.) =    11.51
LONGEST FLOWPATH FROM NODE    204.00 TO NODE    211.00 =    1979.20 FEET.
*****
FLOW PROCESS FROM NODE    211.00 TO NODE    211.00 IS CODE =  10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====
*****
FLOW PROCESS FROM NODE    212.00 TO NODE    213.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
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*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 143.50
UPSTREAM ELEVATION(FEET) = 943.00
DOWNSTREAM ELEVATION(FEET) = 929.00
ELEVATION DIFFERENCE(FEET) = 14.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.318
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.250
SUBAREA RUNOFF(CFS) = 0.25
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.25

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*****
FLOW PROCESS FROM NODE 213.00 TO NODE 214.00 IS CODE = 51
-----

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>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
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ELEVATION DATA: UPSTREAM(FEET) = 929.00 DOWNSTREAM(FEET) = 913.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 156.60 CHANNEL SLOPE = 0.1022
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.621
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.68
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.73
AVERAGE FLOW DEPTH(FEET) = 0.08 TRAVEL TIME(MIN.) = 0.95
Tc(MIN.) = 7.27
SUBAREA AREA(ACRES) = 0.37 SUBAREA RUNOFF(CFS) = 0.86
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 0.5 PEAK FLOW RATE(CFS) = 1.09

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.10 FLOW VELOCITY(FEET/SEC.) = 3.33
LONGEST FLOWPATH FROM NODE 212.00 TO NODE 214.00 = 300.10 FEET.

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*****
FLOW PROCESS FROM NODE 214.00 TO NODE 215.00 IS CODE = 51
-----

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

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ELEVATION DATA: UPSTREAM(FEET) = 913.00 DOWNSTREAM(FEET) = 856.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 293.30 CHANNEL SLOPE = 0.1943
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.100
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.91
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.96
AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 0.99
Tc(MIN.) = 8.26
SUBAREA AREA(ACRES) = 0.77 SUBAREA RUNOFF(CFS) = 1.64
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.2 PEAK FLOW RATE(CFS) = 2.65

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.14 FLOW VELOCITY(FEET/SEC.) = 5.67
 LONGEST FLOWPATH FROM NODE 212.00 TO NODE 215.00 = 593.40 FEET.

FLOW PROCESS FROM NODE 215.00 TO NODE 216.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 856.00 DOWNSTREAM(FEET) = 842.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 145.30 CHANNEL SLOPE = 0.0964

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.885

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.01

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.14

AVERAGE FLOW DEPTH(FEET) = 0.23 TRAVEL TIME(MIN.) = 0.47

Tc(MIN.) = 8.73

SUBAREA AREA(ACRES) = 1.32 SUBAREA RUNOFF(CFS) = 2.72

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 2.6 PEAK FLOW RATE(CFS) = 5.27

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.26 FLOW VELOCITY(FEET/SEC.) = 5.66
 LONGEST FLOWPATH FROM NODE 212.00 TO NODE 216.00 = 738.70 FEET.

FLOW PROCESS FROM NODE 216.00 TO NODE 217.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 842.00 DOWNSTREAM(FEET) = 832.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 165.20 CHANNEL SLOPE = 0.0605

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.677

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.84

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.51

AVERAGE FLOW DEPTH(FEET) = 0.38 TRAVEL TIME(MIN.) = 0.50

Tc(MIN.) = 9.23

SUBAREA AREA(ACRES) = 2.58 SUBAREA RUNOFF(CFS) = 5.13

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 5.1 PEAK FLOW RATE(CFS) = 10.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.44 FLOW VELOCITY(FEET/SEC.) = 5.99
 LONGEST FLOWPATH FROM NODE 212.00 TO NODE 217.00 = 903.90 FEET.

FLOW PROCESS FROM NODE 217.00 TO NODE 218.00 IS CODE = 51

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

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

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ELEVATION DATA: UPSTREAM(FEET) = 832.00 DOWNSTREAM(FEET) = 804.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 185.30 CHANNEL SLOPE = 0.1511
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.534
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 10.86
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.28
AVERAGE FLOW DEPTH(FEET) = 0.35 TRAVEL TIME(MIN.) = 0.37
Tc(MIN.) = 9.60
SUBAREA AREA(ACRES) = 0.67 SUBAREA RUNOFF(CFS) = 1.30
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 5.8 PEAK FLOW RATE(CFS) = 11.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.36 FLOW VELOCITY(FEET/SEC.) = 8.36
LONGEST FLOWPATH FROM NODE 212.00 TO NODE 218.00 = 1089.20 FEET.

*****
FLOW PROCESS FROM NODE 218.00 TO NODE 218.00 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.) = 9.60
RAINFALL INTENSITY(INCH/HR) = 5.53
TOTAL STREAM AREA(ACRES) = 5.81
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.25

*****
FLOW PROCESS FROM NODE 219.00 TO NODE 220.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 114.20
UPSTREAM ELEVATION(FEET) = 914.00
DOWNSTREAM ELEVATION(FEET) = 899.00
ELEVATION DIFFERENCE(FEET) = 15.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

*****
FLOW PROCESS FROM NODE 220.00 TO NODE 221.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 899.00 DOWNSTREAM(FEET) = 813.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 312.10 CHANNEL SLOPE = 0.2756
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

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100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.621

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.59

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.17

AVERAGE FLOW DEPTH(FEET) = 0.10 TRAVEL TIME(MIN.) = 1.01

Tc(MIN.) = 7.27

SUBAREA AREA(ACRES) = 1.15 SUBAREA RUNOFF(CFS) = 2.66

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 1.2 PEAK FLOW RATE(CFS) = 2.90

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.13 FLOW VELOCITY(FEET/SEC.) = 6.59

LONGEST FLOWPATH FROM NODE 219.00 TO NODE 221.00 = 426.30 FEET.

FLOW PROCESS FROM NODE 221.00 TO NODE 218.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 813.00 DOWNSTREAM(FEET) = 804.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 71.20 CHANNEL SLOPE = 0.1264

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.494

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.52

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.37

AVERAGE FLOW DEPTH(FEET) = 0.19 TRAVEL TIME(MIN.) = 0.22

Tc(MIN.) = 7.49

SUBAREA AREA(ACRES) = 0.55 SUBAREA RUNOFF(CFS) = 1.25

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 4.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.21 FLOW VELOCITY(FEET/SEC.) = 5.67

LONGEST FLOWPATH FROM NODE 219.00 TO NODE 218.00 = 497.50 FEET.

FLOW PROCESS FROM NODE 218.00 TO NODE 218.00 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.) = 7.49

RAINFALL INTENSITY(INCH/HR) = 6.49

TOTAL STREAM AREA(ACRES) = 1.80

PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.09

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	11.25	9.60	5.534	5.81
2	4.09	7.49	6.494	1.80

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

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** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	12.87	7.49	6.494
2	14.74	9.60	5.534

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 14.74 Tc(MIN.) = 9.60
 TOTAL AREA(ACRES) = 7.6
 LONGEST FLOWPATH FROM NODE 212.00 TO NODE 218.00 = 1089.20 FEET.

 FLOW PROCESS FROM NODE 218.00 TO NODE 222.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 804.00 DOWNSTREAM(FEET) = 792.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 76.40 CHANNEL SLOPE = 0.1571

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.484

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.14

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.32

AVERAGE FLOW DEPTH(FEET) = 0.42 TRAVEL TIME(MIN.) = 0.14

Tc(MIN.) = 9.74

SUBAREA AREA(ACRES) = 0.42 SUBAREA RUNOFF(CFS) = 0.81

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 8.0 PEAK FLOW RATE(CFS) = 15.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.42 FLOW VELOCITY(FEET/SEC.) = 9.44

LONGEST FLOWPATH FROM NODE 212.00 TO NODE 222.00 = 1165.60 FEET.

 FLOW PROCESS FROM NODE 222.00 TO NODE 211.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 792.00 DOWNSTREAM(FEET) = 762.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 237.80 CHANNEL SLOPE = 0.1262

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.331

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.19

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.10

AVERAGE FLOW DEPTH(FEET) = 0.48 TRAVEL TIME(MIN.) = 0.44

Tc(MIN.) = 10.18

SUBAREA AREA(ACRES) = 1.91 SUBAREA RUNOFF(CFS) = 3.56

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 9.9 PEAK FLOW RATE(CFS) = 18.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.50 FLOW VELOCITY(FEET/SEC.) = 9.26

LONGEST FLOWPATH FROM NODE 212.00 TO NODE 211.00 = 1403.40 FEET.

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 FLOW PROCESS FROM NODE 211.00 TO NODE 211.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	18.55	10.18	5.331	9.94

LONGEST FLOWPATH FROM NODE 212.00 TO NODE 211.00 = 1403.40 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	27.47	9.98	5.399	14.54

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 211.00 = 1979.20 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	45.66	9.98	5.399
2	45.68	10.18	5.331

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 45.68 Tc(MIN.) = 10.18
 TOTAL AREA(ACRES) = 24.5

 FLOW PROCESS FROM NODE 211.00 TO NODE 211.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 211.00 TO NODE 223.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 762.00 DOWNSTREAM(FEET) = 759.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 77.30 CHANNEL SLOPE = 0.0388
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.277

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 45.98

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.93

AVERAGE FLOW DEPTH(FEET) = 1.11 TRAVEL TIME(MIN.) = 0.16

Tc(MIN.) = 10.34

SUBAREA AREA(ACRES) = 0.33 SUBAREA RUNOFF(CFS) = 0.61

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 24.8 PEAK FLOW RATE(CFS) = 45.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.11 FLOW VELOCITY(FEET/SEC.) = 7.90

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 223.00 = 2056.50 FEET.

 FLOW PROCESS FROM NODE 223.00 TO NODE 224.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) =	759.00	DOWNSTREAM(FEET) =	750.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	131.50	CHANNEL SLOPE =	0.0684
CHANNEL BASE(FEET) =	3.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.030	MAXIMUM DEPTH(FEET) =	10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =	5.204		

*USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 46.71
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.72
 AVERAGE FLOW DEPTH(FEET) = 0.97 TRAVEL TIME(MIN.) = 0.23
 Tc(MIN.) = 10.56
 SUBAREA AREA(ACRES) = 0.97 SUBAREA RUNOFF(CFS) = 1.77
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 25.8 PEAK FLOW RATE(CFS) = 46.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.97 FLOW VELOCITY(FEET/SEC.) = 9.77
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 224.00 = 2188.00 FEET.

FLOW PROCESS FROM NODE 224.00 TO NODE 225.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) =	750.00	DOWNSTREAM(FEET) =	742.00
CHANNEL LENGTH THRU SUBAREA(FEET) =	125.10	CHANNEL SLOPE =	0.0639
CHANNEL BASE(FEET) =	3.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.030	MAXIMUM DEPTH(FEET) =	10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =	5.136		

*USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 47.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.56
 AVERAGE FLOW DEPTH(FEET) = 0.99 TRAVEL TIME(MIN.) = 0.22
 Tc(MIN.) = 10.78
 SUBAREA AREA(ACRES) = 0.11 SUBAREA RUNOFF(CFS) = 0.20
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 25.9 PEAK FLOW RATE(CFS) = 46.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.99 FLOW VELOCITY(FEET/SEC.) = 9.54
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 225.00 = 2313.10 FEET.

FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS =	3
---------------------------	---

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 10.78
 RAINFALL INTENSITY(INCH/HR) = 5.14
 TOTAL STREAM AREA(ACRES) = 25.89
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 46.96

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FLOW PROCESS FROM NODE      226.00 TO NODE      227.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 120.30
UPSTREAM ELEVATION(FEET) = 854.00
DOWNSTREAM ELEVATION(FEET) = 834.00
ELEVATION DIFFERENCE(FEET) = 20.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

*****
FLOW PROCESS FROM NODE      227.00 TO NODE      228.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 834.00 DOWNSTREAM(FEET) = 812.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 129.70 CHANNEL SLOPE = 0.1696
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.813
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.62
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.13
AVERAGE FLOW DEPTH(FEET) = 0.06 TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 6.96
SUBAREA AREA(ACRES) = 0.31 SUBAREA RUNOFF(CFS) = 0.74
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 0.4 PEAK FLOW RATE(CFS) = 0.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.08 FLOW VELOCITY(FEET/SEC.) = 3.81
LONGEST FLOWPATH FROM NODE 226.00 TO NODE 228.00 = 250.00 FEET.

*****
FLOW PROCESS FROM NODE      228.00 TO NODE      225.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 812.00 DOWNSTREAM(FEET) = 742.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 466.30 CHANNEL SLOPE = 0.1501
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.979
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.43
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.98
AVERAGE FLOW DEPTH(FEET) = 0.15 TRAVEL TIME(MIN.) = 1.56

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Tc(MIN.) = 8.52
 SUBAREA AREA(ACRES) = 1.38 SUBAREA RUNOFF(CFS) = 2.89
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 3.75

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.19 FLOW VELOCITY(FEET/SEC.) = 5.91
 LONGEST FLOWPATH FROM NODE 226.00 TO NODE 225.00 = 716.30 FEET.

FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 8.52
 RAINFALL INTENSITY(INCH/HR) = 5.98
 TOTAL STREAM AREA(ACRES) = 1.79
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.75

FLOW PROCESS FROM NODE 229.00 TO NODE 230.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 79.00
 UPSTREAM ELEVATION(FEET) = 868.00
 DOWNSTREAM ELEVATION(FEET) = 856.00
 ELEVATION DIFFERENCE(FEET) = 12.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.570
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.864
 SUBAREA RUNOFF(CFS) = 0.36
 TOTAL AREA(ACRES) = 0.13 TOTAL RUNOFF(CFS) = 0.36

FLOW PROCESS FROM NODE 230.00 TO NODE 231.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 856.00 DOWNSTREAM(FEET) = 790.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 205.40 CHANNEL SLOPE = 0.3213
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.371

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.79
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.82
 AVERAGE FLOW DEPTH(FEET) = 0.10 TRAVEL TIME(MIN.) = 0.59
 Tc(MIN.) = 6.16
 SUBAREA AREA(ACRES) = 1.11 SUBAREA RUNOFF(CFS) = 2.86
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.2 PEAK FLOW RATE(CFS) = 3.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.14 FLOW VELOCITY(FEET/SEC.) = 6.96

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LONGEST FLOWPATH FROM NODE      229.00 TO NODE      231.00 =      284.40 FEET.
*****
FLOW PROCESS FROM NODE      231.00 TO NODE      232.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    790.00  DOWNSTREAM(FEET) =    760.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    182.50  CHANNEL SLOPE =    0.1644
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    7.026
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    4.58
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    6.41
AVERAGE FLOW DEPTH(FEET) =    0.21  TRAVEL TIME(MIN.) =    0.47
Tc(MIN.) =    6.63
SUBAREA AREA(ACRES) =    1.12  SUBAREA RUNOFF(CFS) =    2.75
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    2.4  PEAK FLOW RATE(CFS) =    5.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.24  FLOW VELOCITY(FEET/SEC.) =    6.97
LONGEST FLOWPATH FROM NODE      229.00 TO NODE      232.00 =    466.90 FEET.
*****
FLOW PROCESS FROM NODE      232.00 TO NODE      225.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    760.00  DOWNSTREAM(FEET) =    742.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    160.60  CHANNEL SLOPE =    0.1121
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    6.752
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    6.44
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    6.33
AVERAGE FLOW DEPTH(FEET) =    0.29  TRAVEL TIME(MIN.) =    0.42
Tc(MIN.) =    7.06
SUBAREA AREA(ACRES) =    0.54  SUBAREA RUNOFF(CFS) =    1.28
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    2.9  PEAK FLOW RATE(CFS) =    6.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.29  FLOW VELOCITY(FEET/SEC.) =    6.48
LONGEST FLOWPATH FROM NODE      229.00 TO NODE      225.00 =    627.50 FEET.
*****
FLOW PROCESS FROM NODE      225.00 TO NODE      225.00 IS CODE =  1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) =    7.06

```

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 RAINFALL INTENSITY(INCH/HR) = 6.75
 TOTAL STREAM AREA(ACRES) = 2.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.85

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	46.96	10.78	5.136	25.89
2	3.75	8.52	5.979	1.79
3	6.85	7.06	6.752	2.90

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	40.69	7.06	6.752
2	46.92	8.52	5.979
3	55.39	10.78	5.136

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 55.39 Tc(MIN.) = 10.78
 TOTAL AREA(ACRES) = 30.6
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 225.00 = 2313.10 FEET.

FLOW PROCESS FROM NODE 225.00 TO NODE 233.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 742.00 DOWNSTREAM(Feet) = 724.00
 CHANNEL LENGTH THRU SUBAREA(Feet) = 352.60 CHANNEL SLOPE = 0.0510
 CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.950

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 56.62

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 9.23

AVERAGE FLOW DEPTH(Feet) = 1.15 TRAVEL TIME(MIN.) = 0.64

Tc(MIN.) = 11.42

SUBAREA AREA(ACRES) = 1.42 SUBAREA RUNOFF(CFS) = 2.46

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 32.0 PEAK FLOW RATE(CFS) = 55.44

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 1.14 FLOW VELOCITY(Feet/Sec.) = 9.19

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 233.00 = 2665.70 FEET.

FLOW PROCESS FROM NODE 233.00 TO NODE 233.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 11.42

RAINFALL INTENSITY(INCH/HR) = 4.95

TOTAL STREAM AREA(ACRES) = 32.00

PEAK FLOW RATE(CFS) AT CONFLUENCE = 55.44

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*****
FLOW PROCESS FROM NODE      234.00 TO NODE      235.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 115.70
UPSTREAM ELEVATION(FEET) = 804.00
DOWNSTREAM ELEVATION(FEET) = 788.00
ELEVATION DIFFERENCE(FEET) = 16.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26
*****
FLOW PROCESS FROM NODE      235.00 TO NODE      233.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 788.00 DOWNSTREAM(FEET) = 724.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 511.30 CHANNEL SLOPE = 0.1252
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.107
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.31
AVERAGE FLOW DEPTH(FEET) = 0.13 TRAVEL TIME(MIN.) = 1.98
Tc(MIN.) = 8.24
SUBAREA AREA(ACRES) = 1.42 SUBAREA RUNOFF(CFS) = 3.04
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.5 PEAK FLOW RATE(CFS) = 3.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.19 FLOW VELOCITY(FEET/SEC.) = 5.18
LONGEST FLOWPATH FROM NODE 234.00 TO NODE 233.00 = 627.00 FEET.
*****
FLOW PROCESS FROM NODE      233.00 TO NODE      233.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.24
RAINFALL INTENSITY(INCH/HR) = 6.11
TOTAL STREAM AREA(ACRES) = 1.52
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.25
*****
FLOW PROCESS FROM NODE      236.00 TO NODE      237.00 IS CODE =   21
-----

```


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

```
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 121.40
UPSTREAM ELEVATION(FEET) = 785.00
DOWNSTREAM ELEVATION(FEET) = 767.00
ELEVATION DIFFERENCE(FEET) = 18.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26
=====
```

```
*****
FLOW PROCESS FROM NODE 237.00 TO NODE 238.00 IS CODE = 51
=====
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 767.00 DOWNSTREAM(FEET) = 736.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 294.70 CHANNEL SLOPE = 0.1052
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.396
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.23
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.49
AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 1.41
Tc(MIN.) = 7.67
SUBAREA AREA(ACRES) = 0.87 SUBAREA RUNOFF(CFS) = 1.95
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.0 PEAK FLOW RATE(CFS) = 2.17
=====
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 4.22
LONGEST FLOWPATH FROM NODE 236.00 TO NODE 238.00 = 416.10 FEET.
=====
```

```
*****
FLOW PROCESS FROM NODE 238.00 TO NODE 233.00 IS CODE = 51
=====
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 736.00 DOWNSTREAM(FEET) = 724.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 191.40 CHANNEL SLOPE = 0.0627
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.981
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.52
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.80
AVERAGE FLOW DEPTH(FEET) = 0.20 TRAVEL TIME(MIN.) = 0.84
Tc(MIN.) = 8.51
SUBAREA AREA(ACRES) = 0.33 SUBAREA RUNOFF(CFS) = 0.69
=====
```

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 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.3 PEAK FLOW RATE(CFS) = 2.72

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.20 FLOW VELOCITY(FEET/SEC.) = 3.93
 LONGEST FLOWPATH FROM NODE 236.00 TO NODE 233.00 = 607.50 FEET.

 FLOW PROCESS FROM NODE 233.00 TO NODE 233.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 8.51
 RAINFALL INTENSITY(INCH/HR) = 5.98
 TOTAL STREAM AREA(ACRES) = 1.30
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.72

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	55.44	11.42	4.950	32.00
2	3.25	8.24	6.107	1.52
3	2.72	8.51	5.981	1.30

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	50.81	8.24	6.107
2	51.78	8.51	5.981
3	60.32	11.42	4.950

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 60.32 Tc(MIN.) = 11.42
 TOTAL AREA(ACRES) = 34.8
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 233.00 = 2665.70 FEET.

 FLOW PROCESS FROM NODE 233.00 TO NODE 239.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 724.00 DOWNSTREAM(FEET) = 723.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 97.20 CHANNEL SLOPE = 0.0103
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.865
 *USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 61.06
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.23
 AVERAGE FLOW DEPTH(FEET) = 1.78 TRAVEL TIME(MIN.) = 0.31
 Tc(MIN.) = 11.73
 SUBAREA AREA(ACRES) = 0.87 SUBAREA RUNOFF(CFS) = 1.48
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 35.7 PEAK FLOW RATE(CFS) = 60.77

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 1.77 FLOW VELOCITY(Feet/Sec.) = 5.23
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 239.00 = 2762.90 FEET.

FLOW PROCESS FROM NODE 239.00 TO NODE 240.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 723.00 DOWNSTREAM(Feet) = 714.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 164.70 CHANNEL SLOPE = 0.0546

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.791

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 61.82

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 9.71

AVERAGE FLOW DEPTH(Feet) = 1.19 TRAVEL TIME(Min.) = 0.28

Tc(Min.) = 12.01

SUBAREA AREA(ACRES) = 1.25 SUBAREA RUNOFF(CFS) = 2.10

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 36.9 PEAK FLOW RATE(CFS) = 61.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 1.19 FLOW VELOCITY(Feet/Sec.) = 9.71
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 240.00 = 2927.60 FEET.

FLOW PROCESS FROM NODE 240.00 TO NODE 241.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 714.00 DOWNSTREAM(Feet) = 704.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 215.20 CHANNEL SLOPE = 0.0465

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.693

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 62.96

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 9.20

AVERAGE FLOW DEPTH(Feet) = 1.25 TRAVEL TIME(Min.) = 0.39

Tc(Min.) = 12.40

SUBAREA AREA(ACRES) = 1.24 SUBAREA RUNOFF(CFS) = 2.04

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 38.2 PEAK FLOW RATE(CFS) = 62.71

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 1.25 FLOW VELOCITY(Feet/Sec.) = 9.16
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 241.00 = 3142.80 FEET.

FLOW PROCESS FROM NODE 241.00 TO NODE 241.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2

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CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.40
RAINFALL INTENSITY(INCH/HR) = 4.69
TOTAL STREAM AREA(ACRES) = 38.18
PEAK FLOW RATE(CFS) AT CONFLUENCE = 62.71

*****
FLOW PROCESS FROM NODE 242.00 TO NODE 243.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 95.40
UPSTREAM ELEVATION(FEET) = 808.00
DOWNSTREAM ELEVATION(FEET) = 792.00
ELEVATION DIFFERENCE(FEET) = 16.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.121
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.400
SUBAREA RUNOFF(CFS) = 0.28
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.28

*****
FLOW PROCESS FROM NODE 243.00 TO NODE 244.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 792.00 DOWNSTREAM(FEET) = 724.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 416.70 CHANNEL SLOPE = 0.1632
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.557
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.98
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.50
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 1.26
Tc(MIN.) = 7.38
SUBAREA AREA(ACRES) = 2.34 SUBAREA RUNOFF(CFS) = 5.37
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 5.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.23 FLOW VELOCITY(FEET/SEC.) = 6.94
LONGEST FLOWPATH FROM NODE 242.00 TO NODE 244.00 = 512.10 FEET.

*****
FLOW PROCESS FROM NODE 244.00 TO NODE 241.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 724.00 DOWNSTREAM(FEET) = 704.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 282.80 CHANNEL SLOPE = 0.0707
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.099
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

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S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.34
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.38
 AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 0.88
 Tc(MIN.) = 8.26
 SUBAREA AREA(ACRES) = 0.67 SUBAREA RUNOFF(CFS) = 1.43
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 3.1 PEAK FLOW RATE(CFS) = 6.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.33 FLOW VELOCITY(FEET/SEC.) = 5.50
 LONGEST FLOWPATH FROM NODE 242.00 TO NODE 241.00 = 794.90 FEET.

FLOW PROCESS FROM NODE 241.00 TO NODE 241.00 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.) = 8.26
 RAINFALL INTENSITY(INCH/HR) = 6.10
 TOTAL STREAM AREA(ACRES) = 3.12
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.66

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	62.71	12.40	4.693	38.18
2	6.66	8.26	6.099	3.12

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	54.91	8.26	6.099
2	67.84	12.40	4.693

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 67.84 Tc(MIN.) = 12.40
 TOTAL AREA(ACRES) = 41.3
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 241.00 = 3142.80 FEET.

FLOW PROCESS FROM NODE 241.00 TO NODE 245.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 704.00 DOWNSTREAM(FEET) = 672.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 390.00 CHANNEL SLOPE = 0.0821
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.561
 *USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 69.74
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.59
 AVERAGE FLOW DEPTH(FEET) = 1.14 TRAVEL TIME(MIN.) = 0.56

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Tc(MIN.) = 12.96
 SUBAREA AREA(ACRES) = 2.38 SUBAREA RUNOFF(CFS) = 3.80
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 43.7 PEAK FLOW RATE(CFS) = 69.73

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.14 FLOW VELOCITY(FEET/SEC.) = 11.59
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 245.00 = 3532.80 FEET.

FLOW PROCESS FROM NODE 245.00 TO NODE 245.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 12.96
 RAINFALL INTENSITY(INCH/HR) = 4.56
 TOTAL STREAM AREA(ACRES) = 43.68
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 69.73

FLOW PROCESS FROM NODE 246.00 TO NODE 247.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 75.00
 UPSTREAM ELEVATION(FEET) = 732.00
 DOWNSTREAM ELEVATION(FEET) = 726.00
 ELEVATION DIFFERENCE(FEET) = 6.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.846
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.622
 SUBAREA RUNOFF(CFS) = 0.27
 TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.27

FLOW PROCESS FROM NODE 247.00 TO NODE 248.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 726.00 DOWNSTREAM(FEET) = 686.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 367.60 CHANNEL SLOPE = 0.1088
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.724

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.89
 AVERAGE FLOW DEPTH(FEET) = 0.19 TRAVEL TIME(MIN.) = 1.25
 Tc(MIN.) = 7.10
 SUBAREA AREA(ACRES) = 2.48 SUBAREA RUNOFF(CFS) = 5.84
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 2.6 PEAK FLOW RATE(CFS) = 6.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.28 FLOW VELOCITY(FEET/SEC.) = 6.15
 LONGEST FLOWPATH FROM NODE 246.00 TO NODE 248.00 = 442.60 FEET.

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FLOW PROCESS FROM NODE 248.00 TO NODE 245.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 686.00 DOWNSTREAM(FEET) = 672.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 150.80 CHANNEL SLOPE = 0.0928
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.489

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.36

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.24

AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 0.40

Tc(MIN.) = 7.50

SUBAREA AREA(ACRES) = 1.13 SUBAREA RUNOFF(CFS) = 2.57

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 3.7 PEAK FLOW RATE(CFS) = 8.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.35 FLOW VELOCITY(FEET/SEC.) = 6.55

LONGEST FLOWPATH FROM NODE 246.00 TO NODE 245.00 = 593.40 FEET.

FLOW PROCESS FROM NODE 245.00 TO NODE 245.00 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.) = 7.50
 RAINFALL INTENSITY(INCH/HR) = 6.49
 TOTAL STREAM AREA(ACRES) = 3.71
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.43

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	69.73	12.96	4.561	43.68
2	8.43	7.50	6.489	3.71

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	57.43	7.50	6.489
2	75.65	12.96	4.561

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 75.65 Tc(MIN.) = 12.96

TOTAL AREA(ACRES) = 47.4

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 245.00 = 3532.80 FEET.

FLOW PROCESS FROM NODE 245.00 TO NODE 245.00 IS CODE = 10

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

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*****
FLOW PROCESS FROM NODE      249.00 TO NODE      250.00 IS CODE =  21
-----
```

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

```
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 124.40
UPSTREAM ELEVATION(FEET) = 864.00
DOWNSTREAM ELEVATION(FEET) = 842.00
ELEVATION DIFFERENCE(FEET) = 22.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.765
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.691
SUBAREA RUNOFF(CFS) = 0.32
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.32
=====
```

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*****
FLOW PROCESS FROM NODE      250.00 TO NODE      251.00 IS CODE =  51
-----
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```
>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
```

```
ELEVATION DATA: UPSTREAM(FEET) = 842.00 DOWNSTREAM(FEET) = 750.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 602.60 CHANNEL SLOPE = 0.1527
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.518
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.08
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.95
AVERAGE FLOW DEPTH(FEET) = 0.20 TRAVEL TIME(MIN.) = 1.69
Tc(MIN.) = 7.45
SUBAREA AREA(ACRES) = 2.79 SUBAREA RUNOFF(CFS) = 7.46
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 2.9 PEAK FLOW RATE(CFS) = 7.72
=====
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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.29 FLOW VELOCITY(FEET/SEC.) = 7.53
LONGEST FLOWPATH FROM NODE 249.00 TO NODE 251.00 = 727.00 FEET.
=====
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*****
FLOW PROCESS FROM NODE      251.00 TO NODE      252.00 IS CODE =  51
-----
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREAM(FEET) = 730.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 251.80 CHANNEL SLOPE = 0.0794
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.194
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
=====
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S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.87
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.85
 AVERAGE FLOW DEPTH(FEET) = 0.45 TRAVEL TIME(MIN.) = 0.61
 Tc(MIN.) = 8.06
 SUBAREA AREA(ACRES) = 3.26 SUBAREA RUNOFF(CFS) = 8.28
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
 TOTAL AREA(ACRES) = 6.1 PEAK FLOW RATE(CFS) = 15.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.52 FLOW VELOCITY(FEET/SEC.) = 7.51
 LONGEST FLOWPATH FROM NODE 249.00 TO NODE 252.00 = 978.80 FEET.

FLOW PROCESS FROM NODE 252.00 TO NODE 253.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 730.00 DOWNSTREAM(FEET) = 720.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 155.80 CHANNEL SLOPE = 0.0642
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.019

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.44
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.10
 AVERAGE FLOW DEPTH(FEET) = 0.56 TRAVEL TIME(MIN.) = 0.37
 Tc(MIN.) = 8.43
 SUBAREA AREA(ACRES) = 0.67 SUBAREA RUNOFF(CFS) = 1.65
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
 TOTAL AREA(ACRES) = 6.8 PEAK FLOW RATE(CFS) = 16.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.57 FLOW VELOCITY(FEET/SEC.) = 7.14
 LONGEST FLOWPATH FROM NODE 249.00 TO NODE 253.00 = 1134.60 FEET.

FLOW PROCESS FROM NODE 253.00 TO NODE 253.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 8.43
 RAINFALL INTENSITY(INCH/HR) = 6.02
 TOTAL STREAM AREA(ACRES) = 6.82
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 16.83

FLOW PROCESS FROM NODE 254.00 TO NODE 255.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 84.80
 UPSTREAM ELEVATION(FEET) = 865.00
 DOWNSTREAM ELEVATION(FEET) = 862.00
 ELEVATION DIFFERENCE(FEET) = 3.00

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SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.159
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.148
SUBAREA RUNOFF(CFS) = 0.24
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.24

*****
FLOW PROCESS FROM NODE 255.00 TO NODE 256.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(Feet) = 862.00 DOWNSTREAM(Feet) = 744.00
CHANNEL LENGTH THRU SUBAREA(Feet) = 367.50 CHANNEL SLOPE = 0.3211
CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.701
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.14
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 6.06
AVERAGE FLOW DEPTH(Feet) = 0.11 TRAVEL TIME(Min.) = 1.01
Tc(Min.) = 9.17
SUBAREA AREA(ACRES) = 1.90 SUBAREA RUNOFF(CFS) = 3.79
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.0 PEAK FLOW RATE(CFS) = 4.01

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(Feet) = 0.16 FLOW VELOCITY(Feet/Sec.) = 7.69
LONGEST FLOWPATH FROM NODE 254.00 TO NODE 256.00 = 452.30 FEET.

*****
FLOW PROCESS FROM NODE 256.00 TO NODE 253.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(Feet) = 744.00 DOWNSTREAM(Feet) = 720.00
CHANNEL LENGTH THRU SUBAREA(Feet) = 247.60 CHANNEL SLOPE = 0.0969
CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.419
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.79
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 5.50
AVERAGE FLOW DEPTH(Feet) = 0.25 TRAVEL TIME(Min.) = 0.75
Tc(Min.) = 9.92
SUBAREA AREA(ACRES) = 0.70 SUBAREA RUNOFF(CFS) = 1.56
AREA-AVERAGE RUNOFF COEFFICIENT = 0.365
TOTAL AREA(ACRES) = 2.7 PEAK FLOW RATE(CFS) = 5.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(Feet) = 0.26 FLOW VELOCITY(Feet/Sec.) = 5.76
LONGEST FLOWPATH FROM NODE 254.00 TO NODE 253.00 = 699.90 FEET.

*****
FLOW PROCESS FROM NODE 253.00 TO NODE 253.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3

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CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 9.92
RAINFALL INTENSITY(INCH/HR) = 5.42
TOTAL STREAM AREA(ACRES) = 2.71
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.37

*****
FLOW PROCESS FROM NODE 257.00 TO NODE 258.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 75.00
UPSTREAM ELEVATION(FEET) = 866.00
DOWNSTREAM ELEVATION(FEET) = 858.00
ELEVATION DIFFERENCE(FEET) = 8.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.427
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.997
SUBAREA RUNOFF(CFS) = 0.36
TOTAL AREA(ACRES) = 0.13 TOTAL RUNOFF(CFS) = 0.36

*****
FLOW PROCESS FROM NODE 258.00 TO NODE 259.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 858.00 DOWNSTREAM(FEET) = 774.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 294.70 CHANNEL SLOPE = 0.2850
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.161
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.24
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.84
AVERAGE FLOW DEPTH(FEET) = 0.08 TRAVEL TIME(MIN.) = 1.01
Tc(MIN.) = 6.44
SUBAREA AREA(ACRES) = 0.70 SUBAREA RUNOFF(CFS) = 1.75
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 0.8 PEAK FLOW RATE(CFS) = 2.08

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.11 FLOW VELOCITY(FEET/SEC.) = 5.78
LONGEST FLOWPATH FROM NODE 257.00 TO NODE 259.00 = 369.70 FEET.

*****
FLOW PROCESS FROM NODE 259.00 TO NODE 260.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 774.00 DOWNSTREAM(FEET) = 762.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 66.30 CHANNEL SLOPE = 0.1810
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.018
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

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S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.40
 AVERAGE FLOW DEPTH(FEET) = 0.15 TRAVEL TIME(MIN.) = 0.20
 Tc(MIN.) = 6.65
 SUBAREA AREA(ACRES) = 0.45 SUBAREA RUNOFF(CFS) = 1.11
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 1.3 PEAK FLOW RATE(CFS) = 3.14

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 5.80
 LONGEST FLOWPATH FROM NODE 257.00 TO NODE 260.00 = 436.00 FEET.

FLOW PROCESS FROM NODE 260.00 TO NODE 253.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 762.00 DOWNSTREAM(FEET) = 720.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 372.30 CHANNEL SLOPE = 0.1128
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.351

*USER SPECIFIED(SUBAREA):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.19

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.58

AVERAGE FLOW DEPTH(FEET) = 0.22 TRAVEL TIME(MIN.) = 1.11

Tc(MIN.) = 7.76

SUBAREA AREA(ACRES) = 0.94 SUBAREA RUNOFF(CFS) = 2.09

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 2.2 PEAK FLOW RATE(CFS) = 4.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.24 FLOW VELOCITY(FEET/SEC.) = 5.87

LONGEST FLOWPATH FROM NODE 257.00 TO NODE 253.00 = 808.30 FEET.

FLOW PROCESS FROM NODE 253.00 TO NODE 253.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.76
 RAINFALL INTENSITY(INCH/HR) = 6.35
 TOTAL STREAM AREA(ACRES) = 2.22
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.93

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	16.83	8.43	6.019	6.82
2	5.37	9.92	5.419	2.71
3	4.93	7.76	6.351	2.22

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	EDEN200.TXT INTENSITY (INCH/HOUR)
1	24.62	7.76	6.351
2	26.07	8.43	6.019
3	24.73	9.92	5.419

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 26.07 Tc(MIN.) = 8.43
 TOTAL AREA(ACRES) = 11.8
 LONGEST FLOWPATH FROM NODE 249.00 TO NODE 253.00 = 1134.60 FEET.

 FLOW PROCESS FROM NODE 253.00 TO NODE 261.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 720.00 DOWNSTREAM(FEET) = 696.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 376.00 CHANNEL SLOPE = 0.0638
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.692
 *USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28.09
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.20
 AVERAGE FLOW DEPTH(FEET) = 0.76 TRAVEL TIME(MIN.) = 0.76
 Tc(MIN.) = 9.19
 SUBAREA AREA(ACRES) = 1.73 SUBAREA RUNOFF(CFS) = 4.04
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.391
 TOTAL AREA(ACRES) = 13.5 PEAK FLOW RATE(CFS) = 30.01

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.78 FLOW VELOCITY(FEET/SEC.) = 8.40
 LONGEST FLOWPATH FROM NODE 249.00 TO NODE 261.00 = 1510.60 FEET.

 FLOW PROCESS FROM NODE 261.00 TO NODE 261.00 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.) = 9.19
 RAINFALL INTENSITY(INCH/HR) = 5.69
 TOTAL STREAM AREA(ACRES) = 13.48
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 30.01

 FLOW PROCESS FROM NODE 262.00 TO NODE 263.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 109.20
 UPSTREAM ELEVATION(FEET) = 785.00
 DOWNSTREAM ELEVATION(FEET) = 782.00
 ELEVATION DIFFERENCE(FEET) = 3.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.698
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

```

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      THE MAXIMUM OVERLAND FLOW LENGTH =    96.21
      (Reference: Table 3-1B of Hydrology Manual)
      THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.899
      SUBAREA RUNOFF(CFS) =          0.27
      TOTAL AREA(ACRES) =          0.11    TOTAL RUNOFF(CFS) =          0.27

*****
      FLOW PROCESS FROM NODE    263.00 TO NODE    264.00 IS CODE =  51
-----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
      >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
      ELEVATION DATA: UPSTREAM(FEET) =    782.00  DOWNSTREAM(FEET) =    714.00
      CHANNEL LENGTH THRU SUBAREA(FEET) =    597.70  CHANNEL SLOPE =    0.1138
      CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
      MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.091
      *USER SPECIFIED(SUBAREA):
      NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
      S.C.S. CURVE NUMBER (AMC II) = 85
      TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          2.30
      TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.46
      AVERAGE FLOW DEPTH(FEET) =    0.16  TRAVEL TIME(MIN.) =    2.23
      Tc(MIN.) =    10.93
      SUBAREA AREA(ACRES) =     1.93    SUBAREA RUNOFF(CFS) =     4.03
      AREA-AVERAGE RUNOFF COEFFICIENT =    0.410
      TOTAL AREA(ACRES) =          2.0    PEAK FLOW RATE(CFS) =          4.26

      END OF SUBAREA CHANNEL FLOW HYDRAULICS:
      DEPTH(FEET) =    0.22  FLOW VELOCITY(FEET/SEC.) =    5.51
      LONGEST FLOWPATH FROM NODE    262.00 TO NODE    264.00 =    706.90 FEET.

*****
      FLOW PROCESS FROM NODE    264.00 TO NODE    261.00 IS CODE =  51
-----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
      >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
      ELEVATION DATA: UPSTREAM(FEET) =    714.00  DOWNSTREAM(FEET) =    696.00
      CHANNEL LENGTH THRU SUBAREA(FEET) =    195.60  CHANNEL SLOPE =    0.0920
      CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
      MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.923
      *USER SPECIFIED(SUBAREA):
      NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
      S.C.S. CURVE NUMBER (AMC II) = 85
      TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          5.38
      TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    5.58
      AVERAGE FLOW DEPTH(FEET) =    0.27  TRAVEL TIME(MIN.) =    0.58
      Tc(MIN.) =    11.52
      SUBAREA AREA(ACRES) =     1.11    SUBAREA RUNOFF(CFS) =     2.24
      AREA-AVERAGE RUNOFF COEFFICIENT =    0.410
      TOTAL AREA(ACRES) =          3.2    PEAK FLOW RATE(CFS) =          6.36

      END OF SUBAREA CHANNEL FLOW HYDRAULICS:
      DEPTH(FEET) =    0.30  FLOW VELOCITY(FEET/SEC.) =    5.88
      LONGEST FLOWPATH FROM NODE    262.00 TO NODE    261.00 =    902.50 FEET.

*****
      FLOW PROCESS FROM NODE    261.00 TO NODE    261.00 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.) = 11.52
RAINFALL INTENSITY(INCH/HR) = 4.92
TOTAL STREAM AREA(ACRES) = 3.15
PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.36

```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	30.01	9.19	5.692	13.48
2	6.36	11.52	4.923	3.15

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	35.09	9.19	5.692
2	32.31	11.52	4.923

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

PEAK FLOW RATE(CFS) = 35.09 Tc(MIN.) = 9.19
TOTAL AREA(ACRES) = 16.6
LONGEST FLOWPATH FROM NODE 249.00 TO NODE 261.00 = 1510.60 FEET.

```

```

FLOW PROCESS FROM NODE 261.00 TO NODE 245.00 IS CODE = 51

```

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 696.00 DOWNSTREAM(FEET) = 672.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 284.70 CHANNEL SLOPE = 0.0843
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.505
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36.08
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.74
AVERAGE FLOW DEPTH(FEET) = 0.80 TRAVEL TIME(MIN.) = 0.49
Tc(MIN.) = 9.68
SUBAREA AREA(ACRES) = 0.88 SUBAREA RUNOFF(CFS) = 1.99
AREA-AVERAGE RUNOFF COEFFICIENT = 0.396
TOTAL AREA(ACRES) = 17.5 PEAK FLOW RATE(CFS) = 38.13

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

DEPTH(FEET) = 0.83 FLOW VELOCITY(FEET/SEC.) = 9.91
LONGEST FLOWPATH FROM NODE 249.00 TO NODE 245.00 = 1795.30 FEET.

```

```

FLOW PROCESS FROM NODE 245.00 TO NODE 245.00 IS CODE = 11

```

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

** MAIN STREAM CONFLUENCE DATA **

STREAM	RUNOFF	Tc	INTENSITY	AREA
--------	--------	----	-----------	------

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NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
  1         38.13      9.68         5.505         17.51
LONGEST FLOWPATH FROM NODE 249.00 TO NODE 245.00 = 1795.30 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
  1         75.65      12.96         4.561         47.39
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 245.00 = 3532.80 FEET.

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)
  1         94.63         9.68         5.505
  2        107.24        12.96         4.561

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 107.24 Tc(MIN.) = 12.96
TOTAL AREA(ACRES) = 64.9

*****
FLOW PROCESS FROM NODE 245.00 TO NODE 266.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(Feet) = 672.00 DOWNSTREAM(Feet) = 668.00
CHANNEL LENGTH THRU SUBAREA(Feet) = 184.50 CHANNEL SLOPE = 0.0217
CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.476
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 107.87
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 8.02
AVERAGE FLOW DEPTH(Feet) = 1.95 TRAVEL TIME(MIN.) = 0.38
Tc(MIN.) = 13.35
SUBAREA AREA(ACRES) = 0.69 SUBAREA RUNOFF(CFS) = 1.27
AREA-AVERAGE RUNOFF COEFFICIENT = 0.363
TOTAL AREA(ACRES) = 65.6 PEAK FLOW RATE(CFS) = 107.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(Feet) = 1.95 FLOW VELOCITY(Feet/Sec.) = 7.98
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 266.00 = 3717.30 FEET.

*****
FLOW PROCESS FROM NODE 266.00 TO NODE 266.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.35
RAINFALL INTENSITY(INCH/HR) = 4.48
TOTAL STREAM AREA(ACRES) = 65.59
PEAK FLOW RATE(CFS) AT CONFLUENCE = 107.24

*****
FLOW PROCESS FROM NODE 267.00 TO NODE 268.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====

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```

*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 75.00
UPSTREAM ELEVATION(FEET) = 785.00
DOWNSTREAM ELEVATION(FEET) = 782.00
ELEVATION DIFFERENCE(FEET) = 3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.776
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.930
SUBAREA RUNOFF(CFS) = 0.28
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.28

```

```

*****
FLOW PROCESS FROM NODE 268.00 TO NODE 269.00 IS CODE = 51
-----

```

```

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

```

```

ELEVATION DATA: UPSTREAM(FEET) = 782.00 DOWNSTREAM(FEET) = 758.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 366.00 CHANNEL SLOPE = 0.0656
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.006

```

```

*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.63
AVERAGE FLOW DEPTH(FEET) = 0.18 TRAVEL TIME(MIN.) = 1.68
Tc(MIN.) = 8.46
SUBAREA AREA(ACRES) = 1.52 SUBAREA RUNOFF(CFS) = 3.74
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 1.6 PEAK FLOW RATE(CFS) = 3.99

```

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.25 FLOW VELOCITY(FEET/SEC.) = 4.58
LONGEST FLOWPATH FROM NODE 267.00 TO NODE 269.00 = 441.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 269.00 TO NODE 266.00 IS CODE = 51
-----

```

```

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

```

```

ELEVATION DATA: UPSTREAM(FEET) = 758.00 DOWNSTREAM(FEET) = 668.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 534.40 CHANNEL SLOPE = 0.1684
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.516

```

```

*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.13
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.46
AVERAGE FLOW DEPTH(FEET) = 0.27 TRAVEL TIME(MIN.) = 1.19
Tc(MIN.) = 9.65
SUBAREA AREA(ACRES) = 2.77 SUBAREA RUNOFF(CFS) = 6.26
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 4.4 PEAK FLOW RATE(CFS) = 9.93

```

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.32 FLOW VELOCITY(FEET/SEC.) = 8.42
LONGEST FLOWPATH FROM NODE 267.00 TO NODE 266.00 = 975.40 FEET.

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```

*****
FLOW PROCESS FROM NODE      266.00 TO NODE      266.00 IS CODE =   1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   9.65
RAINFALL INTENSITY(INCH/HR) =   5.52
TOTAL STREAM AREA(ACRES) =   4.39
PEAK FLOW RATE(CFS) AT CONFLUENCE =       9.93
*****
FLOW PROCESS FROM NODE      270.00 TO NODE      271.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) =  119.60
UPSTREAM ELEVATION(FEET) =  724.00
DOWNSTREAM ELEVATION(FEET) =  709.00
ELEVATION DIFFERENCE(FEET) =   15.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =   5.765
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =  100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.691
SUBAREA RUNOFF(CFS) =       0.32
TOTAL AREA(ACRES) =       0.10  TOTAL RUNOFF(CFS) =       0.32
*****
FLOW PROCESS FROM NODE      271.00 TO NODE      266.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =  709.00  DOWNSTREAM(FEET) =  668.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  142.10  CHANNEL SLOPE =  0.2885
CHANNEL BASE(FEET) =   3.00  "Z" FACTOR =   2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =  10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.266
*USER SPECIFIED(SUBAREA):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.45
AVERAGE FLOW DEPTH(FEET) =   0.07  TRAVEL TIME(MIN.) =   0.53
Tc(MIN.) =   6.30
SUBAREA AREA(ACRES) =       0.46  SUBAREA RUNOFF(CFS) =   1.37
AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
TOTAL AREA(ACRES) =       0.6  PEAK FLOW RATE(CFS) =       1.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.10  FLOW VELOCITY(FEET/SEC.) =   5.42
LONGEST FLOWPATH FROM NODE      270.00 TO NODE      266.00 =       261.70 FEET.
*****
FLOW PROCESS FROM NODE      266.00 TO NODE      266.00 IS CODE =   1
-----

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.30
 RAINFALL INTENSITY(INCH/HR) = 7.27
 TOTAL STREAM AREA(ACRES) = 0.56
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.67

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	107.24	13.35	4.476	65.59
2	9.93	9.65	5.516	4.39
3	1.67	6.30	7.266	0.56

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	58.75	6.30	7.266
2	88.76	9.65	5.516
3	116.32	13.35	4.476

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 116.32 Tc(MIN.) = 13.35
 TOTAL AREA(ACRES) = 70.5
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 266.00 = 3717.30 FEET.

FLOW PROCESS FROM NODE 266.00 TO NODE 538.00 IS CODE = 52

>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 668.00 DOWNSTREAM(FEET) = 654.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 290.00 CHANNEL SLOPE = 0.0483
 CHANNEL FLOW THRU SUBAREA(CFS) = 116.32
 FLOW VELOCITY(FEET/SEC) = 10.92 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) = 0.44 Tc(MIN.) = 13.79
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 538.00 = 4007.30 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 70.5 TC(MIN.) = 13.79
 PEAK FLOW RATE(CFS) = 116.32

=====

END OF RATIONAL METHOD ANALYSIS

□

BASIN B (CONTINUED FROM RUN 200)



Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Date: Aug 2013
EDEN500.DAT
Run Name: 500 Series

Page: 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
500	501	2	747	745	69.72	0.41	0.10	
501	502	5	745	706	563.30	0.41	1.11	
502	502	1						1 of 3
503	504	2	755	751	76.26	0.41	0.11	
504	502	5	751	706	423.71	0.41	0.84	
502	502	1						2 of 3
505	506	2	759	753.0	64.03	0.41	0.10	
506	507	5	753	724	224.84	0.41	0.72	
507	502	5	724	706	133.33	0.41	0.31	
502	502	1						3 of 3
502	508	5	706	695	144.25	0.41	1.40	
508	509	5	695	689	87.54	0.41	0.59	
509	509	1						1 of 2
510	511	2	754	750	93.70	0.41	0.10	
511	512	5	750	722	386.80	0.41	2.23	
512	513	5	722	711	711.17	0.41	0.95	
513	509	5	711	689	248.49	0.41	1.09	
509	509	1						2 of 2
509	514	5	689	679	206.15	0.41	2.02	
514	515	5	679	660	311.15	0.41	3.33	
515	516	5	660	649	215.09	0.41	0.87	
516	517	5	649	636	378.59	0.41	2.25	
517	517	1						1 of 3
518	519	2	750	741	87.07	0.41	0.10	
519	520	5	741	693	382.98	0.41	0.92	
520	521	5	693	652	468.55	0.41	0.89	
521	517	5	652	636	394.00	0.41	0.44	
517	517	1						2 of 3
522	523	2	639	638	69.54	0.41	0.10	
523	524	5	638	637	44.59	0.41	2.24	
524	517	5	637	636	272.68	0.41	3.22	
517	517	1						3 of 3
517	525	5	636	630	264.2	0.41	0.3	
525	525	1						1 of 3
526	527	2	740	735	99.0	0.41	0.1	
527	528	5	735	684	495.32	0.41	1.44	

528	530	5	684	671	275.0	0.41	2.76	
530	531	5	671	645	449.12	0.41	2.91	
531	325	5	645	630	374.99	0.35	1.69	
525	525	1						2 of 3
532	533	2	719	703	79.93	0.41	0.10	
533	534	5	703	638	512.58	0.41	2.20	
534	525	5	638	630	355.49	0.35	1.72	
525	525	1						3 of 3
525	535	5	630	628	164.54	0.35	0.84	
535	535	10						save to bank 1
536	537	2	724	701	103.67	0.41	0.10	
537	538	5	701	654	399.13	0.41	2.09	
538	538	1						1 of 2
538	538	7	A=70.5 Tc=13.79 Q=116.32					
538	538	1						2 of 2
538	539	5	654	649	225.33	0.41	0.42	
539	539	1						1 of 2
540	541	2	785	782	99.75	0.41	0.10	
541	542	5	782	758	193.80	0.41	0.80	
542	543	5	758	720	291.62	0.41	2.85	
543	544	5	720	673	302.81	0.41	2.61	
544	539	5	673	649	288.26	0.41	0.87	
539	539	1						2 of 2
539	545	5	649	633	430.22	0.35	1.50	
545	535	5	633	628	190.00	0.35	0.52	
535	535	1						1 of 2
546	547	2	740	732	110.01	0.41	0.10	
547	548	5	732	663	538.85	0.35	1.73	
548	535	5	663	628	671.49	0.35	5.11	
535	535	1						2 of 2
535	535	11						confl. With bank 1
535	535	12						clear bank 1
535	549	5	628	625	370.00	0.35	4.62	
549	549	10						save to bank 2
550	551	2	740	735	81.58	0.41	0.10	
551	552	5	735	655	677.07	0.41	2.64	
552	552	1						1 of 2
553	554	2	755	750	77.43	0.41	0.11	
554	552	5	750	655	689.99	0.41	2.75	
552	552	1						2 of 2
552	549	5	655	625	593.80	0.35	5.02	
549	549	11						confl. With bank 2
549	549	12						clearn bank 2

549	555	5	625	619	602.24	0.35	7.90	
555	555	1						1 of 3
556	557	2	750	740	81.58	0.41	0.11	
557	558	5	740	685	459.62	0.41	5.60	
558	555	5	685	619	871.15	0.41	4.81	
555	555	1						2 of 3
559	560	2	860	855	87.52	0.41	0.08	
560	561	5	855	840	220.61	0.41	0.97	
561	562	5	840	775	371.19	0.41	4.04	
562	563	5	775	725	474.11	0.41	6.56	
563	564	5	725	715	292.84	0.41	7.95	
564	555	5	715	619	584.57	0.41	7.03	
555	555	1						3 of 3
555	565	5	619	613	382.53	0.35	5.37	
565	565	1						1 of 2
566	567	2	732	725	115.28	0.41	0.11	
567	568	5	725	669	416.43	0.35	1.00	
568	569	5	669	661	108.90	0.35	1.62	
569	565	5	661	613	629.84	0.35	3.27	
565	565	1						2 of 2
565	565	10						save to bank 3
546	570	2	740	732	97.72	0.35	0.10	
570	571	5	732	691	311.45	0.35	1.21	
571	572	5	691	644	422.81	0.35	0.78	
572	572	1						1 of 2
573	574	2	696	695	103.35	0.41	0.11	
574	575	5	695	661	312.08	0.35	0.85	
575	572	5	661	644	180.06	0.35	0.60	
572	572	1						2 of 2
572	576	5	644	624	252.06	0.35	1.28	
576	565	5	624	613	228.77	0.35	0.45	
565	565	11						confl. With bank 3
565	577	5	613.0	608	286.20	0.41	8.36	

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
2003,1985,1981 HYDROLOGY MANUAL
(c) Copyright 1982-2012 Advanced Engineering Software (aes)
Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fusco Engineering
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Suite 170
San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
* EDEN HILLS *
* EXISTING HYDROLOGY STUDY - 500 SERIES *
* OCTOBER 20, 2014 *

FILE NAME: EDEN500.DAT
TIME/DATE OF STUDY: 11:18 10/21/2014

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

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

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)
*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

FLOW PROCESS FROM NODE 500.00 TO NODE 501.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 69.72
UPSTREAM ELEVATION(FEET) = 747.00
DOWNSTREAM ELEVATION(FEET) = 745.00
ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.299
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.606

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SUBAREA RUNOFF(CFS) =          0.27
TOTAL AREA(ACRES) =          0.10  TOTAL RUNOFF(CFS) =          0.27
*****
FLOW PROCESS FROM NODE      501.00 TO NODE      502.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    745.00  DOWNSTREAM(FEET) =    706.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    563.30  CHANNEL SLOPE =    0.0692
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.350  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    3.065
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          1.02
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    0.56
AVERAGE FLOW DEPTH(FEET) =    0.46  TRAVEL TIME(MIN.) =    16.70
Tc(MIN.) =    24.00
SUBAREA AREA(ACRES) =     1.11  SUBAREA RUNOFF(CFS) =     1.40
AREA-AVERAGE RUNOFF COEFFICIENT =    0.410
TOTAL AREA(ACRES) =     1.2  PEAK FLOW RATE(CFS) =          1.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    0.58  FLOW VELOCITY(FEET/SEC.) =    0.63
LONGEST FLOWPATH FROM NODE      500.00 TO NODE      502.00 =    633.02 FEET.
*****
FLOW PROCESS FROM NODE      502.00 TO NODE      502.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS =    3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    24.00
RAINFALL INTENSITY(INCH/HR) =    3.07
TOTAL STREAM AREA(ACRES) =     1.21
PEAK FLOW RATE(CFS) AT CONFLUENCE =          1.52
*****
FLOW PROCESS FROM NODE      503.00 TO NODE      504.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =    76.26
UPSTREAM ELEVATION(FEET) =    755.00
DOWNSTREAM ELEVATION(FEET) =    751.00
ELEVATION DIFFERENCE(FEET) =     4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =     6.243
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    7.306
SUBAREA RUNOFF(CFS) =     0.33
TOTAL AREA(ACRES) =     0.11  TOTAL RUNOFF(CFS) =     0.33
*****
FLOW PROCESS FROM NODE      504.00 TO NODE      502.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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=====
ELEVATION DATA: UPSTREAM(FEET) = 751.00 DOWNSTREAM(FEET) = 706.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 423.71 CHANNEL SLOPE = 0.1062
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.146
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.39
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.68
AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 1.92
Tc(MIN.) = 8.16
SUBAREA AREA(ACRES) = 0.84 SUBAREA RUNOFF(CFS) = 2.12
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 0.9 PEAK FLOW RATE(CFS) = 2.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 4.41
LONGEST FLOWPATH FROM NODE 503.00 TO NODE 502.00 = 499.97 FEET.

*****
FLOW PROCESS FROM NODE 502.00 TO NODE 502.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.16
RAINFALL INTENSITY(INCH/HR) = 6.15
TOTAL STREAM AREA(ACRES) = 0.95
PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.39

*****
FLOW PROCESS FROM NODE 505.00 TO NODE 506.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 64.03
UPSTREAM ELEVATION(FEET) = 759.00
DOWNSTREAM ELEVATION(FEET) = 753.00
ELEVATION DIFFERENCE(FEET) = 6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.714
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.35
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.35

*****
FLOW PROCESS FROM NODE 506.00 TO NODE 507.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 753.00 DOWNSTREAM(FEET) = 724.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 224.84 CHANNEL SLOPE = 0.1290
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.781
*USER SPECIFIED(SUBAREA):

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USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.95
AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 0.95
Tc(MIN.) = 5.66
SUBAREA AREA(ACRES) = 0.72 SUBAREA RUNOFF(CFS) = 2.30
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 0.8 PEAK FLOW RATE(CFS) = 2.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.16 FLOW VELOCITY(FEET/SEC.) = 4.82
LONGEST FLOWPATH FROM NODE 505.00 TO NODE 507.00 = 288.87 FEET.
*****
FLOW PROCESS FROM NODE 507.00 TO NODE 502.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 724.00 DOWNSTREAM(FEET) = 706.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 133.33 CHANNEL SLOPE = 0.1350
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HR) = 7.433
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.09
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.35
AVERAGE FLOW DEPTH(FEET) = 0.17 TRAVEL TIME(MIN.) = 0.42
Tc(MIN.) = 6.08
SUBAREA AREA(ACRES) = 0.31 SUBAREA RUNOFF(CFS) = 0.94
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 1.1 PEAK FLOW RATE(CFS) = 3.44

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.19 FLOW VELOCITY(FEET/SEC.) = 5.49
LONGEST FLOWPATH FROM NODE 505.00 TO NODE 502.00 = 422.20 FEET.
*****
FLOW PROCESS FROM NODE 502.00 TO NODE 502.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 6.08
RAINFALL INTENSITY(INCH/HR) = 7.43
TOTAL STREAM AREA(ACRES) = 1.13
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.44

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HR) (ACRE)
1 1.52 24.00 3.065 1.21
2 2.39 8.16 6.146 0.95
3 3.44 6.08 7.433 1.13

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

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** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	5.61	6.08	7.433
2	5.76	8.16	6.146
3	4.14	24.00	3.065

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.76 Tc(MIN.) = 8.16

TOTAL AREA(ACRES) = 3.3

LONGEST FLOWPATH FROM NODE 500.00 TO NODE 502.00 = 633.02 FEET.

FLOW PROCESS FROM NODE 502.00 TO NODE 508.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 706.00 DOWNSTREAM(FEET) = 695.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 144.25 CHANNEL SLOPE = 0.0763

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.954

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.47

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.84

AVERAGE FLOW DEPTH(FEET) = 0.35 TRAVEL TIME(MIN.) = 0.41

Tc(MIN.) = 8.58

SUBAREA AREA(ACRES) = 1.40 SUBAREA RUNOFF(CFS) = 3.42

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 11.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.44 FLOW VELOCITY(FEET/SEC.) = 6.71

LONGEST FLOWPATH FROM NODE 500.00 TO NODE 508.00 = 777.27 FEET.

FLOW PROCESS FROM NODE 508.00 TO NODE 509.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 695.00 DOWNSTREAM(FEET) = 689.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 87.54 CHANNEL SLOPE = 0.0685

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.857

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.16

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.60

AVERAGE FLOW DEPTH(FEET) = 0.47 TRAVEL TIME(MIN.) = 0.22

Tc(MIN.) = 8.80

SUBAREA AREA(ACRES) = 0.59 SUBAREA RUNOFF(CFS) = 1.42

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 5.3 PEAK FLOW RATE(CFS) = 12.68

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.48 FLOW VELOCITY(FEET/SEC.) = 6.71

LONGEST FLOWPATH FROM NODE 500.00 TO NODE 509.00 = 864.81 FEET.

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*****
FLOW PROCESS FROM NODE    509.00 TO NODE    509.00 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.) =    8.80
RAINFALL INTENSITY(INCH/HR) =    5.86
TOTAL STREAM AREA(ACRES) =    5.28
PEAK FLOW RATE(CFS) AT CONFLUENCE =    12.68
*****
FLOW PROCESS FROM NODE    510.00 TO NODE    511.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =    93.70
UPSTREAM ELEVATION(FEET) =    754.00
DOWNSTREAM ELEVATION(FEET) =    750.00
ELEVATION DIFFERENCE(FEET) =    4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.411
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.541
SUBAREA RUNOFF(CFS) =    0.27
TOTAL AREA(ACRES) =    0.10    TOTAL RUNOFF(CFS) =    0.27
*****
FLOW PROCESS FROM NODE    511.00 TO NODE    512.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    750.00  DOWNSTREAM(FEET) =    722.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   386.80  CHANNEL SLOPE =    0.0724
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   5.798
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    2.93
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.23
AVERAGE FLOW DEPTH(FEET) =    0.20  TRAVEL TIME(MIN.) =    1.52
Tc(MIN.) =    8.93
SUBAREA AREA(ACRES) =    2.23    SUBAREA RUNOFF(CFS) =    5.30
AREA-AVERAGE RUNOFF COEFFICIENT =    0.410
TOTAL AREA(ACRES) =    2.3    PEAK FLOW RATE(CFS) =    5.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    0.29  FLOW VELOCITY(FEET/SEC.) =    5.24
LONGEST FLOWPATH FROM NODE    510.00 TO NODE    512.00 =    480.50 FEET.
*****
FLOW PROCESS FROM NODE    512.00 TO NODE    513.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    722.00  DOWNSTREAM(FEET) =    711.00

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CHANNEL LENGTH THRU SUBAREA(FEET) = 711.17  CHANNEL SLOPE = 0.0155
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.645
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.45
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.23
AVERAGE FLOW DEPTH(FEET) = 0.50  TRAVEL TIME(MIN.) = 3.67
Tc(MIN.) = 12.60
SUBAREA AREA(ACRES) = 0.95  SUBAREA RUNOFF(CFS) = 1.81
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 3.3  PEAK FLOW RATE(CFS) = 6.25

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.49  FLOW VELOCITY(FEET/SEC.) = 3.19
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 513.00 = 1191.67 FEET.

*****
FLOW PROCESS FROM NODE 513.00 TO NODE 509.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 711.00  DOWNSTREAM(FEET) = 689.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 248.49  CHANNEL SLOPE = 0.0885
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.490
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.11
AVERAGE FLOW DEPTH(FEET) = 0.33  TRAVEL TIME(MIN.) = 0.68
Tc(MIN.) = 13.28
SUBAREA AREA(ACRES) = 1.09  SUBAREA RUNOFF(CFS) = 2.01
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 4.4  PEAK FLOW RATE(CFS) = 8.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.35  FLOW VELOCITY(FEET/SEC.) = 6.29
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 509.00 = 1440.16 FEET.

*****
FLOW PROCESS FROM NODE 509.00 TO NODE 509.00 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.) = 13.28
RAINFALL INTENSITY(INCH/HR) = 4.49
TOTAL STREAM AREA(ACRES) = 4.37
PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.05

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 12.68 8.80 5.857 5.28
2 8.05 13.28 4.490 4.37

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	18.01	8.80	5.857
2	17.77	13.28	4.490

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 18.01 Tc(MIN.) = 8.80
TOTAL AREA(ACRES) = 9.6
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 509.00 = 1440.16 FEET.

FLOW PROCESS FROM NODE 509.00 TO NODE 514.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 689.00 DOWNSTREAM(FEET) = 679.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 206.15 CHANNEL SLOPE = 0.0485
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.650

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.35

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.81

AVERAGE FLOW DEPTH(FEET) = 0.68 TRAVEL TIME(MIN.) = 0.50

Tc(MIN.) = 9.30

SUBAREA AREA(ACRES) = 2.02 SUBAREA RUNOFF(CFS) = 4.68

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 11.7 PEAK FLOW RATE(CFS) = 27.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.80 FLOW VELOCITY(FEET/SEC.) = 7.39

LONGEST FLOWPATH FROM NODE 510.00 TO NODE 514.00 = 1646.31 FEET.

FLOW PROCESS FROM NODE 514.00 TO NODE 515.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 679.00 DOWNSTREAM(FEET) = 660.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 311.15 CHANNEL SLOPE = 0.0611
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.418

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 30.73

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.30

AVERAGE FLOW DEPTH(FEET) = 0.80 TRAVEL TIME(MIN.) = 0.63

Tc(MIN.) = 9.93

SUBAREA AREA(ACRES) = 3.33 SUBAREA RUNOFF(CFS) = 7.40

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 15.0 PEAK FLOW RATE(CFS) = 33.32

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.84 FLOW VELOCITY(Feet/Sec.) = 8.53
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 515.00 = 1957.46 FEET.

FLOW PROCESS FROM NODE 515.00 TO NODE 516.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 660.00 DOWNSTREAM(Feet) = 649.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 215.09 CHANNEL SLOPE = 0.0511

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.267

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 34.26

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 8.06

AVERAGE FLOW DEPTH(Feet) = 0.89 TRAVEL TIME(MIN.) = 0.45

Tc(MIN.) = 10.37

SUBAREA AREA(ACRES) = 0.87 SUBAREA RUNOFF(CFS) = 1.88

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 15.9 PEAK FLOW RATE(CFS) = 34.27

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.89 FLOW VELOCITY(Feet/Sec.) = 8.06
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 516.00 = 2172.55 FEET.

FLOW PROCESS FROM NODE 516.00 TO NODE 517.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 649.00 DOWNSTREAM(Feet) = 636.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 378.59 CHANNEL SLOPE = 0.0343

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.995

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 36.57

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 7.12

AVERAGE FLOW DEPTH(Feet) = 1.02 TRAVEL TIME(MIN.) = 0.89

Tc(MIN.) = 11.26

SUBAREA AREA(ACRES) = 2.25 SUBAREA RUNOFF(CFS) = 4.61

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 18.1 PEAK FLOW RATE(CFS) = 37.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 1.03 FLOW VELOCITY(Feet/Sec.) = 7.15
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 517.00 = 2551.14 FEET.

FLOW PROCESS FROM NODE 517.00 TO NODE 517.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

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TIME OF CONCENTRATION(MIN.) = 11.26
RAINFALL INTENSITY(INCH/HR) = 5.00
TOTAL STREAM AREA(ACRES) = 18.12
PEAK FLOW RATE(CFS) AT CONFLUENCE = 37.11

*****
FLOW PROCESS FROM NODE 518.00 TO NODE 519.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 87.07
UPSTREAM ELEVATION(FEET) = 750.00
DOWNSTREAM ELEVATION(FEET) = 741.00
ELEVATION DIFFERENCE(FEET) = 9.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.380
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.042
SUBAREA RUNOFF(CFS) = 0.33
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.33

*****
FLOW PROCESS FROM NODE 519.00 TO NODE 520.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 741.00 DOWNSTREAM(FEET) = 693.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 382.98 CHANNEL SLOPE = 0.1253
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.802
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.62
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.00
AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 1.60
Tc(MIN.) = 6.97
SUBAREA AREA(ACRES) = 0.92 SUBAREA RUNOFF(CFS) = 2.57
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 1.0 PEAK FLOW RATE(CFS) = 2.84

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 4.99
LONGEST FLOWPATH FROM NODE 518.00 TO NODE 520.00 = 470.05 FEET.

*****
FLOW PROCESS FROM NODE 520.00 TO NODE 521.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 693.00 DOWNSTREAM(FEET) = 652.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 468.55 CHANNEL SLOPE = 0.0875
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.957
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0

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TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.94
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  4.90
AVERAGE FLOW DEPTH(FEET) =  0.23   TRAVEL TIME(MIN.) =  1.59
Tc(MIN.) =      8.57
SUBAREA AREA(ACRES) =      0.89      SUBAREA RUNOFF(CFS) =    2.17
AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
TOTAL AREA(ACRES) =      1.9        PEAK FLOW RATE(CFS) =    4.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.25   FLOW VELOCITY(FEET/SEC.) =  5.22
LONGEST FLOWPATH FROM NODE    518.00 TO NODE    521.00 =    938.60 FEET.

*****
FLOW PROCESS FROM NODE    521.00 TO NODE    517.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   652.00  DOWNSTREAM(FEET) =   636.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   394.00  CHANNEL SLOPE =  0.0406
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.349
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    5.15
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  4.22
AVERAGE FLOW DEPTH(FEET) =  0.33   TRAVEL TIME(MIN.) =  1.56
Tc(MIN.) =   10.12
SUBAREA AREA(ACRES) =    0.44      SUBAREA RUNOFF(CFS) =    0.96
AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
TOTAL AREA(ACRES) =    2.3        PEAK FLOW RATE(CFS) =    5.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =  4.22
LONGEST FLOWPATH FROM NODE    518.00 TO NODE    517.00 =   1332.60 FEET.

*****
FLOW PROCESS FROM NODE    517.00 TO NODE    517.00 IS CODE =   1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =   10.12
RAINFALL INTENSITY(INCH/HR) =    5.35
TOTAL STREAM AREA(ACRES) =    2.35
PEAK FLOW RATE(CFS) AT CONFLUENCE =    5.15

*****
FLOW PROCESS FROM NODE    522.00 TO NODE    523.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =   69.54
UPSTREAM ELEVATION(FEET) =   639.00
DOWNSTREAM ELEVATION(FEET) =   638.00
ELEVATION DIFFERENCE(FEET) =    1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =   9.176

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100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.699
SUBAREA RUNOFF(CFS) = 0.23
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.23
*****
FLOW PROCESS FROM NODE 523.00 TO NODE 524.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 638.00 DOWNSTREAM(FEET) = 637.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 44.59 CHANNEL SLOPE = 0.0224
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.596
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.80
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.82
AVERAGE FLOW DEPTH(FEET) = 0.28 TRAVEL TIME(MIN.) = 0.26
Tc(MIN.) = 9.44
SUBAREA AREA(ACRES) = 2.24 SUBAREA RUNOFF(CFS) = 5.14
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 2.3 PEAK FLOW RATE(CFS) = 5.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.41 FLOW VELOCITY(FEET/SEC.) = 3.46
LONGEST FLOWPATH FROM NODE 522.00 TO NODE 524.00 = 114.13 FEET.
*****
FLOW PROCESS FROM NODE 524.00 TO NODE 517.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 637.00 DOWNSTREAM(FEET) = 636.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 272.68 CHANNEL SLOPE = 0.0037
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.905
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.61
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.12
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 2.14
Tc(MIN.) = 11.58
SUBAREA AREA(ACRES) = 3.22 SUBAREA RUNOFF(CFS) = 6.48
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 5.6 PEAK FLOW RATE(CFS) = 11.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.99 FLOW VELOCITY(FEET/SEC.) = 2.28
LONGEST FLOWPATH FROM NODE 522.00 TO NODE 517.00 = 386.81 FEET.
*****
FLOW PROCESS FROM NODE 517.00 TO NODE 517.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 3

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CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:

TIME OF CONCENTRATION(MIN.) = 11.58
 RAINFALL INTENSITY(INCH/HR) = 4.91
 TOTAL STREAM AREA(ACRES) = 5.56
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.18

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HR)	AREA (ACRE)
1	37.11	11.26	4.995	18.12
2	5.15	10.12	5.349	2.35
3	11.18	11.58	4.905	5.56

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HR)
1	49.59	10.12	5.349
2	52.79	11.26	4.995
3	52.35	11.58	4.905

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 52.79 Tc(MIN.) = 11.26
 TOTAL AREA(ACRES) = 26.0
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 517.00 = 2551.14 FEET.

FLOW PROCESS FROM NODE 517.00 TO NODE 525.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(Feet) = 636.00 DOWNSTREAM(Feet) = 630.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 264.20 CHANNEL SLOPE = 0.0227

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.817

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 53.05

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 6.76

AVERAGE FLOW DEPTH(Feet) = 1.37 TRAVEL TIME(MIN.) = 0.65

Tc(MIN.) = 11.91

SUBAREA AREA(ACRES) = 0.30 SUBAREA RUNOFF(CFS) = 0.51

AREA-AVERAGE RUNOFF COEFFICIENT = 0.409

TOTAL AREA(ACRES) = 26.3 PEAK FLOW RATE(CFS) = 52.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 1.36 FLOW VELOCITY(Feet/Sec.) = 6.77

LONGEST FLOWPATH FROM NODE 510.00 TO NODE 525.00 = 2815.34 FEET.

FLOW PROCESS FROM NODE 525.00 TO NODE 525.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 11.91

RAINFALL INTENSITY(INCH/HR) = 4.82

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TOTAL STREAM AREA(ACRES) =    26.33
PEAK FLOW RATE(CFS) AT CONFLUENCE =    52.79
*****
FLOW PROCESS FROM NODE    526.00 TO NODE    527.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =    99.04
UPSTREAM ELEVATION(FEET) =    740.00
DOWNSTREAM ELEVATION(FEET) =    735.00
ELEVATION DIFFERENCE(FEET) =     5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.205
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.661
SUBAREA RUNOFF(CFS) =     0.27
TOTAL AREA(ACRES) =     0.10    TOTAL RUNOFF(CFS) =     0.27
*****
FLOW PROCESS FROM NODE    527.00 TO NODE    528.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    735.00    DOWNSTREAM(FEET) =    684.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    495.32    CHANNEL SLOPE =    0.1030
CHANNEL BASE(FEET) =     3.00    "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.667
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     1.96
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.03
AVERAGE FLOW DEPTH(FEET) =    0.15    TRAVEL TIME(MIN.) =    2.05
Tc(MIN.) =     9.26
SUBAREA AREA(ACRES) =     1.44    SUBAREA RUNOFF(CFS) =     3.35
AREA-AVERAGE RUNOFF COEFFICIENT =  0.410
TOTAL AREA(ACRES) =     1.5    PEAK FLOW RATE(CFS) =     3.58

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.21    FLOW VELOCITY(FEET/SEC.) =    5.01
LONGEST FLOWPATH FROM NODE    526.00 TO NODE    528.00 =    594.36 FEET.
*****
FLOW PROCESS FROM NODE    528.00 TO NODE    530.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    684.00    DOWNSTREAM(FEET) =    671.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    275.00    CHANNEL SLOPE =    0.0473
CHANNEL BASE(FEET) =     3.00    "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.318
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     6.59
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.78
AVERAGE FLOW DEPTH(FEET) =    0.37    TRAVEL TIME(MIN.) =    0.96

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Tc(MIN.) = 10.22
 SUBAREA AREA(ACRES) = 2.76 SUBAREA RUNOFF(CFS) = 6.02
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
 TOTAL AREA(ACRES) = 4.3 PEAK FLOW RATE(CFS) = 9.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.45 FLOW VELOCITY(FEET/SEC.) = 5.38
 LONGEST FLOWPATH FROM NODE 526.00 TO NODE 530.00 = 869.36 FEET.

FLOW PROCESS FROM NODE 530.00 TO NODE 531.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 671.00 DOWNSTREAM(FEET) = 645.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 449.12 CHANNEL SLOPE = 0.0579
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.952

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.33

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.27

AVERAGE FLOW DEPTH(FEET) = 0.49 TRAVEL TIME(MIN.) = 1.19

Tc(MIN.) = 11.41

SUBAREA AREA(ACRES) = 2.91 SUBAREA RUNOFF(CFS) = 5.91

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 7.2 PEAK FLOW RATE(CFS) = 14.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.54 FLOW VELOCITY(FEET/SEC.) = 6.57
 LONGEST FLOWPATH FROM NODE 526.00 TO NODE 531.00 = 1318.48 FEET.

FLOW PROCESS FROM NODE 531.00 TO NODE 525.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 645.00 DOWNSTREAM(FEET) = 630.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 374.99 CHANNEL SLOPE = 0.0400
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.679

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 16.02

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.97

AVERAGE FLOW DEPTH(FEET) = 0.63 TRAVEL TIME(MIN.) = 1.05

Tc(MIN.) = 12.46

SUBAREA AREA(ACRES) = 1.69 SUBAREA RUNOFF(CFS) = 2.77

AREA-AVERAGE RUNOFF COEFFICIENT = 0.399

TOTAL AREA(ACRES) = 8.9 PEAK FLOW RATE(CFS) = 16.60

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 5.99
 LONGEST FLOWPATH FROM NODE 526.00 TO NODE 525.00 = 1693.47 FEET.

FLOW PROCESS FROM NODE 525.00 TO NODE 525.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 12.46
 RAINFALL INTENSITY(INCH/HR) = 4.68
 TOTAL STREAM AREA(ACRES) = 8.90
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 16.60

 FLOW PROCESS FROM NODE 532.00 TO NODE 533.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 79.93
 UPSTREAM ELEVATION(FEET) = 719.00
 DOWNSTREAM ELEVATION(FEET) = 703.00
 ELEVATION DIFFERENCE(FEET) = 16.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.154
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.267
 SUBAREA RUNOFF(CFS) = 0.34
 TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.34

 FLOW PROCESS FROM NODE 533.00 TO NODE 534.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 703.00 DOWNSTREAM(FEET) = 638.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 512.58 CHANNEL SLOPE = 0.1268
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.943
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.50
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.33
 AVERAGE FLOW DEPTH(FEET) = 0.19 TRAVEL TIME(MIN.) = 1.60
 Tc(MIN.) = 6.76
 SUBAREA AREA(ACRES) = 2.20 SUBAREA RUNOFF(CFS) = 6.26
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
 TOTAL AREA(ACRES) = 2.3 PEAK FLOW RATE(CFS) = 6.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.28 FLOW VELOCITY(FEET/SEC.) = 6.64
 LONGEST FLOWPATH FROM NODE 532.00 TO NODE 534.00 = 592.51 FEET.

 FLOW PROCESS FROM NODE 534.00 TO NODE 525.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 638.00 DOWNSTREAM(FEET) = 630.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 355.49 CHANNEL SLOPE = 0.0225
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

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MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HR) = 6.106

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.39

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.98

AVERAGE FLOW DEPTH(FEET) = 0.52 TRAVEL TIME(MIN.) = 1.49

Tc(MIN.) = 8.25

SUBAREA AREA(ACRES) = 1.72 SUBAREA RUNOFF(CFS) = 3.68

AREA-AVERAGE RUNOFF COEFFICIENT = 0.384

TOTAL AREA(ACRES) = 4.0 PEAK FLOW RATE(CFS) = 9.43

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.55 FLOW VELOCITY(FEET/SEC.) = 4.14

LONGEST FLOWPATH FROM NODE 532.00 TO NODE 525.00 = 948.00 FEET.

 FLOW PROCESS FROM NODE 525.00 TO NODE 525.00 IS CODE = 1

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

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

=====

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:

TIME OF CONCENTRATION(MIN.) = 8.25

RAINFALL INTENSITY(INCH/HR) = 6.11

TOTAL STREAM AREA(ACRES) = 4.02

PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.43

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HR)	AREA (ACRE)
1	52.79	11.91	4.817	26.33
2	16.60	12.46	4.679	8.90
3	9.43	8.25	6.106	4.02

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HR)
1	62.07	8.25	6.106
2	76.11	11.91	4.817
3	75.11	12.46	4.679

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 76.11 Tc(MIN.) = 11.91

TOTAL AREA(ACRES) = 39.2

LONGEST FLOWPATH FROM NODE 510.00 TO NODE 525.00 = 2815.34 FEET.

 FLOW PROCESS FROM NODE 525.00 TO NODE 535.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 630.00 DOWNSTREAM(FEET) = 628.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 164.54 CHANNEL SLOPE = 0.0122

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.700

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*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 76.80

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.92

AVERAGE FLOW DEPTH(FEET) = 1.90 TRAVEL TIME(MIN.) = 0.46

Tc(MIN.) = 12.37

SUBAREA AREA(ACRES) = 0.84 SUBAREA RUNOFF(CFS) = 1.38

AREA-AVERAGE RUNOFF COEFFICIENT = 0.403

TOTAL AREA(ACRES) = 40.1 PEAK FLOW RATE(CFS) = 76.11

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.90 FLOW VELOCITY(FEET/SEC.) = 5.91

LONGEST FLOWPATH FROM NODE 510.00 TO NODE 535.00 = 2979.88 FEET.

FLOW PROCESS FROM NODE 535.00 TO NODE 535.00 IS CODE = 10

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=====

FLOW PROCESS FROM NODE 536.00 TO NODE 537.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 103.67

UPSTREAM ELEVATION(FEET) = 724.00

DOWNSTREAM ELEVATION(FEET) = 701.00

ELEVATION DIFFERENCE(FEET) = 23.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.765

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 100.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.691

SUBAREA RUNOFF(CFS) = 0.32

TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.32

FLOW PROCESS FROM NODE 537.00 TO NODE 538.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 701.00 DOWNSTREAM(FEET) = 654.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 399.13 CHANNEL SLOPE = 0.1178

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.748

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.22

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.13

AVERAGE FLOW DEPTH(FEET) = 0.19 TRAVEL TIME(MIN.) = 1.30

Tc(MIN.) = 7.06

SUBAREA AREA(ACRES) = 2.09 SUBAREA RUNOFF(CFS) = 5.78

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 2.2 PEAK FLOW RATE(CFS) = 6.06

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.27 FLOW VELOCITY(FEET/SEC.) = 6.34
 LONGEST FLOWPATH FROM NODE 536.00 TO NODE 538.00 = 502.80 FEET.

 FLOW PROCESS FROM NODE 538.00 TO NODE 538.00 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.) = 7.06
 RAINFALL INTENSITY(INCH/HR) = 6.75
 TOTAL STREAM AREA(ACRES) = 2.19
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.06

 FLOW PROCESS FROM NODE 538.00 TO NODE 538.00 IS CODE = 7

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

=====

USER-SPECIFIED VALUES ARE AS FOLLOWS:
 TC(MIN) = 13.79 RAIN INTENSITY(INCH/HOUR) = 4.38
 TOTAL AREA(ACRES) = 70.50 TOTAL RUNOFF(CFS) = 116.32

 FLOW PROCESS FROM NODE 538.00 TO NODE 538.00 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.) = 13.79
 RAINFALL INTENSITY(INCH/HR) = 4.38
 TOTAL STREAM AREA(ACRES) = 70.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 116.32

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	6.06	7.06	6.748	2.19
2	116.32	13.79	4.382	70.50

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	65.63	7.06	6.748
2	120.25	13.79	4.382

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 120.25 Tc(MIN.) = 13.79
 TOTAL AREA(ACRES) = 72.7
 LONGEST FLOWPATH FROM NODE 526.00 TO NODE 538.00 = 1693.47 FEET.

 FLOW PROCESS FROM NODE 538.00 TO NODE 539.00 IS CODE = 51

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 654.00 DOWNSTREAM(FEET) = 649.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 225.33 CHANNEL SLOPE = 0.0222
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.292
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 120.62
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.30
AVERAGE FLOW DEPTH(FEET) = 2.05 TRAVEL TIME(MIN.) = 0.45
Tc(MIN.) = 14.24
SUBAREA AREA(ACRES) = 0.42 SUBAREA RUNOFF(CFS) = 0.74
AREA-AVERAGE RUNOFF COEFFICIENT = 0.378
TOTAL AREA(ACRES) = 73.1 PEAK FLOW RATE(CFS) = 120.25

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

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DEPTH(FEET) = 2.04 FLOW VELOCITY(FEET/SEC.) = 8.31
LONGEST FLOWPATH FROM NODE 526.00 TO NODE 539.00 = 1918.80 FEET.

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FLOW PROCESS FROM NODE 539.00 TO NODE 539.00 IS CODE = 1

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

```

=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 14.24
RAINFALL INTENSITY(INCH/HR) = 4.29
TOTAL STREAM AREA(ACRES) = 73.11
PEAK FLOW RATE(CFS) AT CONFLUENCE = 120.25

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FLOW PROCESS FROM NODE 540.00 TO NODE 541.00 IS CODE = 21

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

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=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 99.75
UPSTREAM ELEVATION(FEET) = 785.00
DOWNSTREAM ELEVATION(FEET) = 782.00
ELEVATION DIFFERENCE(FEET) = 3.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.594
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.945
SUBAREA RUNOFF(CFS) = 0.24
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.24

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FLOW PROCESS FROM NODE 541.00 TO NODE 542.00 IS CODE = 51

```

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 782.00 DOWNSTREAM(FEET) = 758.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 193.80 CHANNEL SLOPE = 0.1238
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.571
*USER SPECIFIED(SUBAREA):

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USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.16
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.55
AVERAGE FLOW DEPTH(FEET) = 0.10 TRAVEL TIME(MIN.) = 0.91
Tc(MIN.) = 9.51
SUBAREA AREA(ACRES) = 0.80 SUBAREA RUNOFF(CFS) = 1.83
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 0.9 PEAK FLOW RATE(CFS) = 2.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.14 FLOW VELOCITY(FEET/SEC.) = 4.41
LONGEST FLOWPATH FROM NODE 540.00 TO NODE 542.00 = 293.55 FEET.
*****
FLOW PROCESS FROM NODE 542.00 TO NODE 543.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 758.00 DOWNSTREAM(FEET) = 720.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 291.62 CHANNEL SLOPE = 0.1303
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.394
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.21
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.98
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 0.49
Tc(MIN.) = 9.99
SUBAREA AREA(ACRES) = 2.85 SUBAREA RUNOFF(CFS) = 6.30
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) = 8.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.21 FLOW VELOCITY(FEET/SEC.) = 11.50
LONGEST FLOWPATH FROM NODE 540.00 TO NODE 543.00 = 585.17 FEET.
*****
FLOW PROCESS FROM NODE 543.00 TO NODE 544.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 720.00 DOWNSTREAM(FEET) = 673.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 302.81 CHANNEL SLOPE = 0.1552
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.196
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.07
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.44
AVERAGE FLOW DEPTH(FEET) = 0.35 TRAVEL TIME(MIN.) = 0.60
Tc(MIN.) = 10.59
SUBAREA AREA(ACRES) = 2.61 SUBAREA RUNOFF(CFS) = 5.56
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 6.4 PEAK FLOW RATE(CFS) = 13.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

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                                EDEN500.TXT
DEPTH(FEET) = 0.39    FLOW VELOCITY(FEET/SEC.) = 9.08
LONGEST FLOWPATH FROM NODE 540.00 TO NODE 544.00 = 887.98 FEET.
*****
FLOW PROCESS FROM NODE 544.00 TO NODE 539.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 673.00 DOWNSTREAM(FEET) = 649.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 288.26 CHANNEL SLOPE = 0.0833
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.000
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.44
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.38
AVERAGE FLOW DEPTH(FEET) = 0.49 TRAVEL TIME(MIN.) = 0.65
Tc(MIN.) = 11.24
SUBAREA AREA(ACRES) = 0.87 SUBAREA RUNOFF(CFS) = 1.78
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 7.2 PEAK FLOW RATE(CFS) = 14.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.49 FLOW VELOCITY(FEET/SEC.) = 7.54
LONGEST FLOWPATH FROM NODE 540.00 TO NODE 539.00 = 1176.24 FEET.
*****
FLOW PROCESS FROM NODE 539.00 TO NODE 539.00 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.) = 11.24
RAINFALL INTENSITY(INCH/HR) = 5.00
TOTAL STREAM AREA(ACRES) = 7.23
PEAK FLOW RATE(CFS) AT CONFLUENCE = 14.82

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 120.25 14.24 4.292 73.11
2 14.82 11.24 5.000 7.23

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

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
1 118.05 11.24 5.000
2 132.98 14.24 4.292

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 132.98 Tc(MIN.) = 14.24
TOTAL AREA(ACRES) = 80.3
LONGEST FLOWPATH FROM NODE 526.00 TO NODE 539.00 = 1918.80 FEET.
*****

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FLOW PROCESS FROM NODE      539.00 TO NODE      545.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   649.00  DOWNSTREAM(FEET) =   633.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   430.22  CHANNEL SLOPE =   0.0372
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   4.162
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    134.07
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   10.34
AVERAGE FLOW DEPTH(FEET) =    1.90  TRAVEL TIME(MIN.) =    0.69
Tc(MIN.) =   14.94
SUBAREA AREA(ACRES) =    1.50      SUBAREA RUNOFF(CFS) =    2.19
AREA-AVERAGE RUNOFF COEFFICIENT =   0.380
TOTAL AREA(ACRES) =    81.8      PEAK FLOW RATE(CFS) =   132.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.90  FLOW VELOCITY(FEET/SEC.) =   10.32
LONGEST FLOWPATH FROM NODE   526.00 TO NODE   545.00 =   2349.02 FEET.
*****
FLOW PROCESS FROM NODE      545.00 TO NODE      535.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   633.00  DOWNSTREAM(FEET) =   628.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   190.00  CHANNEL SLOPE =   0.0263
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   4.101
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =   133.35
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    9.07
AVERAGE FLOW DEPTH(FEET) =    2.06  TRAVEL TIME(MIN.) =    0.35
Tc(MIN.) =   15.28
SUBAREA AREA(ACRES) =    0.52      SUBAREA RUNOFF(CFS) =    0.75
AREA-AVERAGE RUNOFF COEFFICIENT =   0.380
TOTAL AREA(ACRES) =    82.4      PEAK FLOW RATE(CFS) =   132.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.06  FLOW VELOCITY(FEET/SEC.) =    9.09
LONGEST FLOWPATH FROM NODE   526.00 TO NODE   535.00 =   2539.02 FEET.
*****
FLOW PROCESS FROM NODE      535.00 TO NODE      535.00 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.) =   15.28
RAINFALL INTENSITY(INCH/HR) =    4.10
TOTAL STREAM AREA(ACRES) =   82.36
PEAK FLOW RATE(CFS) AT CONFLUENCE =   132.98

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 FLOW PROCESS FROM NODE 546.00 TO NODE 547.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 110.01

UPSTREAM ELEVATION(FEET) = 740.00

DOWNSTREAM ELEVATION(FEET) = 732.00

ELEVATION DIFFERENCE(FEET) = 8.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.411

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 100.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.182

SUBAREA RUNOFF(CFS) = 0.29

TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.29

 FLOW PROCESS FROM NODE 547.00 TO NODE 548.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 732.00 DOWNSTREAM(FEET) = 663.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 538.85 CHANNEL SLOPE = 0.1281

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.051

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.15

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.60

AVERAGE FLOW DEPTH(FEET) = 0.14 TRAVEL TIME(MIN.) = 1.95

Tc(MIN.) = 8.36

SUBAREA AREA(ACRES) = 1.73 SUBAREA RUNOFF(CFS) = 3.66

AREA-AVERAGE RUNOFF COEFFICIENT = 0.353

TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 3.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.20 FLOW VELOCITY(FEET/SEC.) = 5.65

LONGEST FLOWPATH FROM NODE 546.00 TO NODE 548.00 = 648.86 FEET.

 FLOW PROCESS FROM NODE 548.00 TO NODE 535.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 663.00 DOWNSTREAM(FEET) = 628.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 671.49 CHANNEL SLOPE = 0.0521

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.245

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.62

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.39

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AVERAGE FLOW DEPTH(FEET) = 0.42 TRAVEL TIME(MIN.) = 2.08
 Tc(MIN.) = 10.44
 SUBAREA AREA(ACRES) = 5.11 SUBAREA RUNOFF(CFS) = 9.38
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.351
 TOTAL AREA(ACRES) = 6.9 PEAK FLOW RATE(CFS) = 12.77

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.52 FLOW VELOCITY(FEET/SEC.) = 6.05
 LONGEST FLOWPATH FROM NODE 546.00 TO NODE 535.00 = 1320.35 FEET.

FLOW PROCESS FROM NODE 535.00 TO NODE 535.00 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.) = 10.44
 RAINFALL INTENSITY(INCH/HR) = 5.24
 TOTAL STREAM AREA(ACRES) = 6.94
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 12.77

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	132.98	15.28	4.101	82.36
2	12.77	10.44	5.245	6.94

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	116.75	10.44	5.245
2	142.96	15.28	4.101

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 142.96 Tc(MIN.) = 15.28
 TOTAL AREA(ACRES) = 89.3
 LONGEST FLOWPATH FROM NODE 526.00 TO NODE 535.00 = 2539.02 FEET.

FLOW PROCESS FROM NODE 535.00 TO NODE 535.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	142.96	15.28	4.101	89.30

LONGEST FLOWPATH FROM NODE 526.00 TO NODE 535.00 = 2539.02 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	76.11	12.37	4.700	40.09

LONGEST FLOWPATH FROM NODE 510.00 TO NODE 535.00 = 2979.88 FEET.

** PEAK FLOW RATE TABLE **

STREAM	RUNOFF	Tc	INTENSITY
--------	--------	----	-----------

NUMBER	(CFS)	(MIN.)	EDEN500.TXT (INCH/HOUR)
1	191.82	12.37	4.700
2	209.37	15.28	4.101

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 209.37 Tc(MIN.) = 15.28
 TOTAL AREA(ACRES) = 129.4

 FLOW PROCESS FROM NODE 535.00 TO NODE 535.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 535.00 TO NODE 549.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(Feet) =	628.00	DOWNSTREAM(Feet) =	625.00
CHANNEL LENGTH THRU SUBAREA(Feet) =	370.00	CHANNEL SLOPE =	0.0081
CHANNEL BASE(Feet) =	3.00	"Z" FACTOR =	2.000
MANNING'S FACTOR =	0.030	MAXIMUM DEPTH(Feet) =	10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =	3.947		

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 212.56
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 6.60
 AVERAGE FLOW DEPTH(Feet) = 3.33 TRAVEL TIME(MIN.) = 0.93
 Tc(MIN.) = 16.22
 SUBAREA AREA(ACRES) = 4.62 SUBAREA RUNOFF(CFS) = 6.38
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.384
 TOTAL AREA(ACRES) = 134.0 PEAK FLOW RATE(CFS) = 209.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(Feet) = 3.31 FLOW VELOCITY(Feet/Sec.) = 6.58
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 549.00 = 3349.88 FEET.

 FLOW PROCESS FROM NODE 549.00 TO NODE 549.00 IS CODE = 10

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

 FLOW PROCESS FROM NODE 550.00 TO NODE 551.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(Feet) = 81.58
 UPSTREAM ELEVATION(Feet) = 740.00
 DOWNSTREAM ELEVATION(Feet) = 735.00
 ELEVATION DIFFERENCE(Feet) = 5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.130
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.393
 SUBAREA RUNOFF(CFS) = 0.30
 TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.30

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 FLOW PROCESS FROM NODE 551.00 TO NODE 552.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 735.00 DOWNSTREAM(FEET) = 655.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 677.07 CHANNEL SLOPE = 0.1182
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.100
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.63
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.30
 AVERAGE FLOW DEPTH(FEET) = 0.20 TRAVEL TIME(MIN.) = 2.13
 Tc(MIN.) = 8.26
 SUBAREA AREA(ACRES) = 2.64 SUBAREA RUNOFF(CFS) = 6.60
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
 TOTAL AREA(ACRES) = 2.7 PEAK FLOW RATE(CFS) = 6.85

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.29 FLOW VELOCITY(FEET/SEC.) = 6.68
 LONGEST FLOWPATH FROM NODE 550.00 TO NODE 552.00 = 758.65 FEET.

 FLOW PROCESS FROM NODE 552.00 TO NODE 552.00 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.) = 8.26
 RAINFALL INTENSITY(INCH/HR) = 6.10
 TOTAL STREAM AREA(ACRES) = 2.74
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 6.85

 FLOW PROCESS FROM NODE 553.00 TO NODE 554.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 77.43
 UPSTREAM ELEVATION(FEET) = 755.00
 DOWNSTREAM ELEVATION(FEET) = 750.00
 ELEVATION DIFFERENCE(FEET) = 5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.869
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.603
 SUBAREA RUNOFF(CFS) = 0.34
 TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.34

 FLOW PROCESS FROM NODE 554.00 TO NODE 552.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 750.00 DOWNSTREAM(FEET) = 655.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 689.99 CHANNEL SLOPE = 0.1377

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CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.291
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.93
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.74
AVERAGE FLOW DEPTH(FEET) = 0.20 TRAVEL TIME(MIN.) = 2.00
Tc(MIN.) = 7.87
SUBAREA AREA(ACRES) = 2.75 SUBAREA RUNOFF(CFS) = 7.09
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 2.9 PEAK FLOW RATE(CFS) = 7.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.29 FLOW VELOCITY(FEET/SEC.) = 7.19
LONGEST FLOWPATH FROM NODE 553.00 TO NODE 552.00 = 767.42 FEET.

*****
FLOW PROCESS FROM NODE 552.00 TO NODE 552.00 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.) = 7.87
RAINFALL INTENSITY(INCH/HR) = 6.29
TOTAL STREAM AREA(ACRES) = 2.86
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.38

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 6.85 8.26 6.100 2.74
2 7.38 7.87 6.291 2.86

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

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
1 13.91 7.87 6.291
2 14.01 8.26 6.100

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 14.01 Tc(MIN.) = 8.26
TOTAL AREA(ACRES) = 5.6
LONGEST FLOWPATH FROM NODE 553.00 TO NODE 552.00 = 767.42 FEET.

*****
FLOW PROCESS FROM NODE 552.00 TO NODE 549.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 655.00 DOWNSTREAM(FEET) = 625.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 593.80 CHANNEL SLOPE = 0.0505
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.488
*USER SPECIFIED(SUBAREA):

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USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 18.84
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.72
AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 1.47
Tc(MIN.) = 9.73
SUBAREA AREA(ACRES) = 5.02 SUBAREA RUNOFF(CFS) = 9.64
AREA-AVERAGE RUNOFF COEFFICIENT = 0.382
TOTAL AREA(ACRES) = 10.6 PEAK FLOW RATE(CFS) = 22.24

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.71 FLOW VELOCITY(FEET/SEC.) = 7.06
LONGEST FLOWPATH FROM NODE 553.00 TO NODE 549.00 = 1361.22 FEET.
*****
FLOW PROCESS FROM NODE 549.00 TO NODE 549.00 IS CODE = 11
-----
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
=====

** MAIN STREAM CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 22.24 9.73 5.488 10.62
LONGEST FLOWPATH FROM NODE 553.00 TO NODE 549.00 = 1361.22 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 209.37 16.22 3.947 134.01
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 549.00 = 3349.88 FEET.

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
1 147.85 9.73 5.488
2 225.36 16.22 3.947

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 225.36 Tc(MIN.) = 16.22
TOTAL AREA(ACRES) = 144.6
*****
FLOW PROCESS FROM NODE 549.00 TO NODE 549.00 IS CODE = 12
-----
>>>>>CLEAR MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE 549.00 TO NODE 555.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 625.00 DOWNSTREAM(FEET) = 619.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 602.24 CHANNEL SLOPE = 0.0100
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.744
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 230.54

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TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.27
AVERAGE FLOW DEPTH(FEET) = 3.30 TRAVEL TIME(MIN.) = 1.38
Tc(MIN.) = 17.60
SUBAREA AREA(ACRES) = 7.90 SUBAREA RUNOFF(CFS) = 10.35
AREA-AVERAGE RUNOFF COEFFICIENT = 0.382
TOTAL AREA(ACRES) = 152.5 PEAK FLOW RATE(CFS) = 225.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.27 FLOW VELOCITY(FEET/SEC.) = 7.23
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 555.00 = 3952.12 FEET.
*****
FLOW PROCESS FROM NODE 555.00 TO NODE 555.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 17.60
RAINFALL INTENSITY(INCH/HR) = 3.74
TOTAL STREAM AREA(ACRES) = 152.53
PEAK FLOW RATE(CFS) AT CONFLUENCE = 225.36
*****
FLOW PROCESS FROM NODE 556.00 TO NODE 557.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 81.58
UPSTREAM ELEVATION(FEET) = 750.00
DOWNSTREAM ELEVATION(FEET) = 740.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.207
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.213
SUBAREA RUNOFF(CFS) = 0.37
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.37
*****
FLOW PROCESS FROM NODE 557.00 TO NODE 558.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 740.00 DOWNSTREAM(FEET) = 685.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 459.62 CHANNEL SLOPE = 0.1197
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.283
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.19
AVERAGE FLOW DEPTH(FEET) = 0.33 TRAVEL TIME(MIN.) = 1.07
Tc(MIN.) = 6.27
SUBAREA AREA(ACRES) = 5.60 SUBAREA RUNOFF(CFS) = 16.72
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 5.7 PEAK FLOW RATE(CFS) = 17.05

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.49    FLOW VELOCITY(FEET/SEC.) = 8.85
LONGEST FLOWPATH FROM NODE 556.00 TO NODE 558.00 = 541.20 FEET.
*****
FLOW PROCESS FROM NODE 558.00 TO NODE 555.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 685.00 DOWNSTREAM(FEET) = 619.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 871.15 CHANNEL SLOPE = 0.0758
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.212
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 23.19
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.27
AVERAGE FLOW DEPTH(FEET) = 0.65 TRAVEL TIME(MIN.) = 1.75
Tc(MIN.) = 8.03
SUBAREA AREA(ACRES) = 4.81 SUBAREA RUNOFF(CFS) = 12.25
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 10.5 PEAK FLOW RATE(CFS) = 26.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.70    FLOW VELOCITY(FEET/SEC.) = 8.62
LONGEST FLOWPATH FROM NODE 556.00 TO NODE 555.00 = 1412.35 FEET.
*****
FLOW PROCESS FROM NODE 555.00 TO NODE 555.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.03
RAINFALL INTENSITY(INCH/HR) = 6.21
TOTAL STREAM AREA(ACRES) = 10.52
PEAK FLOW RATE(CFS) AT CONFLUENCE = 26.79
*****
FLOW PROCESS FROM NODE 559.00 TO NODE 560.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 87.52
UPSTREAM ELEVATION(FEET) = 860.00
DOWNSTREAM ELEVATION(FEET) = 855.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.500
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.119
SUBAREA RUNOFF(CFS) = 0.23
TOTAL AREA(ACRES) = 0.08 TOTAL RUNOFF(CFS) = 0.23
*****
FLOW PROCESS FROM NODE 560.00 TO NODE 561.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 855.00 DOWNSTREAM(FEET) = 840.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 220.61 CHANNEL SLOPE = 0.0680
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.427
```

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.51

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.29

AVERAGE FLOW DEPTH(FEET) = 0.14 TRAVEL TIME(MIN.) = 1.12

Tc(MIN.) = 7.62

SUBAREA AREA(ACRES) = 0.97 SUBAREA RUNOFF(CFS) = 2.56

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 1.1 PEAK FLOW RATE(CFS) = 2.77

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.20 FLOW VELOCITY(FEET/SEC.) = 4.04

LONGEST FLOWPATH FROM NODE 559.00 TO NODE 561.00 = 308.13 FEET.

FLOW PROCESS FROM NODE 561.00 TO NODE 562.00 IS CODE = 51

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

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 840.00 DOWNSTREAM(FEET) = 775.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 371.19 CHANNEL SLOPE = 0.1751
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.032
```

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.77

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.87

AVERAGE FLOW DEPTH(FEET) = 0.28 TRAVEL TIME(MIN.) = 0.79

Tc(MIN.) = 8.40

SUBAREA AREA(ACRES) = 4.04 SUBAREA RUNOFF(CFS) = 9.99

AREA-AVERAGE RUNOFF COEFFICIENT = 0.410

TOTAL AREA(ACRES) = 5.1 PEAK FLOW RATE(CFS) = 12.59

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.37 FLOW VELOCITY(FEET/SEC.) = 9.12

LONGEST FLOWPATH FROM NODE 559.00 TO NODE 562.00 = 679.32 FEET.

FLOW PROCESS FROM NODE 562.00 TO NODE 563.00 IS CODE = 51

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

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 775.00 DOWNSTREAM(FEET) = 725.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 474.11 CHANNEL SLOPE = 0.1055
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.654
```

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 20.20

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TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.91
AVERAGE FLOW DEPTH(FEET) = 0.55 TRAVEL TIME(MIN.) = 0.89
Tc(MIN.) = 9.29
SUBAREA AREA(ACRES) = 6.56 SUBAREA RUNOFF(CFS) = 15.21
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 11.6 PEAK FLOW RATE(CFS) = 27.01

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.65 FLOW VELOCITY(FEET/SEC.) = 9.75
LONGEST FLOWPATH FROM NODE 559.00 TO NODE 563.00 = 1153.43 FEET.
*****
FLOW PROCESS FROM NODE 563.00 TO NODE 564.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 725.00 DOWNSTREAM(FEET) = 715.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 292.84 CHANNEL SLOPE = 0.0341
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.398
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 35.81
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.04
AVERAGE FLOW DEPTH(FEET) = 1.01 TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 9.98
SUBAREA AREA(ACRES) = 7.95 SUBAREA RUNOFF(CFS) = 17.59
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 19.6 PEAK FLOW RATE(CFS) = 43.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.12 FLOW VELOCITY(FEET/SEC.) = 7.42
LONGEST FLOWPATH FROM NODE 559.00 TO NODE 564.00 = 1446.27 FEET.
*****
FLOW PROCESS FROM NODE 564.00 TO NODE 555.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 715.00 DOWNSTREAM(FEET) = 619.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 584.57 CHANNEL SLOPE = 0.1642
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.163
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 50.82
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.67
AVERAGE FLOW DEPTH(FEET) = 0.81 TRAVEL TIME(MIN.) = 0.71
Tc(MIN.) = 10.69
SUBAREA AREA(ACRES) = 7.03 SUBAREA RUNOFF(CFS) = 14.88
AREA-AVERAGE RUNOFF COEFFICIENT = 0.410
TOTAL AREA(ACRES) = 26.6 PEAK FLOW RATE(CFS) = 56.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.85 FLOW VELOCITY(FEET/SEC.) = 14.07
LONGEST FLOWPATH FROM NODE 559.00 TO NODE 555.00 = 2030.84 FEET.

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 FLOW PROCESS FROM NODE 555.00 TO NODE 555.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 10.69
 RAINFALL INTENSITY(INCH/HR) = 5.16
 TOTAL STREAM AREA(ACRES) = 26.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 56.37

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	225.36	17.60	3.744	152.53
2	26.79	8.03	6.212	10.52
3	56.37	10.69	5.163	26.63

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	171.92	8.03	6.212
2	215.59	10.69	5.163
3	282.40	17.60	3.744

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 282.40 Tc(MIN.) = 17.60
 TOTAL AREA(ACRES) = 189.7
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 555.00 = 3952.12 FEET.

 FLOW PROCESS FROM NODE 555.00 TO NODE 565.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 619.00 DOWNSTREAM(FEET) = 613.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 382.53 CHANNEL SLOPE = 0.0157
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.651

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 285.83
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.10
 AVERAGE FLOW DEPTH(FEET) = 3.28 TRAVEL TIME(MIN.) = 0.70
 Tc(MIN.) = 18.30
 SUBAREA AREA(ACRES) = 5.37 SUBAREA RUNOFF(CFS) = 6.86
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.387
 TOTAL AREA(ACRES) = 195.0 PEAK FLOW RATE(CFS) = 282.40

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 3.27 FLOW VELOCITY(FEET/SEC.) = 9.06
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 565.00 = 4334.65 FEET.

 FLOW PROCESS FROM NODE 565.00 TO NODE 565.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 18.30
 RAINFALL INTENSITY(INCH/HR) = 3.65
 TOTAL STREAM AREA(ACRES) = 195.05
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 282.40

 FLOW PROCESS FROM NODE 566.00 TO NODE 567.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 115.28
 UPSTREAM ELEVATION(FEET) = 732.00
 DOWNSTREAM ELEVATION(FEET) = 725.00
 ELEVATION DIFFERENCE(FEET) = 7.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.808
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.909
 SUBAREA RUNOFF(CFS) = 0.31
 TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.31

 FLOW PROCESS FROM NODE 567.00 TO NODE 568.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 725.00 DOWNSTREAM(FEET) = 669.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 416.43 CHANNEL SLOPE = 0.1345
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.941
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.36
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.86
 AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 1.80
 Tc(MIN.) = 8.60
 SUBAREA AREA(ACRES) = 1.00 SUBAREA RUNOFF(CFS) = 2.08
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.356
 TOTAL AREA(ACRES) = 1.1 PEAK FLOW RATE(CFS) = 2.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.15 FLOW VELOCITY(FEET/SEC.) = 4.75
 LONGEST FLOWPATH FROM NODE 566.00 TO NODE 568.00 = 531.71 FEET.

 FLOW PROCESS FROM NODE 568.00 TO NODE 569.00 IS CODE = 51

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

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ELEVATION DATA: UPSTREAM(FEET) = 669.00 DOWNSTREAM(FEET) = 661.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 108.90 CHANNEL SLOPE = 0.0735
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.776

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.98
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.74
 AVERAGE FLOW DEPTH(FEET) = 0.24 TRAVEL TIME(MIN.) = 0.38
 Tc(MIN.) = 8.99
 SUBAREA AREA(ACRES) = 1.62 SUBAREA RUNOFF(CFS) = 3.28
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.352
 TOTAL AREA(ACRES) = 2.7 PEAK FLOW RATE(CFS) = 5.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.29 FLOW VELOCITY(FEET/SEC.) = 5.25
 LONGEST FLOWPATH FROM NODE 566.00 TO NODE 569.00 = 640.61 FEET.

FLOW PROCESS FROM NODE 569.00 TO NODE 565.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 661.00 DOWNSTREAM(FEET) = 613.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 629.84 CHANNEL SLOPE = 0.0762
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.162

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.52
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.14
 AVERAGE FLOW DEPTH(FEET) = 0.37 TRAVEL TIME(MIN.) = 1.71
 Tc(MIN.) = 10.70
 SUBAREA AREA(ACRES) = 3.27 SUBAREA RUNOFF(CFS) = 5.91
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.351
 TOTAL AREA(ACRES) = 6.0 PEAK FLOW RATE(CFS) = 10.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.43 FLOW VELOCITY(FEET/SEC.) = 6.55
 LONGEST FLOWPATH FROM NODE 566.00 TO NODE 565.00 = 1270.45 FEET.

FLOW PROCESS FROM NODE 565.00 TO NODE 565.00 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.) = 10.70
 RAINFALL INTENSITY(INCH/HR) = 5.16
 TOTAL STREAM AREA(ACRES) = 6.00
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.87

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	282.40	18.30	3.651	195.05

2 10.87 10.70 EDEN500.TXT 5.162 6.00

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	210.63	10.70	5.162
2	290.09	18.30	3.651

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 290.09 Tc(MIN.) = 18.30
TOTAL AREA(ACRES) = 201.0
LONGEST FLOWPATH FROM NODE 510.00 TO NODE 565.00 = 4334.65 FEET.

FLOW PROCESS FROM NODE 565.00 TO NODE 565.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 546.00 TO NODE 570.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 97.72

UPSTREAM ELEVATION(FEET) = 740.00

DOWNSTREAM ELEVATION(FEET) = 732.00

ELEVATION DIFFERENCE(FEET) = 8.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.622

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.034

SUBAREA RUNOFF(CFS) = 0.25

TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.25

FLOW PROCESS FROM NODE 570.00 TO NODE 571.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 732.00 DOWNSTREAM(FEET) = 691.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 311.45 CHANNEL SLOPE = 0.1316

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.283

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.58

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.10

AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 1.27

Tc(MIN.) = 7.89

SUBAREA AREA(ACRES) = 1.21 SUBAREA RUNOFF(CFS) = 2.66

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 1.3 PEAK FLOW RATE(CFS) = 2.88

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 5.05

```

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LONGEST FLOWPATH FROM NODE      546.00 TO NODE      571.00 =      409.17 FEET.
*****
FLOW PROCESS FROM NODE      571.00 TO NODE      572.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      691.00  DOWNSTREAM(FEET) =      644.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      422.81  CHANNEL SLOPE =      0.1112
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =      10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      5.681
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =      0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.66
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =      5.28
AVERAGE FLOW DEPTH(FEET) =      0.20  TRAVEL TIME(MIN.) =      1.33
Tc(MIN.) =      9.22
SUBAREA AREA(ACRES) =      0.78  SUBAREA RUNOFF(CFS) =      1.55
AREA-AVERAGE RUNOFF COEFFICIENT =      0.350
TOTAL AREA(ACRES) =      2.1  PEAK FLOW RATE(CFS) =      4.16

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =      0.22  FLOW VELOCITY(FEET/SEC.) =      5.54
LONGEST FLOWPATH FROM NODE      546.00 TO NODE      572.00 =      831.98 FEET.
*****
FLOW PROCESS FROM NODE      572.00 TO NODE      572.00 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.) =      9.22
RAINFALL INTENSITY(INCH/HR) =      5.68
TOTAL STREAM AREA(ACRES) =      2.09
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.16
*****
FLOW PROCESS FROM NODE      573.00 TO NODE      574.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .4100
S.C.S. CURVE NUMBER (AMC II) =      0
INITIAL SUBAREA FLOW-LENGTH(FEET) =      103.35
UPSTREAM ELEVATION(FEET) =      696.00
DOWNSTREAM ELEVATION(FEET) =      695.00
ELEVATION DIFFERENCE(FEET) =      1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =      10.408
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =      68.70
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      5.254
SUBAREA RUNOFF(CFS) =      0.24
TOTAL AREA(ACRES) =      0.11  TOTAL RUNOFF(CFS) =      0.24
*****
FLOW PROCESS FROM NODE      574.00 TO NODE      575.00 IS CODE =  51

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

ELEVATION DATA: UPSTREAM(FEET) = 695.00 DOWNSTREAM(FEET) = 661.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 312.08 CHANNEL SLOPE = 0.1089
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.780
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.95
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.17
 AVERAGE FLOW DEPTH(FEET) = 0.09 TRAVEL TIME(MIN.) = 1.64
 Tc(MIN.) = 12.05
 SUBAREA AREA(ACRES) = 0.85 SUBAREA RUNOFF(CFS) = 1.42
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.357
 TOTAL AREA(ACRES) = 1.0 PEAK FLOW RATE(CFS) = 1.64

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.13 FLOW VELOCITY(FEET/SEC.) = 3.97
 LONGEST FLOWPATH FROM NODE 573.00 TO NODE 575.00 = 415.43 FEET.

 FLOW PROCESS FROM NODE 575.00 TO NODE 572.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 661.00 DOWNSTREAM(FEET) = 644.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 180.06 CHANNEL SLOPE = 0.0944
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.603
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.12
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.12
 AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 0.73
 Tc(MIN.) = 12.78
 SUBAREA AREA(ACRES) = 0.60 SUBAREA RUNOFF(CFS) = 0.97
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.354
 TOTAL AREA(ACRES) = 1.6 PEAK FLOW RATE(CFS) = 2.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 4.40
 LONGEST FLOWPATH FROM NODE 573.00 TO NODE 572.00 = 595.49 FEET.

 FLOW PROCESS FROM NODE 572.00 TO NODE 572.00 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.) = 12.78
 RAINFALL INTENSITY(INCH/HR) = 4.60
 TOTAL STREAM AREA(ACRES) = 1.56
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.54

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** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	4.16	9.22	5.681	2.09
2	2.54	12.78	4.603	1.56

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	5.99	9.22	5.681
2	5.91	12.78	4.603

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 5.99 Tc(MIN.) = 9.22
TOTAL AREA(ACRES) = 3.7
LONGEST FLOWPATH FROM NODE 546.00 TO NODE 572.00 = 831.98 FEET.

FLOW PROCESS FROM NODE 572.00 TO NODE 576.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 644.00 DOWNSTREAM(FEET) = 624.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 252.06 CHANNEL SLOPE = 0.0793
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.415
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.20
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.90
AVERAGE FLOW DEPTH(FEET) = 0.33 TRAVEL TIME(MIN.) = 0.71
Tc(MIN.) = 9.93
SUBAREA AREA(ACRES) = 1.28 SUBAREA RUNOFF(CFS) = 2.43
AREA-AVERAGE RUNOFF COEFFICIENT = 0.351
TOTAL AREA(ACRES) = 4.9 PEAK FLOW RATE(CFS) = 9.38

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.39 FLOW VELOCITY(FEET/SEC.) = 6.44
LONGEST FLOWPATH FROM NODE 546.00 TO NODE 576.00 = 1084.04 FEET.

FLOW PROCESS FROM NODE 576.00 TO NODE 565.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 624.00 DOWNSTREAM(FEET) = 613.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 228.77 CHANNEL SLOPE = 0.0481
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.181
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 9.79
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.42
AVERAGE FLOW DEPTH(FEET) = 0.46 TRAVEL TIME(MIN.) = 0.70

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Tc(MIN.) = 10.64
 SUBAREA AREA(ACRES) = 0.45 SUBAREA RUNOFF(CFS) = 0.82
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.351
 TOTAL AREA(ACRES) = 5.4 PEAK FLOW RATE(CFS) = 9.79

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.46 FLOW VELOCITY(FEET/SEC.) = 5.42
 LONGEST FLOWPATH FROM NODE 546.00 TO NODE 565.00 = 1312.81 FEET.

FLOW PROCESS FROM NODE 565.00 TO NODE 565.00 IS CODE = 11

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

==
 ** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	9.79	10.64	5.181	5.38

LONGEST FLOWPATH FROM NODE 546.00 TO NODE 565.00 = 1312.81 FEET.

** MEMORY BANK # 3 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	290.09	18.30	3.651	201.05

LONGEST FLOWPATH FROM NODE 510.00 TO NODE 565.00 = 4334.65 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	178.42	10.64	5.181
2	296.99	18.30	3.651

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 296.99 Tc(MIN.) = 18.30
 TOTAL AREA(ACRES) = 206.4

FLOW PROCESS FROM NODE 565.00 TO NODE 567.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 613.00 DOWNSTREAM(FEET) = 608.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 286.20 CHANNEL SLOPE = 0.0175
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.589

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .4100
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 303.14
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.61
 AVERAGE FLOW DEPTH(FEET) = 3.29 TRAVEL TIME(MIN.) = 0.50
 Tc(MIN.) = 18.80
 SUBAREA AREA(ACRES) = 8.36 SUBAREA RUNOFF(CFS) = 12.30
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.386
 TOTAL AREA(ACRES) = 214.8 PEAK FLOW RATE(CFS) = 297.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 3.26 FLOW VELOCITY(FEET/SEC.) = 9.57
 LONGEST FLOWPATH FROM NODE 510.00 TO NODE 567.00 = 4620.85 FEET.

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END OF STUDY SUMMARY:

TOTAL AREA(ACRES)	=	214.8	TC(MIN.)	=	18.80
PEAK FLOW RATE(CFS)	=	297.35			

=====

=====

END OF RATIONAL METHOD ANALYSIS

□

BASIN C



Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Date: Aug 2013
EDEN300.DAT
Run Name: 300 Series

Page: 1

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
300	301	2	1205.0	1200.0	105.30	0.35	0.10	
301	302	5	1200.0	1050.0	986.40	0.35	9.88	
302	303	5	1050.0	854.0	793.60	0.35	14.180	
303	303	1	-	-	-	-	-	1 of 2
304	305	2	1090.0	1086.0	86.20	0.35	0.11	
305	306	5	1086.0	937.0	498.30	0.35	3.67	
306	307	5	937.0	907.0	295.30	0.35	5.61	
307	303	5	907.0	854.0	552.70	0.35	7.98	
303	303	1	-	-	-	-	-	2 of 2
303	308	5	854.0	802.0	424.70	0.35	3.51	
308	309	5	802.0	773.0	295.40	0.35	2.29	
309	310	5	773.0	748.0	327.30	0.35	2.68	
310	311	5	748.0	738.0	190.90	0.35	0.67	
311	311	1	-	-	-	-	-	1 of 2
312	313	2	978.0	965.0	71.60	0.35	0.11	
313	314	5	965.0	901.0	217.70	0.35	0.53	
314	315	5	901.0	795.0	358.60	0.35	2.86	
315	316	5	795.0	768.0	253.80	0.35	2.31	
316	311	5	768.0	738.0	372.30	0.35	2.06	
311	311	1	-	-	-	-	-	2 of 2
311	317	5	738.0	726.0	226.60	0.35	1.62	
317	317	1	-	-	-	-	-	1 of 3
318	319	2	890.0	838.0	197.40	0.35	0.11	
319	317	5	838.0	726.0	630.70	0.35	1.57	
317	317	1	-	-	-	-	-	2 of 3
300	320	2	1205.0	1200.0	86.50	0.35	0.11	
320	321	5	1200.0	1100.0	799.00	0.35	5.47	
321	322	5	1100.0	895.0	771.10	0.35	6.24	
322	323	5	895.0	772.0	849.80	0.35	4.76	
323	324	5	772.0	732.0	424.10	0.35	1.80	
324	317	5	732.0	726.0	140.10	0.35	0.36	
317	317	1	-	-	-	-	-	3 of 3



Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Date: Aug 2013

Run Name: 300 Series

Page: 2

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C or Fric Co.	Area (ac.)	Comments
317	325	5	726.0	708.0	323.30	0.35	2.24	
325	326	5	708.0	701.0	148.20	0.35	0.83	
326	327	5	701.0	690.0	273.10	0.35	1.46	
327	328	5	690.0	689.0	82.80	0.35	0.53	
328	329	5	689.0	684.0	231.10	0.35	0.48	
329	329	10	-	-	-	-	-	Save to Bank 1
300	330	2	1205.0	1200.0	112.80	0.35	0.10	
330	331	5	1200.0	1075.0	815.50	0.35	6.99	
331	332	5	1075.0	935.0	619.60	0.35	12.76	
332	333	5	935.0	865.0	485.10	0.35	3.25	
333	334	5	865.0	823.0	269.90	0.35	1.58	
334	334	1	-	-	-	-	-	1 of 2
335	336	2	965.0	936.0	89.11	0.35	0.10	
336	337	5	936.0	861.0	354.00	0.35	2.41	
337	334	5	861.0	823.0	269.00	0.35	1.72	
334	334	1	-	-	-	-	-	2 of 2
334	338	5	823.0	766.0	504.10	0.35	5.25	
338	338	1	-	-	-	-	-	1 of 2
339	340	2	896.0	883.0	76.00	0.35	0.10	
340	338	5	883.0	766.0	609.30	0.35	1.91	
338	338	1	-	-	-	-	-	2 of 2
338	341	5	766.0	729.0	566.20	0.35	4.53	
341	342	5	729.0	706.0	385.40	0.35	4.93	
342	343	5	706.0	696.0	331.50	0.35	2.01	
343	329	5	696.0	684.0	418.60	0.35	0.71	
329	329	11	-	-	-	-	-	Confl. w/ Bank 1
329	329	12	-	-	-	-	-	Clear Bank 1
329	344	5	684.0	683.0	279.20	0.35	1.67	
344	344	10	-	-	-	-	-	Save to Bank 2
345	346	2	878.0	871.0	95.30	0.35	0.10	
346	347	5	871.0	846.0	182.10	0.35	0.36	
347	348	5	846.0	768.0	377.10	0.35	1.56	
348	349	5	768.0	752.0	132.70	0.35	0.93	
349	350	5	752.0	739.0	192.30	0.35	0.72	
350	351	5	739.0	705.0	470.90	0.35	0.66	
351	351	1	-	-	-	-	-	1 of 2

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
 Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
 2003,1985,1981 HYDROLOGY MANUAL
 (c) Copyright 1982-2012 Advanced Engineering Software (aes)
 Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fusco Engineering
 6390 Greenwich Dr.
 Suite 170
 San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
 * VALIANO *
 * EXISTING HYDROLOGY STUDY - 300 SERIES *
 * OCTOBER 20, 2014 *

FILE NAME: EDEN300.DAT
 TIME/DATE OF STUDY: 10:07 10/20/2014

 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
 6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
 SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350

NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

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

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

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
 as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
 OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

FLOW PROCESS FROM NODE 300.00 TO NODE 301.00 IS CODE = 21

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

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 105.30
 UPSTREAM ELEVATION(FEET) = 1205.00
 DOWNSTREAM ELEVATION(FEET) = 1200.00
 ELEVATION DIFFERENCE(FEET) = 5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.032
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

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    THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
    (Reference: Table 3-1B of Hydrology Manual)
    THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.210
    SUBAREA RUNOFF(CFS) = 0.22
    TOTAL AREA(ACRES) = 0.10    TOTAL RUNOFF(CFS) = 0.22

*****
FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 1200.00  DOWNSTREAM(FEET) = 1050.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 986.40  CHANNEL SLOPE = 0.1521
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.365
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 9.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.04
AVERAGE FLOW DEPTH(FEET) = 0.33  TRAVEL TIME(MIN.) = 2.05
Tc(MIN.) = 10.08
SUBAREA AREA(ACRES) = 9.88    SUBAREA RUNOFF(CFS) = 18.55
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 10.0    PEAK FLOW RATE(CFS) = 18.74

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.48  FLOW VELOCITY(FEET/SEC.) = 9.91
LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 = 1091.70 FEET.

*****
FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 1050.00  DOWNSTREAM(FEET) = 854.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 793.60  CHANNEL SLOPE = 0.2470
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.058
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 31.22
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.72
AVERAGE FLOW DEPTH(FEET) = 0.55  TRAVEL TIME(MIN.) = 0.96
Tc(MIN.) = 11.04
SUBAREA AREA(ACRES) = 14.10    SUBAREA RUNOFF(CFS) = 24.96
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 24.1    PEAK FLOW RATE(CFS) = 42.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.66  FLOW VELOCITY(FEET/SEC.) = 14.98
LONGEST FLOWPATH FROM NODE    300.00 TO NODE    303.00 = 1885.30 FEET.

*****
FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

```

EDEN300.TXT

```
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 11.04
RAINFALL INTENSITY(INCH/HR) = 5.06
TOTAL STREAM AREA(ACRES) = 24.08
PEAK FLOW RATE(CFS) AT CONFLUENCE = 42.63
=====
```

```
*****
FLOW PROCESS FROM NODE 304.00 TO NODE 305.00 IS CODE = 21
=====
```

```
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
```

```
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 86.20
UPSTREAM ELEVATION(FEET) = 1090.00
DOWNSTREAM ELEVATION(FEET) = 1086.00
ELEVATION DIFFERENCE(FEET) = 4.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.515
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.483
SUBAREA RUNOFF(CFS) = 0.25
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.25
=====
```

```
*****
FLOW PROCESS FROM NODE 305.00 TO NODE 306.00 IS CODE = 51
=====
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 1086.00 DOWNSTREAM(FEET) = 937.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 498.30 CHANNEL SLOPE = 0.2990
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.933
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.07
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.50
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 1.11
Tc(MIN.) = 8.62
SUBAREA AREA(ACRES) = 3.67 SUBAREA RUNOFF(CFS) = 7.62
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) = 7.85
=====
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.24 FLOW VELOCITY(FEET/SEC.) = 9.43
LONGEST FLOWPATH FROM NODE 304.00 TO NODE 306.00 = 584.50 FEET.
=====
```

```
*****
FLOW PROCESS FROM NODE 306.00 TO NODE 307.00 IS CODE = 51
=====
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 937.00 DOWNSTREAM(FEET) = 907.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 295.30 CHANNEL SLOPE = 0.1016
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.667
*USER SPECIFIED(GLOBAL):
=====
```

```

                                EDEN300.TXT
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.42
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    7.74
AVERAGE FLOW DEPTH(FEET) =    0.45    TRAVEL TIME(MIN.) =    0.64
Tc(MIN.) =    9.26
SUBAREA AREA(ACRES) =    5.61          SUBAREA RUNOFF(CFS) =    11.13
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    9.4            PEAK FLOW RATE(CFS) =    18.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.53    FLOW VELOCITY(FEET/SEC.) =    8.63
LONGEST FLOWPATH FROM NODE    304.00 TO NODE    307.00 =    879.80 FEET.

*****
FLOW PROCESS FROM NODE    307.00 TO NODE    303.00 IS CODE =    51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    907.00    DOWNSTREAM(FEET) =    854.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    552.70    CHANNEL SLOPE =    0.0959
CHANNEL BASE(FEET) =    3.00    "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.307
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    26.04
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    9.29
AVERAGE FLOW DEPTH(FEET) =    0.65    TRAVEL TIME(MIN.) =    0.99
Tc(MIN.) =    10.25
SUBAREA AREA(ACRES) =    7.98          SUBAREA RUNOFF(CFS) =    14.82
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    17.4            PEAK FLOW RATE(CFS) =    32.26

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.73    FLOW VELOCITY(FEET/SEC.) =    9.92
LONGEST FLOWPATH FROM NODE    304.00 TO NODE    303.00 =    1432.50 FEET.

*****
FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 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.) =    10.25
RAINFALL INTENSITY(INCH/HR) =    5.31
TOTAL STREAM AREA(ACRES) =    17.37
PEAK FLOW RATE(CFS) AT CONFLUENCE =    32.26

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
    1         42.63      11.04      5.058        24.08
    2         32.26      10.25      5.307        17.37

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

** PEAK FLOW RATE TABLE **

```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	EDEN300.TXT INTENSITY (INCH/HOUR)
1	71.82	10.25	5.307
2	73.37	11.04	5.058

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 73.37 Tc(MIN.) = 11.04
 TOTAL AREA(ACRES) = 41.5
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 303.00 = 1885.30 FEET.

FLOW PROCESS FROM NODE 303.00 TO NODE 308.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 854.00 DOWNSTREAM(FEET) = 802.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 424.70 CHANNEL SLOPE = 0.1224
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.912
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 76.39
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 13.84
 AVERAGE FLOW DEPTH(FEET) = 1.07 TRAVEL TIME(MIN.) = 0.51
 Tc(MIN.) = 11.55
 SUBAREA AREA(ACRES) = 3.51 SUBAREA RUNOFF(CFS) = 6.03
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 45.0 PEAK FLOW RATE(CFS) = 77.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.08 FLOW VELOCITY(FEET/SEC.) = 13.86
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 308.00 = 2310.00 FEET.

FLOW PROCESS FROM NODE 308.00 TO NODE 309.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 802.00 DOWNSTREAM(FEET) = 773.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 295.40 CHANNEL SLOPE = 0.0982
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.810
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 79.22
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.89
 AVERAGE FLOW DEPTH(FEET) = 1.16 TRAVEL TIME(MIN.) = 0.38
 Tc(MIN.) = 11.94
 SUBAREA AREA(ACRES) = 2.29 SUBAREA RUNOFF(CFS) = 3.86
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 47.3 PEAK FLOW RATE(CFS) = 79.55

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.16 FLOW VELOCITY(FEET/SEC.) = 12.85
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 309.00 = 2605.40 FEET.

```

                                EDEN300.TXT
FLOW PROCESS FROM NODE      309.00 TO NODE      310.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   773.00  DOWNSTREAM(FEET) =   748.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   327.30  CHANNEL SLOPE =   0.0764
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   4.694
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    81.75
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  11.83
AVERAGE FLOW DEPTH(FEET) =    1.25  TRAVEL TIME(MIN.) =    0.46
Tc(MIN.) =    12.40
SUBAREA AREA(ACRES) =    2.68      SUBAREA RUNOFF(CFS) =    4.40
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =    49.9      PEAK FLOW RATE(CFS) =    82.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.26  FLOW VELOCITY(FEET/SEC.) =  11.85
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      310.00 =  2932.70 FEET.
*****
FLOW PROCESS FROM NODE      310.00 TO NODE      311.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   748.00  DOWNSTREAM(FEET) =   738.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   190.90  CHANNEL SLOPE =   0.0524
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   4.620
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    82.57
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  10.32
AVERAGE FLOW DEPTH(FEET) =    1.39  TRAVEL TIME(MIN.) =    0.31
Tc(MIN.) =    12.71
SUBAREA AREA(ACRES) =    0.67      SUBAREA RUNOFF(CFS) =    1.08
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =    50.6      PEAK FLOW RATE(CFS) =    82.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.38  FLOW VELOCITY(FEET/SEC.) =  10.28
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      311.00 =  3123.60 FEET.
*****
FLOW PROCESS FROM NODE      311.00 TO NODE      311.00 IS CODE =   1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =   12.71
RAINFALL INTENSITY(INCH/HR) =    4.62
TOTAL STREAM AREA(ACRES) =   50.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =    82.03

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EDEN300.TXT

 FLOW PROCESS FROM NODE 312.00 TO NODE 313.00 IS CODE = 21

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

=====

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 71.60
 UPSTREAM ELEVATION(FEET) = 978.00
 DOWNSTREAM ELEVATION(FEET) = 965.00
 ELEVATION DIFFERENCE(FEET) = 13.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.303
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.118
 SUBAREA RUNOFF(CFS) = 0.31
 TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.31

 FLOW PROCESS FROM NODE 313.00 TO NODE 314.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 965.00 DOWNSTREAM(FEET) = 901.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 217.70 CHANNEL SLOPE = 0.2940
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.403
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.00
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.45
 AVERAGE FLOW DEPTH(FEET) = 0.07 TRAVEL TIME(MIN.) = 0.81
 Tc(MIN.) = 6.12
 SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 1.37
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 0.6 PEAK FLOW RATE(CFS) = 1.66

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.10 FLOW VELOCITY(FEET/SEC.) = 5.39
 LONGEST FLOWPATH FROM NODE 312.00 TO NODE 314.00 = 289.30 FEET.

 FLOW PROCESS FROM NODE 314.00 TO NODE 315.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 901.00 DOWNSTREAM(FEET) = 795.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 358.60 CHANNEL SLOPE = 0.2956
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.875
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.10
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.05
 AVERAGE FLOW DEPTH(FEET) = 0.19 TRAVEL TIME(MIN.) = 0.74
 Tc(MIN.) = 6.86
 SUBAREA AREA(ACRES) = 2.86 SUBAREA RUNOFF(CFS) = 6.88

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                                EDEN300.TXT
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 3.5          PEAK FLOW RATE(CFS) = 8.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.25    FLOW VELOCITY(FEET/SEC.) = 9.67
LONGEST FLOWPATH FROM NODE 312.00 TO NODE 315.00 = 647.90 FEET.

*****
FLOW PROCESS FROM NODE 315.00 TO NODE 316.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 795.00 DOWNSTREAM(FEET) = 768.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 253.80 CHANNEL SLOPE = 0.1064
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.532
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.06
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.46
AVERAGE FLOW DEPTH(FEET) = 0.39 TRAVEL TIME(MIN.) = 0.57
Tc(MIN.) = 7.43
SUBAREA AREA(ACRES) = 2.31 SUBAREA RUNOFF(CFS) = 5.28
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 5.8 PEAK FLOW RATE(CFS) = 13.28

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.44    FLOW VELOCITY(FEET/SEC.) = 7.83
LONGEST FLOWPATH FROM NODE 312.00 TO NODE 316.00 = 901.70 FEET.

*****
FLOW PROCESS FROM NODE 316.00 TO NODE 311.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 768.00 DOWNSTREAM(FEET) = 738.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 372.30 CHANNEL SLOPE = 0.0806
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.101
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.48
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.48
AVERAGE FLOW DEPTH(FEET) = 0.51 TRAVEL TIME(MIN.) = 0.83
Tc(MIN.) = 8.26
SUBAREA AREA(ACRES) = 2.06 SUBAREA RUNOFF(CFS) = 4.40
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 7.9 PEAK FLOW RATE(CFS) = 16.80

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.54    FLOW VELOCITY(FEET/SEC.) = 7.68
LONGEST FLOWPATH FROM NODE 312.00 TO NODE 311.00 = 1274.00 FEET.

*****
FLOW PROCESS FROM NODE 311.00 TO NODE 311.00 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.) = 8.26
RAINFALL INTENSITY(INCH/HR) = 6.10
TOTAL STREAM AREA(ACRES) = 7.87
PEAK FLOW RATE(CFS) AT CONFLUENCE = 16.80

```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	82.03	12.71	4.620	50.60
2	16.80	8.26	6.101	7.87

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	78.93	8.26	6.101
2	94.75	12.71	4.620

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

PEAK FLOW RATE(CFS) = 94.75   Tc(MIN.) = 12.71
TOTAL AREA(ACRES) = 58.5
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 311.00 = 3123.60 FEET.

```

```

FLOW PROCESS FROM NODE 311.00 TO NODE 317.00 IS CODE = 51

```

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 738.00   DOWNSTREAM(FEET) = 726.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 226.60   CHANNEL SLOPE = 0.0530
CHANNEL BASE(FEET) = 3.00   "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.540
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 96.04
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.77
AVERAGE FLOW DEPTH(FEET) = 1.49   TRAVEL TIME(MIN.) = 0.35
Tc(MIN.) = 13.06
SUBAREA AREA(ACRES) = 1.62   SUBAREA RUNOFF(CFS) = 2.57
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 60.1   PEAK FLOW RATE(CFS) = 95.48

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

DEPTH(FEET) = 1.48   FLOW VELOCITY(FEET/SEC.) = 10.77
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 317.00 = 3350.20 FEET.

```

```

FLOW PROCESS FROM NODE 317.00 TO NODE 317.00 IS CODE = 1

```

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

```

=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.06

```

```

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RAINFALL INTENSITY(INCH/HR) = 4.54
TOTAL STREAM AREA(ACRES) = 60.09
PEAK FLOW RATE(CFS) AT CONFLUENCE = 95.48

*****
FLOW PROCESS FROM NODE 318.00 TO NODE 319.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 197.40
UPSTREAM ELEVATION(FEET) = 890.00
DOWNSTREAM ELEVATION(FEET) = 838.00
ELEVATION DIFFERENCE(FEET) = 52.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.28
TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.28

*****
FLOW PROCESS FROM NODE 319.00 TO NODE 317.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 838.00 DOWNSTREAM(FEET) = 726.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 630.70 CHANNEL SLOPE = 0.1776
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.009
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.95
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.81
AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 2.19
Tc(MIN.) = 8.45
SUBAREA AREA(ACRES) = 1.57 SUBAREA RUNOFF(CFS) = 3.30
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.7 PEAK FLOW RATE(CFS) = 3.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 6.12
LONGEST FLOWPATH FROM NODE 318.00 TO NODE 317.00 = 828.10 FEET.

*****
FLOW PROCESS FROM NODE 317.00 TO NODE 317.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.45
RAINFALL INTENSITY(INCH/HR) = 6.01
TOTAL STREAM AREA(ACRES) = 1.68
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.53

```

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 FLOW PROCESS FROM NODE 300.00 TO NODE 320.00 IS CODE = 21

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

=====

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 86.50
 UPSTREAM ELEVATION(FEET) = 1205.00
 DOWNSTREAM ELEVATION(FEET) = 1200.00
 ELEVATION DIFFERENCE(FEET) = 5.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.997
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.788
 SUBAREA RUNOFF(CFS) = 0.26
 TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.26

 FLOW PROCESS FROM NODE 320.00 TO NODE 321.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1200.00 DOWNSTREAM(FEET) = 1100.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 799.00 CHANNEL SLOPE = 0.1252
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.742
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.78
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.42
 AVERAGE FLOW DEPTH(FEET) = 0.26 TRAVEL TIME(MIN.) = 2.07
 Tc(MIN.) = 9.07
 SUBAREA AREA(ACRES) = 5.47 SUBAREA RUNOFF(CFS) = 10.99
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 5.6 PEAK FLOW RATE(CFS) = 11.21

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.38 FLOW VELOCITY(FEET/SEC.) = 7.88
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 321.00 = 885.50 FEET.

 FLOW PROCESS FROM NODE 321.00 TO NODE 322.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 1100.00 DOWNSTREAM(FEET) = 895.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 771.10 CHANNEL SLOPE = 0.2659
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.333
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.04
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.69
 AVERAGE FLOW DEPTH(FEET) = 0.39 TRAVEL TIME(MIN.) = 1.10
 Tc(MIN.) = 10.17
 SUBAREA AREA(ACRES) = 6.24 SUBAREA RUNOFF(CFS) = 11.65
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

```

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TOTAL AREA(ACRES) =      11.8      PEAK FLOW RATE(CFS) =      22.06

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.45    FLOW VELOCITY(FEET/SEC.) = 12.67
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      322.00 =      1656.60 FEET.

*****
FLOW PROCESS FROM NODE      322.00 TO NODE      323.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      895.00  DOWNSTREAM(FEET) =      772.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      849.80  CHANNEL SLOPE = 0.1447
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.931
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      26.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.78
AVERAGE FLOW DEPTH(FEET) = 0.58  TRAVEL TIME(MIN.) = 1.31
Tc(MIN.) = 11.48
SUBAREA AREA(ACRES) =      4.76      SUBAREA RUNOFF(CFS) =      8.22
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      16.6      PEAK FLOW RATE(CFS) =      28.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.61    FLOW VELOCITY(FEET/SEC.) = 11.04
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      323.00 =      2506.40 FEET.

*****
FLOW PROCESS FROM NODE      323.00 TO NODE      324.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      772.00  DOWNSTREAM(FEET) =      732.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      424.10  CHANNEL SLOPE = 0.0943
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.739
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      30.11
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.65
AVERAGE FLOW DEPTH(FEET) = 0.71  TRAVEL TIME(MIN.) = 0.73
Tc(MIN.) = 12.22
SUBAREA AREA(ACRES) =      1.80      SUBAREA RUNOFF(CFS) =      2.99
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      18.4      PEAK FLOW RATE(CFS) =      30.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.71    FLOW VELOCITY(FEET/SEC.) = 9.67
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      324.00 =      2930.50 FEET.

*****
FLOW PROCESS FROM NODE      324.00 TO NODE      317.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

```

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```
=====
ELEVATION DATA: UPSTREAM(FEET) = 732.00 DOWNSTREAM(FEET) = 726.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 140.10 CHANNEL SLOPE = 0.0428
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.661
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 30.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.32
AVERAGE FLOW DEPTH(FEET) = 0.88 TRAVEL TIME(MIN.) = 0.32
Tc(MIN.) = 12.53
SUBAREA AREA(ACRES) = 0.36 SUBAREA RUNOFF(CFS) = 0.59
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 18.7 PEAK FLOW RATE(CFS) = 30.57
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.88 FLOW VELOCITY(FEET/SEC.) = 7.30
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 317.00 = 3070.60 FEET.
```

```
FLOW PROCESS FROM NODE 317.00 TO NODE 317.00 IS CODE = 1
```

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

```
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 12.53
RAINFALL INTENSITY(INCH/HR) = 4.66
TOTAL STREAM AREA(ACRES) = 18.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 30.57
```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	95.48	13.06	4.540	60.09
2	3.53	8.45	6.009	1.68
3	30.57	12.53	4.661	18.74

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	96.28	8.45	6.009
2	126.31	12.53	4.661
3	127.92	13.06	4.540

```
COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 127.92 Tc(MIN.) = 13.06
TOTAL AREA(ACRES) = 80.5
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 317.00 = 3350.20 FEET.
```

```
FLOW PROCESS FROM NODE 317.00 TO NODE 325.00 IS CODE = 51
```

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 726.00 DOWNSTREAM(FEET) = 708.00
```



```

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CHANNEL LENGTH THRU SUBAREA(FEET) = 323.30  CHANNEL SLOPE = 0.0557
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.441
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 129.66
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.87
AVERAGE FLOW DEPTH(FEET) = 1.70  TRAVEL TIME(MIN.) = 0.45
Tc(MIN.) = 13.51
SUBAREA AREA(ACRES) = 2.24  SUBAREA RUNOFF(CFS) = 3.48
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 82.8  PEAK FLOW RATE(CFS) = 128.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.70  FLOW VELOCITY(FEET/SEC.) = 11.86
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 325.00 = 3673.50 FEET.

*****
FLOW PROCESS FROM NODE 325.00 TO NODE 326.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 708.00  DOWNSTREAM(FEET) = 701.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 148.20  CHANNEL SLOPE = 0.0472
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.395
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 129.25
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 11.19
AVERAGE FLOW DEPTH(FEET) = 1.77  TRAVEL TIME(MIN.) = 0.22
Tc(MIN.) = 13.73
SUBAREA AREA(ACRES) = 0.83  SUBAREA RUNOFF(CFS) = 1.28
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 83.6  PEAK FLOW RATE(CFS) = 128.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.77  FLOW VELOCITY(FEET/SEC.) = 11.16
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 326.00 = 3821.70 FEET.

*****
FLOW PROCESS FROM NODE 326.00 TO NODE 327.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 701.00  DOWNSTREAM(FEET) = 690.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 273.10  CHANNEL SLOPE = 0.0403
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.308
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 129.72
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.54
AVERAGE FLOW DEPTH(FEET) = 1.84  TRAVEL TIME(MIN.) = 0.43
Tc(MIN.) = 14.16

```

```

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SUBAREA AREA(ACRES) = 1.46 SUBAREA RUNOFF(CFS) = 2.20
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 85.0 PEAK FLOW RATE(CFS) = 128.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.83 FLOW VELOCITY(FEET/SEC.) = 10.52
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 327.00 = 4094.80 FEET.
*****
FLOW PROCESS FROM NODE 327.00 TO NODE 328.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 690.00 DOWNSTREAM(FEET) = 689.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 82.80 CHANNEL SLOPE = 0.0121
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.268
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 129.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.75
AVERAGE FLOW DEPTH(FEET) = 2.43 TRAVEL TIME(MIN.) = 0.20
Tc(MIN.) = 14.37
SUBAREA AREA(ACRES) = 0.53 SUBAREA RUNOFF(CFS) = 0.79
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 85.6 PEAK FLOW RATE(CFS) = 128.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.43 FLOW VELOCITY(FEET/SEC.) = 6.74
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 328.00 = 4177.60 FEET.
*****
FLOW PROCESS FROM NODE 328.00 TO NODE 329.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 689.00 DOWNSTREAM(FEET) = 684.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 231.10 CHANNEL SLOPE = 0.0216
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.182
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 128.97
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.38
AVERAGE FLOW DEPTH(FEET) = 2.12 TRAVEL TIME(MIN.) = 0.46
Tc(MIN.) = 14.83
SUBAREA AREA(ACRES) = 0.48 SUBAREA RUNOFF(CFS) = 0.70
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 86.1 PEAK FLOW RATE(CFS) = 128.62

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 2.12 FLOW VELOCITY(FEET/SEC.) = 8.36
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 329.00 = 4408.70 FEET.
*****
FLOW PROCESS FROM NODE 329.00 TO NODE 329.00 IS CODE = 10
-----

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

```
*****
FLOW PROCESS FROM NODE      300.00 TO NODE      330.00 IS CODE =  21
-----
```

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

```
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 112.80
UPSTREAM ELEVATION(FEET) = 1205.00
DOWNSTREAM ELEVATION(FEET) = 1200.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 8.219
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.119
SUBAREA RUNOFF(CFS) = 0.21
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.21
=====
```

```
*****
FLOW PROCESS FROM NODE      330.00 TO NODE      331.00 IS CODE =  51
-----
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 1200.00 DOWNSTREAM(FEET) = 1075.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 815.50 CHANNEL SLOPE = 0.1533
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.347
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.80
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.11
AVERAGE FLOW DEPTH(FEET) = 0.27 TRAVEL TIME(MIN.) = 1.91
Tc(MIN.) = 10.13
SUBAREA AREA(ACRES) = 6.99 SUBAREA RUNOFF(CFS) = 13.08
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 7.1 PEAK FLOW RATE(CFS) = 13.27
=====
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.39 FLOW VELOCITY(FEET/SEC.) = 8.95
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 331.00 = 928.30 FEET.
=====
```

```
*****
FLOW PROCESS FROM NODE      331.00 TO NODE      332.00 IS CODE =  51
-----
```

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

```
ELEVATION DATA: UPSTREAM(FEET) = 1075.00 DOWNSTREAM(FEET) = 935.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 619.60 CHANNEL SLOPE = 0.2260
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.080
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
=====
```

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S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 24.62
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.35
 AVERAGE FLOW DEPTH(FEET) = 0.50 TRAVEL TIME(MIN.) = 0.84
 Tc(MIN.) = 10.97
 SUBAREA AREA(ACRES) = 12.76 SUBAREA RUNOFF(CFS) = 22.69
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 19.9 PEAK FLOW RATE(CFS) = 35.30

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.61 FLOW VELOCITY(FEET/SEC.) = 13.78
 LONGEST FLOWPATH FROM NODE 300.00 TO NODE 332.00 = 1547.90 FEET.

FLOW PROCESS FROM NODE 332.00 TO NODE 333.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 935.00 DOWNSTREAM(FEET) = 865.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 485.10 CHANNEL SLOPE = 0.1443
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.889

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 38.08

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.04

AVERAGE FLOW DEPTH(FEET) = 0.71 TRAVEL TIME(MIN.) = 0.67

Tc(MIN.) = 11.64

SUBAREA AREA(ACRES) = 3.25 SUBAREA RUNOFF(CFS) = 5.56

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 23.1 PEAK FLOW RATE(CFS) = 39.53

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.73 FLOW VELOCITY(FEET/SEC.) = 12.15

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 333.00 = 2033.00 FEET.

FLOW PROCESS FROM NODE 333.00 TO NODE 334.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 865.00 DOWNSTREAM(FEET) = 823.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 269.90 CHANNEL SLOPE = 0.1556
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.795

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 40.86

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.60

AVERAGE FLOW DEPTH(FEET) = 0.73 TRAVEL TIME(MIN.) = 0.36

Tc(MIN.) = 11.99

SUBAREA AREA(ACRES) = 1.58 SUBAREA RUNOFF(CFS) = 2.65

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 24.7 PEAK FLOW RATE(CFS) = 41.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.74 FLOW VELOCITY(FEET/SEC.) = 12.60

```

                                EDEN300.TXT
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      334.00 =      2302.90 FEET.
*****
FLOW PROCESS FROM NODE      334.00 TO NODE      334.00 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.) =      11.99
RAINFALL INTENSITY(INCH/HR) =      4.79
TOTAL STREAM AREA(ACRES) =      24.68
PEAK FLOW RATE(CFS) AT CONFLUENCE =      41.42
*****
FLOW PROCESS FROM NODE      335.00 TO NODE      336.00 IS CODE =      21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =      85
INITIAL SUBAREA FLOW-LENGTH(FEET) =      89.11
UPSTREAM ELEVATION(FEET) =      965.00
DOWNSTREAM ELEVATION(FEET) =      936.00
ELEVATION DIFFERENCE(FEET) =      29.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =      5.916
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      7.565
SUBAREA RUNOFF(CFS) =      0.26
TOTAL AREA(ACRES) =      0.10    TOTAL RUNOFF(CFS) =      0.26
*****
FLOW PROCESS FROM NODE      336.00 TO NODE      337.00 IS CODE =      51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      936.00    DOWNSTREAM(FEET) =      861.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      354.00    CHANNEL SLOPE =      0.2119
CHANNEL BASE(FEET) =      3.00    "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) =      10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      6.866
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =      85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      3.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =      6.15
AVERAGE FLOW DEPTH(FEET) =      0.16    TRAVEL TIME(MIN.) =      0.96
Tc(MIN.) =      6.87
SUBAREA AREA(ACRES) =      2.41    SUBAREA RUNOFF(CFS) =      5.79
AREA-AVERAGE RUNOFF COEFFICIENT =      0.350
TOTAL AREA(ACRES) =      2.5    PEAK FLOW RATE(CFS) =      6.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =      0.23    FLOW VELOCITY(FEET/SEC.) =      7.73
LONGEST FLOWPATH FROM NODE      335.00 TO NODE      337.00 =      443.11 FEET.
*****
FLOW PROCESS FROM NODE      337.00 TO NODE      334.00 IS CODE =      51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

```

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```
=====
ELEVATION DATA: UPSTREAM(FEET) = 861.00 DOWNSTREAM(FEET) = 823.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 269.00 CHANNEL SLOPE = 0.1413
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.501
```

```
*USER SPECIFIED(GLOBAL):
```

```
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
```

```
S.C.S. CURVE NUMBER (AMC II) = 85
```

```
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.99
```

```
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.39
```

```
AVERAGE FLOW DEPTH(FEET) = 0.30 TRAVEL TIME(MIN.) = 0.61
```

```
Tc(MIN.) = 7.48
```

```
SUBAREA AREA(ACRES) = 1.72 SUBAREA RUNOFF(CFS) = 3.91
```

```
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
```

```
TOTAL AREA(ACRES) = 4.2 PEAK FLOW RATE(CFS) = 9.63
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
DEPTH(FEET) = 0.33 FLOW VELOCITY(FEET/SEC.) = 7.89
```

```
LONGEST FLOWPATH FROM NODE 335.00 TO NODE 334.00 = 712.11 FEET.
```

```
*****
```

```
FLOW PROCESS FROM NODE 334.00 TO NODE 334.00 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.) = 7.48
```

```
RAINFALL INTENSITY(INCH/HR) = 6.50
```

```
TOTAL STREAM AREA(ACRES) = 4.23
```

```
PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.63
```

```
** CONFLUENCE DATA **
```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	41.42	11.99	4.795	24.68
2	9.63	7.48	6.501	4.23

```
RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
CONFLUENCE FORMULA USED FOR 2 STREAMS.
```

```
** PEAK FLOW RATE TABLE **
```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	35.46	7.48	6.501
2	48.52	11.99	4.795

```
COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
PEAK FLOW RATE(CFS) = 48.52 Tc(MIN.) = 11.99
```

```
TOTAL AREA(ACRES) = 28.9
```

```
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 334.00 = 2302.90 FEET.
```

```
*****
```

```
FLOW PROCESS FROM NODE 334.00 TO NODE 338.00 IS CODE = 51
```

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

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 823.00 DOWNSTREAM(FEET) = 766.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 504.10 CHANNEL SLOPE = 0.1131
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
```

```

                                EDEN300.TXT
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.624
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 52.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.12
AVERAGE FLOW DEPTH(FEET) = 0.91    TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 12.69
SUBAREA AREA(ACRES) = 5.25    SUBAREA RUNOFF(CFS) = 8.50
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 34.2    PEAK FLOW RATE(CFS) = 55.29

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.93    FLOW VELOCITY(FEET/SEC.) = 12.27
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 338.00 = 2807.00 FEET.

*****
FLOW PROCESS FROM NODE 338.00 TO NODE 338.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 12.69
RAINFALL INTENSITY(INCH/HR) = 4.62
TOTAL STREAM AREA(ACRES) = 34.16
PEAK FLOW RATE(CFS) AT CONFLUENCE = 55.29

*****
FLOW PROCESS FROM NODE 339.00 TO NODE 340.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 76.00
UPSTREAM ELEVATION(FEET) = 896.00
DOWNSTREAM ELEVATION(FEET) = 883.00
ELEVATION DIFFERENCE(FEET) = 13.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.463
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.963
SUBAREA RUNOFF(CFS) = 0.28
TOTAL AREA(ACRES) = 0.10    TOTAL RUNOFF(CFS) = 0.28

*****
FLOW PROCESS FROM NODE 340.00 TO NODE 338.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 883.00    DOWNSTREAM(FEET) = 766.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 609.30    CHANNEL SLOPE = 0.1920
CHANNEL BASE(FEET) = 3.00    "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.586
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.50
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.43

```

```

                                EDEN300.TXT
AVERAGE FLOW DEPTH(FEET) = 0.14 TRAVEL TIME(MIN.) = 1.87
Tc(MIN.) = 7.33
SUBAREA AREA(ACRES) = 1.91 SUBAREA RUNOFF(CFS) = 4.40
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.0 PEAK FLOW RATE(CFS) = 4.63

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.20 FLOW VELOCITY(FEET/SEC.) = 6.77
LONGEST FLOWPATH FROM NODE 339.00 TO NODE 338.00 = 685.30 FEET.

*****
FLOW PROCESS FROM NODE 338.00 TO NODE 338.00 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.) = 7.33
RAINFALL INTENSITY(INCH/HR) = 6.59
TOTAL STREAM AREA(ACRES) = 2.01
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.63

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HR) (ACRE)
1 55.29 12.69 4.624 34.16
2 4.63 7.33 6.586 2.01

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

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HR)
1 43.45 7.33 6.586
2 58.54 12.69 4.624

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 58.54 Tc(MIN.) = 12.69
TOTAL AREA(ACRES) = 36.2
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 338.00 = 2807.00 FEET.

*****
FLOW PROCESS FROM NODE 338.00 TO NODE 341.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 766.00 DOWNSTREAM(FEET) = 729.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 566.20 CHANNEL SLOPE = 0.0653
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HR) = 4.423
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 62.05
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.39
AVERAGE FLOW DEPTH(FEET) = 1.13 TRAVEL TIME(MIN.) = 0.91
Tc(MIN.) = 13.60
SUBAREA AREA(ACRES) = 4.53 SUBAREA RUNOFF(CFS) = 7.01
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

```



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TOTAL AREA(ACRES) =      40.7      PEAK FLOW RATE(CFS) =      63.00

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.14    FLOW VELOCITY(FEET/SEC.) = 10.45
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      341.00 =      3373.20 FEET.

*****
FLOW PROCESS FROM NODE      341.00 TO NODE      342.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      729.00  DOWNSTREAM(FEET) =      706.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      385.40  CHANNEL SLOPE = 0.0597
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.296
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      66.71
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.26
AVERAGE FLOW DEPTH(FEET) = 1.20  TRAVEL TIME(MIN.) = 0.63
Tc(MIN.) = 14.22
SUBAREA AREA(ACRES) =      4.93      SUBAREA RUNOFF(CFS) =      7.41
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      45.6      PEAK FLOW RATE(CFS) =      68.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.22    FLOW VELOCITY(FEET/SEC.) = 10.29
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      342.00 =      3758.60 FEET.

*****
FLOW PROCESS FROM NODE      342.00 TO NODE      343.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      706.00  DOWNSTREAM(FEET) =      696.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      331.50  CHANNEL SLOPE = 0.0302
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.168
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      70.08
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.09
AVERAGE FLOW DEPTH(FEET) = 1.46  TRAVEL TIME(MIN.) = 0.68
Tc(MIN.) = 14.90
SUBAREA AREA(ACRES) =      2.01      SUBAREA RUNOFF(CFS) =      2.93
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      47.6      PEAK FLOW RATE(CFS) =      69.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.46    FLOW VELOCITY(FEET/SEC.) = 8.04
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      343.00 =      4090.10 FEET.

*****
FLOW PROCESS FROM NODE      343.00 TO NODE      329.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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EDEN300.TXT

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=====
ELEVATION DATA: UPSTREAM(FEET) = 696.00 DOWNSTREAM(FEET) = 684.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 418.60 CHANNEL SLOPE = 0.0287
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.016

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*USER SPECIFIED(GLOBAL):

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```

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 70.00
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.91
AVERAGE FLOW DEPTH(FEET) = 1.48 TRAVEL TIME(MIN.) = 0.88
Tc(MIN.) = 15.79
SUBAREA AREA(ACRES) = 0.71 SUBAREA RUNOFF(CFS) = 1.00
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 48.3 PEAK FLOW RATE(CFS) = 69.50

```

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

```

DEPTH(FEET) = 1.48 FLOW VELOCITY(FEET/SEC.) = 7.90
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 329.00 = 4508.70 FEET.

```

```

*****

```

```

FLOW PROCESS FROM NODE 329.00 TO NODE 329.00 IS CODE = 11

```

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

```

```

** MAIN STREAM CONFLUENCE DATA **

```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	69.50	15.79	4.016	48.35

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 329.00 = 4508.70 FEET.

```

** MEMORY BANK # 1 CONFLUENCE DATA **

```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	128.62	14.83	4.182	86.05

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 329.00 = 4408.70 FEET.

```

** PEAK FLOW RATE TABLE **

```

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	193.89	14.83	4.182
2	193.01	15.79	4.016

```

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

```

PEAK FLOW RATE(CFS) = 193.89 Tc(MIN.) = 14.83
TOTAL AREA(ACRES) = 134.4

```

```

*****

```

```

FLOW PROCESS FROM NODE 329.00 TO NODE 329.00 IS CODE = 12

```

```

-----
>>>>>CLEAR MEMORY BANK # 1 <<<<<
=====

```

```

*****

```

```

FLOW PROCESS FROM NODE 329.00 TO NODE 344.00 IS CODE = 51

```

```

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

```

```

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

```

```

ELEVATION DATA: UPSTREAM(FEET) = 684.00 DOWNSTREAM(FEET) = 683.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 279.20 CHANNEL SLOPE = 0.0036

```

```

                                EDEN300.TXT
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.013
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      195.06
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.76
AVERAGE FLOW DEPTH(FEET) = 3.84  TRAVEL TIME(MIN.) = 0.98
Tc(MIN.) = 15.80
SUBAREA AREA(ACRES) =      1.67  SUBAREA RUNOFF(CFS) =      2.35
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      136.1  PEAK FLOW RATE(CFS) =      193.89

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 3.83  FLOW VELOCITY(FEET/SEC.) = 4.76
LONGEST FLOWPATH FROM NODE      300.00 TO NODE      344.00 =      4787.90 FEET.

*****
FLOW PROCESS FROM NODE      344.00 TO NODE      344.00 IS CODE = 10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE      345.00 TO NODE      346.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====

*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) =      95.30
UPSTREAM ELEVATION(FEET) =      878.00
DOWNSTREAM ELEVATION(FEET) =      871.00
ELEVATION DIFFERENCE(FEET) =      7.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =      6.780
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.927
SUBAREA RUNOFF(CFS) =      0.24
TOTAL AREA(ACRES) =      0.10  TOTAL RUNOFF(CFS) =      0.24

*****
FLOW PROCESS FROM NODE      346.00 TO NODE      347.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      871.00  DOWNSTREAM(FEET) =      846.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      182.10  CHANNEL SLOPE = 0.1373
CHANNEL BASE(FEET) =      3.00  "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.306
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      0.64
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.85
AVERAGE FLOW DEPTH(FEET) = 0.07  TRAVEL TIME(MIN.) = 1.06
Tc(MIN.) = 7.84
SUBAREA AREA(ACRES) =      0.36  SUBAREA RUNOFF(CFS) =      0.79
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) =      0.5  PEAK FLOW RATE(CFS) =      1.02

```

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.09 FLOW VELOCITY(Feet/Sec.) = 3.60
 LONGEST FLOWPATH FROM NODE 345.00 TO NODE 347.00 = 277.40 FEET.

FLOW PROCESS FROM NODE 347.00 TO NODE 348.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 846.00 DOWNSTREAM(Feet) = 768.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 377.10 CHANNEL SLOPE = 0.2068

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.789

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.60

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 5.65

AVERAGE FLOW DEPTH(Feet) = 0.14 TRAVEL TIME(Min.) = 1.11

Tc(Min.) = 8.95

SUBAREA AREA(ACRES) = 1.56 SUBAREA RUNOFF(CFS) = 3.16

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 2.0 PEAK FLOW RATE(CFS) = 4.09

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.18 FLOW VELOCITY(Feet/Sec.) = 6.76
 LONGEST FLOWPATH FROM NODE 345.00 TO NODE 348.00 = 654.50 FEET.

FLOW PROCESS FROM NODE 348.00 TO NODE 349.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 768.00 DOWNSTREAM(Feet) = 752.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 132.70 CHANNEL SLOPE = 0.1206

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.640

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.01

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 5.96

AVERAGE FLOW DEPTH(Feet) = 0.24 TRAVEL TIME(Min.) = 0.37

Tc(Min.) = 9.33

SUBAREA AREA(ACRES) = 0.93 SUBAREA RUNOFF(CFS) = 1.84

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 3.0 PEAK FLOW RATE(CFS) = 5.82

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.26 FLOW VELOCITY(Feet/Sec.) = 6.30
 LONGEST FLOWPATH FROM NODE 345.00 TO NODE 349.00 = 787.20 FEET.

FLOW PROCESS FROM NODE 349.00 TO NODE 350.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 752.00 DOWNSTREAM(Feet) = 739.00

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CHANNEL LENGTH THRU SUBAREA(FEET) = 192.30  CHANNEL SLOPE = 0.0676
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.419
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.51
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.37
AVERAGE FLOW DEPTH(FEET) = 0.33  TRAVEL TIME(MIN.) = 0.60
Tc(MIN.) = 9.92
SUBAREA AREA(ACRES) = 0.72  SUBAREA RUNOFF(CFS) = 1.37
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 3.7  PEAK FLOW RATE(CFS) = 6.96

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.34  FLOW VELOCITY(FEET/SEC.) = 5.55
LONGEST FLOWPATH FROM NODE 345.00 TO NODE 350.00 = 979.50 FEET.

*****
FLOW PROCESS FROM NODE 350.00 TO NODE 351.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 739.00  DOWNSTREAM(FEET) = 705.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 470.90  CHANNEL SLOPE = 0.0722
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.986
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.54
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.75
AVERAGE FLOW DEPTH(FEET) = 0.35  TRAVEL TIME(MIN.) = 1.37
Tc(MIN.) = 11.29
SUBAREA AREA(ACRES) = 0.66  SUBAREA RUNOFF(CFS) = 1.15
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.3  PEAK FLOW RATE(CFS) = 7.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.35  FLOW VELOCITY(FEET/SEC.) = 5.76
LONGEST FLOWPATH FROM NODE 345.00 TO NODE 351.00 = 1450.40 FEET.

*****
FLOW PROCESS FROM NODE 351.00 TO NODE 351.00 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.) = 11.29
RAINFALL INTENSITY(INCH/HR) = 4.99
TOTAL STREAM AREA(ACRES) = 4.33
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.56

*****
FLOW PROCESS FROM NODE 352.00 TO NODE 353.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):

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                                EDEN300.TXT
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 132.50
UPSTREAM ELEVATION(FEET) = 845.00
DOWNSTREAM ELEVATION(FEET) = 823.00
ELEVATION DIFFERENCE(FEET) = 22.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

*****
FLOW PROCESS FROM NODE 353.00 TO NODE 354.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 823.00 DOWNSTREAM(FEET) = 765.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 355.00 CHANNEL SLOPE = 0.1634
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.348
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.22
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.95
AVERAGE FLOW DEPTH(FEET) = 0.10 TRAVEL TIME(MIN.) = 1.50
Tc(MIN.) = 7.76
SUBAREA AREA(ACRES) = 0.86 SUBAREA RUNOFF(CFS) = 1.91
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.0 PEAK FLOW RATE(CFS) = 2.13

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.13 FLOW VELOCITY(FEET/SEC.) = 4.93
LONGEST FLOWPATH FROM NODE 352.00 TO NODE 354.00 = 487.50 FEET.

*****
FLOW PROCESS FROM NODE 354.00 TO NODE 355.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 765.00 DOWNSTREAM(FEET) = 727.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 394.90 CHANNEL SLOPE = 0.0962
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.809
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.49
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.75
AVERAGE FLOW DEPTH(FEET) = 0.27 TRAVEL TIME(MIN.) = 1.14
Tc(MIN.) = 8.91
SUBAREA AREA(ACRES) = 3.30 SUBAREA RUNOFF(CFS) = 6.71
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.3 PEAK FLOW RATE(CFS) = 8.66

```

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.35 FLOW VELOCITY(FEET/SEC.) = 6.60
 LONGEST FLOWPATH FROM NODE 352.00 TO NODE 355.00 = 882.40 FEET.

FLOW PROCESS FROM NODE 355.00 TO NODE 351.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 727.00 DOWNSTREAM(FEET) = 705.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 461.20 CHANNEL SLOPE = 0.0477

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.322

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 12.97

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.93

AVERAGE FLOW DEPTH(FEET) = 0.54 TRAVEL TIME(MIN.) = 1.30

Tc(MIN.) = 10.20

SUBAREA AREA(ACRES) = 4.62 SUBAREA RUNOFF(CFS) = 8.61

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 8.9 PEAK FLOW RATE(CFS) = 16.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.61 FLOW VELOCITY(FEET/SEC.) = 6.38

LONGEST FLOWPATH FROM NODE 352.00 TO NODE 351.00 = 1343.60 FEET.

FLOW PROCESS FROM NODE 351.00 TO NODE 351.00 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.) = 10.20

RAINFALL INTENSITY(INCH/HR) = 5.32

TOTAL STREAM AREA(ACRES) = 8.88

PEAK FLOW RATE(CFS) AT CONFLUENCE = 16.54

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	7.56	11.29	4.986	4.33
2	16.54	10.20	5.322	8.88

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	23.37	10.20	5.322
2	23.05	11.29	4.986

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 23.37 Tc(MIN.) = 10.20

TOTAL AREA(ACRES) = 13.2

LONGEST FLOWPATH FROM NODE 345.00 TO NODE 351.00 = 1450.40 FEET.

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 FLOW PROCESS FROM NODE 351.00 TO NODE 344.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 705.00 DOWNSTREAM(FEET) = 684.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 586.30 CHANNEL SLOPE = 0.0358
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 4.899
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 33.01
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.00
 AVERAGE FLOW DEPTH(FEET) = 0.96 TRAVEL TIME(MIN.) = 1.40
 Tc(MIN.) = 11.60
 SUBAREA AREA(ACRES) = 11.24 SUBAREA RUNOFF(CFS) = 19.27
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 24.5 PEAK FLOW RATE(CFS) = 41.93

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.09 FLOW VELOCITY(FEET/SEC.) = 7.46
 LONGEST FLOWPATH FROM NODE 345.00 TO NODE 344.00 = 2036.70 FEET.

 FLOW PROCESS FROM NODE 344.00 TO NODE 344.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	41.93	11.60	4.899	24.45

LONGEST FLOWPATH FROM NODE 345.00 TO NODE 344.00 = 2036.70 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	193.89	15.80	4.013	136.07

LONGEST FLOWPATH FROM NODE 300.00 TO NODE 344.00 = 4787.90 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	184.23	11.60	4.899
2	228.23	15.80	4.013

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 228.23 Tc(MIN.) = 15.80
 TOTAL AREA(ACRES) = 160.5

 FLOW PROCESS FROM NODE 344.00 TO NODE 344.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 344.00 TO NODE 356.00 IS CODE = 51

```

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>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    684.00  DOWNSTREAM(FEET) =    670.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    615.60  CHANNEL SLOPE =    0.0227
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    3.853
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    232.13
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    9.92
AVERAGE FLOW DEPTH(FEET) =    2.75  TRAVEL TIME(MIN.) =    1.03
Tc(MIN.) =    16.84
SUBAREA AREA(ACRES) =     5.78  SUBAREA RUNOFF(CFS) =     7.79
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =    166.3  PEAK FLOW RATE(CFS) =    228.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    2.73  FLOW VELOCITY(FEET/SEC.) =    9.86
LONGEST FLOWPATH FROM NODE    300.00 TO NODE    356.00 =    5403.50 FEET.

*****
FLOW PROCESS FROM NODE    356.00 TO NODE    356.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS =    3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM    1 ARE:
TIME OF CONCENTRATION(MIN.) =    16.84
RAINFALL INTENSITY(INCH/HR) =    3.85
TOTAL STREAM AREA(ACRES) =    166.30
PEAK FLOW RATE(CFS) AT CONFLUENCE =    228.23

*****
FLOW PROCESS FROM NODE    357.00 TO NODE    358.00 IS CODE =    21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    85
INITIAL SUBAREA FLOW-LENGTH(FEET) =    91.59
UPSTREAM ELEVATION(FEET) =    698.00
DOWNSTREAM ELEVATION(FEET) =    693.00
ELEVATION DIFFERENCE(FEET) =     5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    7.338
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    6.583
SUBAREA RUNOFF(CFS) =     0.25
TOTAL AREA(ACRES) =     0.11  TOTAL RUNOFF(CFS) =     0.25

*****
FLOW PROCESS FROM NODE    358.00 TO NODE    356.00 IS CODE =    51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    693.00  DOWNSTREAM(FEET) =    670.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   1098.30  CHANNEL SLOPE =    0.0209
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    4.491

```

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*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.96

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.08

AVERAGE FLOW DEPTH(FEET) = 0.35 TRAVEL TIME(MIN.) = 5.94

Tc(MIN.) = 13.28

SUBAREA AREA(ACRES) = 4.59 SUBAREA RUNOFF(CFS) = 7.21

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 7.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.49 FLOW VELOCITY(FEET/SEC.) = 3.76

LONGEST FLOWPATH FROM NODE 357.00 TO NODE 356.00 = 1189.89 FEET.

FLOW PROCESS FROM NODE 356.00 TO NODE 356.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:

TIME OF CONCENTRATION(MIN.) = 13.28

RAINFALL INTENSITY(INCH/HR) = 4.49

TOTAL STREAM AREA(ACRES) = 4.70

PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.39

FLOW PROCESS FROM NODE 359.00 TO NODE 360.00 IS CODE = 21

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

=====

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

INITIAL SUBAREA FLOW-LENGTH(FEET) = 108.30

UPSTREAM ELEVATION(FEET) = 739.00

DOWNSTREAM ELEVATION(FEET) = 733.00

ELEVATION DIFFERENCE(FEET) = 6.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 7.630

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 100.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.419

SUBAREA RUNOFF(CFS) = 0.22

TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.22

FLOW PROCESS FROM NODE 360.00 TO NODE 356.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 733.00 DOWNSTREAM(FEET) = 670.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 677.40 CHANNEL SLOPE = 0.0930

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.306

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.46

```

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TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.31
AVERAGE FLOW DEPTH(FEET) = 0.17 TRAVEL TIME(MIN.) = 2.62
Tc(MIN.) = 10.25
SUBAREA AREA(ACRES) = 2.38 SUBAREA RUNOFF(CFS) = 4.42
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.5 PEAK FLOW RATE(CFS) = 4.61

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.25 FLOW VELOCITY(FEET/SEC.) = 5.34
LONGEST FLOWPATH FROM NODE 359.00 TO NODE 356.00 = 785.70 FEET.

*****
FLOW PROCESS FROM NODE 356.00 TO NODE 356.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 10.25
RAINFALL INTENSITY(INCH/HR) = 5.31
TOTAL STREAM AREA(ACRES) = 2.48
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.61

** CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 228.23 16.84 3.853 166.30
2 7.39 13.28 4.491 4.70
3 4.61 10.25 5.306 2.48

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
1 149.26 10.25 5.306
2 191.25 13.28 4.491
3 237.91 16.84 3.853

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 237.91 Tc(MIN.) = 16.84
TOTAL AREA(ACRES) = 173.5
LONGEST FLOWPATH FROM NODE 300.00 TO NODE 356.00 = 5403.50 FEET.
=====
END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 173.5 TC(MIN.) = 16.84
PEAK FLOW RATE(CFS) = 237.91
=====
END OF RATIONAL METHOD ANALYSIS

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□

FUSCOE
ENGINEERING

Job Name: Eden Hills
Existing Hydrology
100 year Design Storm
Job #: 2690-007-02

Page: 1

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RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
 Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
 2003,1985,1981 HYDROLOGY MANUAL
 (c) Copyright 1982-2012 Advanced Engineering Software (aes)
 Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fusco Engineering
 6390 Greenwich Dr.
 Suite 170
 San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
 * VALIANO *
 * EXISTING HYDROLOGY STUDY - 400 SERIES *
 * OCTOBER 20, 2014 *

FILE NAME: EDEN400.DAT
 TIME/DATE OF STUDY: 10:19 10/20/2014

 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
 6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
 SPECIFIED CONSTANT RUNOFF COEFFICIENT = 0.350

NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

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

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

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
 as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
 OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

FLOW PROCESS FROM NODE 400.00 TO NODE 401.00 IS CODE = 21

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

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 1070.00
 DOWNSTREAM ELEVATION(FEET) = 1027.00
 ELEVATION DIFFERENCE(FEET) = 43.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
 WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!

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100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26
*****
FLOW PROCESS FROM NODE 401.00 TO NODE 402.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 1027.00 DOWNSTREAM(FEET) = 895.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 517.30 CHANNEL SLOPE = 0.2552
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.270
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.75
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.24
AVERAGE FLOW DEPTH(FEET) = 0.10 TRAVEL TIME(MIN.) = 1.65
Tc(MIN.) = 7.91
SUBAREA AREA(ACRES) = 1.35 SUBAREA RUNOFF(CFS) = 2.96
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.5 PEAK FLOW RATE(CFS) = 3.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.15 FLOW VELOCITY(FEET/SEC.) = 6.53
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 402.00 = 617.30 FEET.
*****
FLOW PROCESS FROM NODE 402.00 TO NODE 403.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 895.00 DOWNSTREAM(FEET) = 787.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 307.40 CHANNEL SLOPE = 0.3513
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.996
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.91
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.01
AVERAGE FLOW DEPTH(FEET) = 0.19 TRAVEL TIME(MIN.) = 0.57
Tc(MIN.) = 8.48
SUBAREA AREA(ACRES) = 2.60 SUBAREA RUNOFF(CFS) = 5.46
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.1 PEAK FLOW RATE(CFS) = 8.50

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.24 FLOW VELOCITY(FEET/SEC.) = 10.21
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 403.00 = 924.70 FEET.
*****
FLOW PROCESS FROM NODE 403.00 TO NODE 404.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 787.00 DOWNSTREAM(FEET) = 766.00

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                                EDEN400.TXT
CHANNEL LENGTH THRU SUBAREA(FEET) = 109.50  CHANNEL SLOPE = 0.1918
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.902
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 9.98
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.70
AVERAGE FLOW DEPTH(FEET) = 0.32  TRAVEL TIME(MIN.) = 0.21
Tc(MIN.) = 8.69
SUBAREA AREA(ACRES) = 1.43  SUBAREA RUNOFF(CFS) = 2.95
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 5.5  PEAK FLOW RATE(CFS) = 11.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.34  FLOW VELOCITY(FEET/SEC.) = 9.09
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 404.00 = 1034.20 FEET.

*****
FLOW PROCESS FROM NODE 404.00 TO NODE 405.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 766.00  DOWNSTREAM(FEET) = 756.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 72.10  CHANNEL SLOPE = 0.1387
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.842
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 13.19
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.64
AVERAGE FLOW DEPTH(FEET) = 0.40  TRAVEL TIME(MIN.) = 0.14
Tc(MIN.) = 8.83
SUBAREA AREA(ACRES) = 1.83  SUBAREA RUNOFF(CFS) = 3.74
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 7.3  PEAK FLOW RATE(CFS) = 14.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.43  FLOW VELOCITY(FEET/SEC.) = 8.95
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 405.00 = 1106.30 FEET.

*****
FLOW PROCESS FROM NODE 405.00 TO NODE 406.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 756.00  DOWNSTREAM(FEET) = 746.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 85.70  CHANNEL SLOPE = 0.1167
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.776
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 18.47
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.05
AVERAGE FLOW DEPTH(FEET) = 0.51  TRAVEL TIME(MIN.) = 0.16
Tc(MIN.) = 8.99

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EDEN400.TXT
SUBAREA AREA(ACRES) =      3.49      SUBAREA RUNOFF(CFS) =      7.05
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =      10.8      PEAK FLOW RATE(CFS) =      21.83

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.56      FLOW VELOCITY(FEET/SEC.) = 9.47
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 406.00 = 1192.00 FEET.

*****
FLOW PROCESS FROM NODE 406.00 TO NODE 407.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 746.00 DOWNSTREAM(FEET) = 726.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 145.50 CHANNEL SLOPE = 0.1375
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.679
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22.77
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.18
AVERAGE FLOW DEPTH(FEET) = 0.55 TRAVEL TIME(MIN.) = 0.24
Tc(MIN.) = 9.23
SUBAREA AREA(ACRES) = 0.94 SUBAREA RUNOFF(CFS) = 1.87
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 11.7 PEAK FLOW RATE(CFS) = 23.34

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.55 FLOW VELOCITY(FEET/SEC.) = 10.25
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 407.00 = 1337.50 FEET.

*****
FLOW PROCESS FROM NODE 407.00 TO NODE 408.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 726.00 DOWNSTREAM(FEET) = 707.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 321.80 CHANNEL SLOPE = 0.0590
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.422
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 25.71
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.82
AVERAGE FLOW DEPTH(FEET) = 0.74 TRAVEL TIME(MIN.) = 0.69
Tc(MIN.) = 9.91
SUBAREA AREA(ACRES) = 2.50 SUBAREA RUNOFF(CFS) = 4.74
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 14.2 PEAK FLOW RATE(CFS) = 27.03

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.76 FLOW VELOCITY(FEET/SEC.) = 7.89
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 408.00 = 1659.30 FEET.

*****
FLOW PROCESS FROM NODE 408.00 TO NODE 409.00 IS CODE = 51
-----

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                                EDEN400.TXT
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 707.00 DOWNSTREAM(FEET) = 686.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 527.90 CHANNEL SLOPE = 0.0398
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.018
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 28.46
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.96
AVERAGE FLOW DEPTH(FEET) = 0.86 TRAVEL TIME(MIN.) = 1.26
Tc(MIN.) = 11.18
SUBAREA AREA(ACRES) = 1.63 SUBAREA RUNOFF(CFS) = 2.86
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 15.9 PEAK FLOW RATE(CFS) = 27.87

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.85 FLOW VELOCITY(FEET/SEC.) = 6.96
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 409.00 = 2187.20 FEET.

*****
FLOW PROCESS FROM NODE 409.00 TO NODE 409.00 IS CODE = 10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
=====

*****
FLOW PROCESS FROM NODE 410.00 TO NODE 411.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 134.00
UPSTREAM ELEVATION(FEET) = 794.00
DOWNSTREAM ELEVATION(FEET) = 776.00
ELEVATION DIFFERENCE(FEET) = 18.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 0.26
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

*****
FLOW PROCESS FROM NODE 411.00 TO NODE 422.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 776.00 DOWNSTREAM(FEET) = 694.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 680.00 CHANNEL SLOPE = 0.1206
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.195
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

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S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.83
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.31
 AVERAGE FLOW DEPTH(FEET) = 0.26 TRAVEL TIME(MIN.) = 1.80
 Tc(MIN.) = 8.06
 SUBAREA AREA(ACRES) = 5.11 SUBAREA RUNOFF(CFS) = 11.08
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 5.2 PEAK FLOW RATE(CFS) = 11.30

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.38 FLOW VELOCITY(FEET/SEC.) = 7.80
 LONGEST FLOWPATH FROM NODE 410.00 TO NODE 422.00 = 814.00 FEET.

FLOW PROCESS FROM NODE 422.00 TO NODE 422.00 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.) = 8.06
 RAINFALL INTENSITY(INCH/HR) = 6.19
 TOTAL STREAM AREA(ACRES) = 5.21
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.30

FLOW PROCESS FROM NODE 423.00 TO NODE 424.00 IS CODE = 21

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

=====

*USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 102.00
 UPSTREAM ELEVATION(FEET) = 978.00
 DOWNSTREAM ELEVATION(FEET) = 964.00
 ELEVATION DIFFERENCE(FEET) = 14.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
 SUBAREA RUNOFF(CFS) = 0.28
 TOTAL AREA(ACRES) = 0.11 TOTAL RUNOFF(CFS) = 0.28

FLOW PROCESS FROM NODE 424.00 TO NODE 425.00 IS CODE = 51

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

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 964.00 DOWNSTREAM(FEET) = 727.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 872.00 CHANNEL SLOPE = 0.2718
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.329
 *USER SPECIFIED(GLOBAL):
 NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 85
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.55
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.48
 AVERAGE FLOW DEPTH(FEET) = 0.26 TRAVEL TIME(MIN.) = 1.53

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Tc(MIN.) = 7.80
 SUBAREA AREA(ACRES) = 7.43 SUBAREA RUNOFF(CFS) = 16.46
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 7.5 PEAK FLOW RATE(CFS) = 16.70

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.38 FLOW VELOCITY(FEET/SEC.) = 11.74
 LONGEST FLOWPATH FROM NODE 423.00 TO NODE 425.00 = 974.00 FEET.

FLOW PROCESS FROM NODE 425.00 TO NODE 422.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 727.00 DOWNSTREAM(FEET) = 693.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 750.00 CHANNEL SLOPE = 0.0453
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.489

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 19.03

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.49

AVERAGE FLOW DEPTH(FEET) = 0.67 TRAVEL TIME(MIN.) = 1.93

Tc(MIN.) = 9.73

SUBAREA AREA(ACRES) = 2.42 SUBAREA RUNOFF(CFS) = 4.65

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 10.0 PEAK FLOW RATE(CFS) = 19.14

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.67 FLOW VELOCITY(FEET/SEC.) = 6.53
 LONGEST FLOWPATH FROM NODE 423.00 TO NODE 422.00 = 1724.00 FEET.

FLOW PROCESS FROM NODE 422.00 TO NODE 422.00 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.) = 9.73
 RAINFALL INTENSITY(INCH/HR) = 5.49
 TOTAL STREAM AREA(ACRES) = 9.96
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 19.14

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	11.30	8.06	6.195	5.21
2	19.14	9.73	5.489	9.96

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	27.16	8.06	6.195
2	29.15	9.73	5.489

```

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COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 29.15 Tc(MIN.) = 9.73
TOTAL AREA(ACRES) = 15.2
LONGEST FLOWPATH FROM NODE 423.00 TO NODE 422.00 = 1724.00 FEET.
*****
FLOW PROCESS FROM NODE 422.00 TO NODE 409.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 693.00 DOWNSTREAM(FEET) = 686.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 414.00 CHANNEL SLOPE = 0.0169
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.013 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.239
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 29.82
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 9.46
AVERAGE FLOW DEPTH(FEET) = 0.71 TRAVEL TIME(MIN.) = 0.73
Tc(MIN.) = 10.45
SUBAREA AREA(ACRES) = 0.74 SUBAREA RUNOFF(CFS) = 1.36
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 15.9 PEAK FLOW RATE(CFS) = 29.18

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.70 FLOW VELOCITY(FEET/SEC.) = 9.39
LONGEST FLOWPATH FROM NODE 423.00 TO NODE 409.00 = 2138.00 FEET.
*****
FLOW PROCESS FROM NODE 409.00 TO NODE 409.00 IS CODE = 11
-----
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 29.18 10.45 5.239 15.91
LONGEST FLOWPATH FROM NODE 423.00 TO NODE 409.00 = 2138.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 27.87 11.18 5.018 15.87
LONGEST FLOWPATH FROM NODE 400.00 TO NODE 409.00 = 2187.20 FEET.

** PEAK FLOW RATE TABLE **
STREAM RUNOFF Tc INTENSITY
NUMBER (CFS) (MIN.) (INCH/HOUR)
1 55.25 10.45 5.239
2 55.82 11.18 5.018

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 55.82 Tc(MIN.) = 11.18
TOTAL AREA(ACRES) = 31.8
*****
FLOW PROCESS FROM NODE 409.00 TO NODE 409.00 IS CODE = 12
-----
>>>>>CLEAR MEMORY BANK # 1 <<<<<

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=====
*****
FLOW PROCESS FROM NODE      409.00 TO NODE      412.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    686.00  DOWNSTREAM(FEET) =    684.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    261.50  CHANNEL SLOPE =    0.0076
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    4.765
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    58.92
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.66
AVERAGE FLOW DEPTH(FEET) =    1.87  TRAVEL TIME(MIN.) =    0.94
Tc(MIN.) =    12.11
SUBAREA AREA(ACRES) =     3.72  SUBAREA RUNOFF(CFS) =     6.20
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =     35.5  PEAK FLOW RATE(CFS) =    59.20

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.88  FLOW VELOCITY(FEET/SEC.) =    4.66
LONGEST FLOWPATH FROM NODE      400.00 TO NODE      412.00 =    2448.70 FEET.
*****
FLOW PROCESS FROM NODE      412.00 TO NODE      412.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 4
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =    12.11
RAINFALL INTENSITY(INCH/HR) =    4.76
TOTAL STREAM AREA(ACRES) =    35.50
PEAK FLOW RATE(CFS) AT CONFLUENCE =    59.20
*****
FLOW PROCESS FROM NODE      413.00 TO NODE      414.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) =    100.00
UPSTREAM ELEVATION(FEET) =    914.00
DOWNSTREAM ELEVATION(FEET) =    863.00
ELEVATION DIFFERENCE(FEET) =    51.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    7.288
SUBAREA RUNOFF(CFS) =     0.26
TOTAL AREA(ACRES) =     0.10  TOTAL RUNOFF(CFS) =     0.26
*****
FLOW PROCESS FROM NODE      414.00 TO NODE      415.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

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```
=====
ELEVATION DATA: UPSTREAM(FEET) = 863.00 DOWNSTREAM(FEET) = 785.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 265.70 CHANNEL SLOPE = 0.2936
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.650
```

```
*USER SPECIFIED(GLOBAL):
```

```
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
```

```
S.C.S. CURVE NUMBER (AMC II) = 85
```

```
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.07
```

```
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.63
```

```
AVERAGE FLOW DEPTH(FEET) = 0.07 TRAVEL TIME(MIN.) = 0.96
```

```
Tc(MIN.) = 7.22
```

```
SUBAREA AREA(ACRES) = 0.70 SUBAREA RUNOFF(CFS) = 1.63
```

```
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
```

```
TOTAL AREA(ACRES) = 0.8 PEAK FLOW RATE(CFS) = 1.86
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
DEPTH(FEET) = 0.10 FLOW VELOCITY(FEET/SEC.) = 5.58
```

```
LONGEST FLOWPATH FROM NODE 413.00 TO NODE 415.00 = 365.70 FEET.
```

```
*****
```

```
FLOW PROCESS FROM NODE 415.00 TO NODE 416.00 IS CODE = 51
```

```
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 785.00 DOWNSTREAM(FEET) = 769.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 104.60 CHANNEL SLOPE = 0.1530
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.471
```

```
*USER SPECIFIED(GLOBAL):
```

```
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
```

```
S.C.S. CURVE NUMBER (AMC II) = 85
```

```
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.35
```

```
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.59
```

```
AVERAGE FLOW DEPTH(FEET) = 0.18 TRAVEL TIME(MIN.) = 0.31
```

```
Tc(MIN.) = 7.54
```

```
SUBAREA AREA(ACRES) = 1.31 SUBAREA RUNOFF(CFS) = 2.97
```

```
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
```

```
TOTAL AREA(ACRES) = 2.1 PEAK FLOW RATE(CFS) = 4.78
```

```
END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
DEPTH(FEET) = 0.22 FLOW VELOCITY(FEET/SEC.) = 6.37
```

```
LONGEST FLOWPATH FROM NODE 413.00 TO NODE 416.00 = 470.30 FEET.
```

```
*****
```

```
FLOW PROCESS FROM NODE 416.00 TO NODE 417.00 IS CODE = 51
```

```
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 769.00 DOWNSTREAM(FEET) = 728.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 369.40 CHANNEL SLOPE = 0.1110
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.987
```

```
*USER SPECIFIED(GLOBAL):
```

```
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
```

```
S.C.S. CURVE NUMBER (AMC II) = 85
```

```
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.69
```

```
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.37
```

```

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AVERAGE FLOW DEPTH(FEET) = 0.29 TRAVEL TIME(MIN.) = 0.97
Tc(MIN.) = 8.50
SUBAREA AREA(ACRES) = 1.82 SUBAREA RUNOFF(CFS) = 3.81
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 3.9 PEAK FLOW RATE(CFS) = 8.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.33 FLOW VELOCITY(FEET/SEC.) = 6.94
LONGEST FLOWPATH FROM NODE 413.00 TO NODE 417.00 = 839.70 FEET.

*****
FLOW PROCESS FROM NODE 417.00 TO NODE 412.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 728.00 DOWNSTREAM(FEET) = 684.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 684.40 CHANNEL SLOPE = 0.0643
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.238
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.90
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.83
AVERAGE FLOW DEPTH(FEET) = 0.40 TRAVEL TIME(MIN.) = 1.96
Tc(MIN.) = 10.46
SUBAREA AREA(ACRES) = 0.73 SUBAREA RUNOFF(CFS) = 1.34
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.7 PEAK FLOW RATE(CFS) = 8.54

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.39 FLOW VELOCITY(FEET/SEC.) = 5.76
LONGEST FLOWPATH FROM NODE 413.00 TO NODE 412.00 = 1524.10 FEET.

*****
FLOW PROCESS FROM NODE 412.00 TO NODE 412.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 4
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 10.46
RAINFALL INTENSITY(INCH/HR) = 5.24
TOTAL STREAM AREA(ACRES) = 4.66
PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.54

*****
FLOW PROCESS FROM NODE 418.00 TO NODE 419.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 85
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 805.00
DOWNSTREAM ELEVATION(FEET) = 787.00
ELEVATION DIFFERENCE(FEET) = 18.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288

```

```

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SUBAREA RUNOFF(CFS) =          0.28
TOTAL AREA(ACRES) =          0.11  TOTAL RUNOFF(CFS) =          0.28
*****
FLOW PROCESS FROM NODE      419.00 TO NODE      412.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    787.00  DOWNSTREAM(FEET) =    684.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    955.10  CHANNEL SLOPE =    0.1078
CHANNEL BASE(FEET) =     3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =    10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    5.784
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    85
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          5.45
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    5.89
AVERAGE FLOW DEPTH(FEET) =    0.26  TRAVEL TIME(MIN.) =    2.70
Tc(MIN.) =    8.97
SUBAREA AREA(ACRES) =     5.03  SUBAREA RUNOFF(CFS) =    10.18
AREA-AVERAGE RUNOFF COEFFICIENT =    0.350
TOTAL AREA(ACRES) =     5.1  PEAK FLOW RATE(CFS) =    10.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =    0.38  FLOW VELOCITY(FEET/SEC.) =    7.32
LONGEST FLOWPATH FROM NODE      418.00 TO NODE      412.00 =    1055.10 FEET.
*****
FLOW PROCESS FROM NODE      412.00 TO NODE      412.00 IS CODE =    1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS =    4
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM   3 ARE:
TIME OF CONCENTRATION(MIN.) =    8.97
RAINFALL INTENSITY(INCH/HR) =    5.78
TOTAL STREAM AREA(ACRES) =     5.14
PEAK FLOW RATE(CFS) AT CONFLUENCE =    10.41
*****
FLOW PROCESS FROM NODE      420.00 TO NODE      421.00 IS CODE =   21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(GLOBAL):
NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    85
INITIAL SUBAREA FLOW-LENGTH(FEET) =    100.00
UPSTREAM ELEVATION(FEET) =    761.00
DOWNSTREAM ELEVATION(FEET) =    738.00
ELEVATION DIFFERENCE(FEET) =    23.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    7.288
SUBAREA RUNOFF(CFS) =          0.26
TOTAL AREA(ACRES) =          0.10  TOTAL RUNOFF(CFS) =          0.26
*****
FLOW PROCESS FROM NODE      421.00 TO NODE      412.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

```


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

ELEVATION DATA: UPSTREAM(FEET) = 738.00 DOWNSTREAM(FEET) = 684.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 705.40 CHANNEL SLOPE = 0.0766
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.897

*USER SPECIFIED(GLOBAL):

NATURAL DESERT LANDSCAPING RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 85

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.16

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.82

AVERAGE FLOW DEPTH(FEET) = 0.25 TRAVEL TIME(MIN.) = 2.44

Tc(MIN.) = 8.70

SUBAREA AREA(ACRES) = 3.75 SUBAREA RUNOFF(CFS) = 7.74

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 3.8 PEAK FLOW RATE(CFS) = 7.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.36 FLOW VELOCITY(FEET/SEC.) = 6.02

LONGEST FLOWPATH FROM NODE 420.00 TO NODE 412.00 = 805.40 FEET.

FLOW PROCESS FROM NODE 412.00 TO NODE 412.00 IS CODE = 1

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

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

TOTAL NUMBER OF STREAMS = 4

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 4 ARE:

TIME OF CONCENTRATION(MIN.) = 8.70

RAINFALL INTENSITY(INCH/HR) = 5.90

TOTAL STREAM AREA(ACRES) = 3.85

PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.95

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	59.20	12.11	4.765	35.50
2	8.54	10.46	5.238	4.66
3	10.41	8.97	5.784	5.14
4	7.95	8.70	5.897	3.85

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 4 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	67.69	8.70	5.897
2	69.35	8.97	5.784
3	76.14	10.46	5.238
4	81.96	12.11	4.765

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 81.96 Tc(MIN.) = 12.11

TOTAL AREA(ACRES) = 49.1

LONGEST FLOWPATH FROM NODE 400.00 TO NODE 412.00 = 2448.70 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 49.1 TC(MIN.) = 12.11

PEAK FLOW RATE(CFS) = 81.96

=====

END OF RATIONAL METHOD ANALYSIS

□

BASIN A



Job Name: Valiano
Proposed Hydrology
100 Year Design Storm
Job #: 2690-007-02

Date:
Oct. 2014
Run Name:
P-100.DAT

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
100	101	2	1015	1000	108	0.35	0.10	
101	102	5	1000	950	308	0.35	1.35	
102	103	5	950	863	387	0.35	2.28	
103	104	5	863	832	200	0.35	0.43	1 of 3
104	104	1						
105	106	2	975	967	100	0.35	0.10	
106	107	5	967	918	220	0.35	0.92	
107	104	5	918	832	385	0.35	1.58	
104	104	1						2 of 3
109	104	2	896	832	333	0.35	0.96	
104	104	1						3 of 3
104	110	5	832	816	151	0.35	0.97	
110	110	10						save to bank 1
116	117	2	882	880	85	0.71	0.30	
117	118	6	880	874	310	0.71	2.44	
118	119	3	869	854	75			
119	119	1						1 of 2
119.1	119	2	876	854	75	0.35	0.36	
119	119	1						2 of 2
119	120	3	851	834	80			
120	110	5	834	816	145	0.35	0.57	
110	110	11						add bank 1
110	110	12						clear bank 1
110	111	5	816	786	316	0.35	1.39	
111	111	1						1 of 2
112	113	2	975	950	128	0.35	0.11	
113	114	5	950	875	395	0.35	1.25	
114	111	5	875	786	668	0.35	2.75	
111	111	1						2 of 2
111	115	5	786	775	255.0	0.35	0.86	
115	115	10						save to bank 1
125	122	2	880	806	375	0.35	0.77	
122	122	1						1 of 3



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
 Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
 2003,1985,1981 HYDROLOGY MANUAL
 (c) Copyright 1982-2012 Advanced Engineering Software (aes)
 Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fusco Engineering
 6390 Greenwich Dr.
 Suite 170
 San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
 * VALIANO PROPOSED HYDROLOGY *
 * 100 SERIES *
 * OCTOBER 20, 2014 *

FILE NAME: P-100.DAT
 TIME/DATE OF STUDY: 11:04 10/21/2014

 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
 6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
 NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL									
NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT- / PARK- SIDE / SIDE / WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)			
1	20.0	8.0	0.020/0.020/0.020	0.33	0.10	0.0100	0.010	0.0150	

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.33 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.*

 FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 108.00
 UPSTREAM ELEVATION(FEET) = 1015.00
 DOWNSTREAM ELEVATION(FEET) = 1000.00
 ELEVATION DIFFERENCE(FEET) = 15.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

```

                                P-100.TXT
      THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
      (Reference: Table 3-1B of Hydrology Manual)
      THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
      SUBAREA RUNOFF(CFS) = 0.26
      TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.26

*****
      FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 51
      -----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
      >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
      =====
      ELEVATION DATA: UPSTREAM(FEET) = 1000.00 DOWNSTREAM(FEET) = 950.00
      CHANNEL LENGTH THRU SUBAREA(FEET) = 308.00 CHANNEL SLOPE = 0.1623
      CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
      MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.570
      *USER SPECIFIED(SUBAREA):
      USER-SPECIFIED RUNOFF COEFFICIENT = .3500
      S.C.S. CURVE NUMBER (AMC II) = 0
      TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.81
      TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.69
      AVERAGE FLOW DEPTH(FEET) = 0.12 TRAVEL TIME(MIN.) = 1.09
      Tc(MIN.) = 7.36
      SUBAREA AREA(ACRES) = 1.35 SUBAREA RUNOFF(CFS) = 3.10
      AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
      TOTAL AREA(ACRES) = 1.5 PEAK FLOW RATE(CFS) = 3.33

      END OF SUBAREA CHANNEL FLOW HYDRAULICS:
      DEPTH(FEET) = 0.17 FLOW VELOCITY(FEET/SEC.) = 5.77
      LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 416.00 FEET.

*****
      FLOW PROCESS FROM NODE 102.00 TO NODE 103.00 IS CODE = 51
      -----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
      >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
      =====
      ELEVATION DATA: UPSTREAM(FEET) = 950.00 DOWNSTREAM(FEET) = 863.00
      CHANNEL LENGTH THRU SUBAREA(FEET) = 387.00 CHANNEL SLOPE = 0.2248
      CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
      MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.128
      *USER SPECIFIED(SUBAREA):
      USER-SPECIFIED RUNOFF COEFFICIENT = .3500
      S.C.S. CURVE NUMBER (AMC II) = 0
      TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.78
      TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.70
      AVERAGE FLOW DEPTH(FEET) = 0.22 TRAVEL TIME(MIN.) = 0.84
      Tc(MIN.) = 8.20
      SUBAREA AREA(ACRES) = 2.28 SUBAREA RUNOFF(CFS) = 4.89
      AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
      TOTAL AREA(ACRES) = 3.7 PEAK FLOW RATE(CFS) = 8.00

      END OF SUBAREA CHANNEL FLOW HYDRAULICS:
      DEPTH(FEET) = 0.26 FLOW VELOCITY(FEET/SEC.) = 8.58
      LONGEST FLOWPATH FROM NODE 100.00 TO NODE 103.00 = 803.00 FEET.

*****
      FLOW PROCESS FROM NODE 103.00 TO NODE 104.00 IS CODE = 51
      -----
      >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

```

P-100.TXT

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 863.00 DOWNSTREAM(FEET) = 832.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 200.00 CHANNEL SLOPE = 0.1550
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.930
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.45
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.75
AVERAGE FLOW DEPTH(FEET) = 0.30 TRAVEL TIME(MIN.) = 0.43
Tc(MIN.) = 8.63
SUBAREA AREA(ACRES) = 0.43 SUBAREA RUNOFF(CFS) = 0.89
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.2 PEAK FLOW RATE(CFS) = 8.63
```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.31 FLOW VELOCITY(FEET/SEC.) = 7.75
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 104.00 = 1003.00 FEET.

FLOW PROCESS FROM NODE 104.00 TO NODE 104.00 IS CODE = 1

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

```
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.63
RAINFALL INTENSITY(INCH/HR) = 5.93
TOTAL STREAM AREA(ACRES) = 4.16
PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.63
```

FLOW PROCESS FROM NODE 105.00 TO NODE 106.00 IS CODE = 21

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

```
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 975.00
DOWNSTREAM ELEVATION(FEET) = 967.00
ELEVATION DIFFERENCE(FEET) = 8.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.750
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.947
SUBAREA RUNOFF(CFS) = 0.24
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.24
```

FLOW PROCESS FROM NODE 106.00 TO NODE 107.00 IS CODE = 51

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

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 967.00 DOWNSTREAM(FEET) = 918.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 220.00 CHANNEL SLOPE = 0.2227
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.460
*USER SPECIFIED(SUBAREA):
```

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                                P-100.TXT
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.28
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.55
AVERAGE FLOW DEPTH(FEET) = 0.09 TRAVEL TIME(MIN.) = 0.81
Tc(MIN.) = 7.56
SUBAREA AREA(ACRES) = 0.92 SUBAREA RUNOFF(CFS) = 2.08
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.0 PEAK FLOW RATE(CFS) = 2.31

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.13 FLOW VELOCITY(FEET/SEC.) = 5.59
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 107.00 = 320.00 FEET.
*****
FLOW PROCESS FROM NODE 107.00 TO NODE 104.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 918.00 DOWNSTREAM(FEET) = 832.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 385.00 CHANNEL SLOPE = 0.2234
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.992
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.96
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.86
AVERAGE FLOW DEPTH(FEET) = 0.17 TRAVEL TIME(MIN.) = 0.94
Tc(MIN.) = 8.49
SUBAREA AREA(ACRES) = 1.58 SUBAREA RUNOFF(CFS) = 3.31
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.6 PEAK FLOW RATE(CFS) = 5.45

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.21 FLOW VELOCITY(FEET/SEC.) = 7.56
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 104.00 = 705.00 FEET.
*****
FLOW PROCESS FROM NODE 104.00 TO NODE 104.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 8.49
RAINFALL INTENSITY(INCH/HR) = 5.99
TOTAL STREAM AREA(ACRES) = 2.60
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.45
*****
FLOW PROCESS FROM NODE 109.00 TO NODE 104.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 333.00
UPSTREAM ELEVATION(FEET) = 896.00
DOWNSTREAM ELEVATION(FEET) = 832.00

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                                P-100.TXT
ELEVATION DIFFERENCE(FEET) =      64.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =      6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =      100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      7.288
SUBAREA RUNOFF(CFS) =      2.45
TOTAL AREA(ACRES) =      0.96    TOTAL RUNOFF(CFS) =      2.45

*****
FLOW PROCESS FROM NODE      104.00 TO NODE      104.00 IS CODE =      1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS =      3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM      3 ARE:
TIME OF CONCENTRATION(MIN.) =      6.27
RAINFALL INTENSITY(INCH/HR) =      7.29
TOTAL STREAM AREA(ACRES) =      0.96
PEAK FLOW RATE(CFS) AT CONFLUENCE =      2.45

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
    1         8.63        8.63         5.930         4.16
    2         5.45        8.49         5.992         2.60
    3         2.45        6.27         7.288         0.96

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR      3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)
    1        12.74        6.27         7.288
    2        15.96        8.49         5.992
    3        16.02        8.63         5.930

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      16.02    Tc(MIN.) =      8.63
TOTAL AREA(ACRES) =      7.7
LONGEST FLOWPATH FROM NODE      100.00 TO NODE      104.00 =      1003.00 FEET.

*****
FLOW PROCESS FROM NODE      104.00 TO NODE      110.00 IS CODE =      51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      832.00    DOWNSTREAM(FEET) =      816.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      151.00    CHANNEL SLOPE =      0.1060
CHANNEL BASE(FEET) =      3.00    "Z" FACTOR =      2.000
MANNING'S FACTOR =      0.030    MAXIMUM DEPTH(FEET) =      10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      5.802
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =      0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.01
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =      8.49
AVERAGE FLOW DEPTH(FEET) =      0.50    TRAVEL TIME(MIN.) =      0.30
Tc(MIN.) =      8.93

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                                P-100.TXT
SUBAREA AREA(ACRES) =      0.97      SUBAREA RUNOFF(CFS) =      1.97
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =      8.7        PEAK FLOW RATE(CFS) =      17.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.51    FLOW VELOCITY(FEET/SEC.) = 8.64
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 110.00 = 1154.00 FEET.

*****
FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 10
-----
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
=====
*****
FLOW PROCESS FROM NODE 116.00 TO NODE 117.00 IS CODE = 21
-----
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 85.00
UPSTREAM ELEVATION(FEET) = 882.00
DOWNSTREAM ELEVATION(FEET) = 880.00
ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.866
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.80
TOTAL AREA(ACRES) = 0.30    TOTAL RUNOFF(CFS) = 1.80

*****
FLOW PROCESS FROM NODE 117.00 TO NODE 118.00 IS CODE = 62
-----
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>(STREET TABLE SECTION # 1 USED)<<<<
=====
UPSTREAM ELEVATION(FEET) = 880.00    DOWNSTREAM ELEVATION(FEET) = 874.00
STREET LENGTH(FEET) = 310.00    CURB HEIGHT(INCHES) = 4.0
STREET HALFWIDTH(FEET) = 20.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0200

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 8.16
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.31
HALFSTREET FLOOD WIDTH(FEET) = 14.66
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.80
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.18
STREET FLOW TRAVEL TIME(MIN.) = 1.36    Tc(MIN.) = 6.23
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.318
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.710

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                                P-100.TXT
SUBAREA AREA(ACRES) =      2.44      SUBAREA RUNOFF(CFS) =    12.68
TOTAL AREA(ACRES) =      2.7        PEAK FLOW RATE(CFS) =    14.24

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.38    HALFSTREET FLOOD WIDTH(FEET) = 20.30
FLOW VELOCITY(FEET/SEC.) = 4.31    DEPTH*VELOCITY(FT*FT/SEC.) = 1.63
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
      AND L = 310.0 FT WITH ELEVATION-DROP = 6.0 FT, IS 14.6 CFS,
      WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 118.00
LONGEST FLOWPATH FROM NODE 116.00 TO NODE 118.00 = 395.00 FEET.

*****
FLOW PROCESS FROM NODE 118.00 TO NODE 119.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 869.00 DOWNSTREAM(FEET) = 854.00
FLOW LENGTH(FEET) = 75.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 12.0 INCH PIPE IS 9.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 21.88
ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 14.24
PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.28
LONGEST FLOWPATH FROM NODE 116.00 TO NODE 119.00 = 470.00 FEET.

*****
FLOW PROCESS FROM NODE 119.00 TO NODE 119.00 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.) = 6.28
RAINFALL INTENSITY(INCH/HR) = 7.27
TOTAL STREAM AREA(ACRES) = 2.74
PEAK FLOW RATE(CFS) AT CONFLUENCE = 14.24

*****
FLOW PROCESS FROM NODE 119.10 TO NODE 119.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 75.00
UPSTREAM ELEVATION(FEET) = 876.00
DOWNSTREAM ELEVATION(FEET) = 854.00
ELEVATION DIFFERENCE(FEET) = 22.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.427
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.997
SUBAREA RUNOFF(CFS) = 1.01
TOTAL AREA(ACRES) = 0.36 TOTAL RUNOFF(CFS) = 1.01

*****
FLOW PROCESS FROM NODE 119.00 TO NODE 119.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 2

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CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 5.43
 RAINFALL INTENSITY(INCH/HR) = 8.00
 TOTAL STREAM AREA(ACRES) = 0.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.01

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	14.24	6.28	7.275	2.74
2	1.01	5.43	7.997	0.36

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	13.30	5.43	7.997
2	15.15	6.28	7.275

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 15.15 Tc(MIN.) = 6.28
 TOTAL AREA(ACRES) = 3.1
 LONGEST FLOWPATH FROM NODE 116.00 TO NODE 119.00 = 470.00 FEET.

FLOW PROCESS FROM NODE 119.00 TO NODE 120.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 851.00 DOWNSTREAM(FEET) = 834.00
 FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 12.0 INCH PIPE IS 9.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 22.60
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 15.15
 PIPE TRAVEL TIME(MIN.) = 0.06 Tc(MIN.) = 6.34
 LONGEST FLOWPATH FROM NODE 116.00 TO NODE 120.00 = 550.00 FEET.

FLOW PROCESS FROM NODE 120.00 TO NODE 110.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 834.00 DOWNSTREAM(FEET) = 816.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 145.00 CHANNEL SLOPE = 0.1241
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.036
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 15.85
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.78
 AVERAGE FLOW DEPTH(FEET) = 0.46 TRAVEL TIME(MIN.) = 0.28
 Tc(MIN.) = 6.62
 SUBAREA AREA(ACRES) = 0.57 SUBAREA RUNOFF(CFS) = 1.40
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.619
 TOTAL AREA(ACRES) = 3.7 PEAK FLOW RATE(CFS) = 15.98

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END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.46 FLOW VELOCITY(Feet/Sec.) = 8.80
 LONGEST FLOWPATH FROM NODE 116.00 TO NODE 110.00 = 695.00 FEET.

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	15.98	6.62	7.036	3.67

LONGEST FLOWPATH FROM NODE 116.00 TO NODE 110.00 = 695.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	17.65	8.93	5.802	8.69

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 110.00 = 1154.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	29.06	6.62	7.036
2	30.82	8.93	5.802

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 30.82 Tc(MIN.) = 8.93
 TOTAL AREA(ACRES) = 12.4

FLOW PROCESS FROM NODE 110.00 TO NODE 110.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 110.00 TO NODE 111.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(Feet) = 816.00 DOWNSTREAM(Feet) = 786.00

CHANNEL LENGTH THRU SUBAREA(Feet) = 316.00 CHANNEL SLOPE = 0.0949

CHANNEL BASE(Feet) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(Feet) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.589

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 32.18

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(Feet/Sec.) = 9.89

AVERAGE FLOW DEPTH(Feet) = 0.73 TRAVEL TIME(MIN.) = 0.53

Tc(MIN.) = 9.46

SUBAREA AREA(ACRES) = 1.39 SUBAREA RUNOFF(CFS) = 2.72

AREA-AVERAGE RUNOFF COEFFICIENT = 0.422

TOTAL AREA(ACRES) = 13.8 PEAK FLOW RATE(CFS) = 32.41

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(Feet) = 0.74 FLOW VELOCITY(Feet/Sec.) = 9.86
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 1470.00 FEET.

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*****
FLOW PROCESS FROM NODE    111.00 TO NODE    111.00 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.) =    9.46
RAINFALL INTENSITY(INCH/HR) =    5.59
TOTAL STREAM AREA(ACRES) =    13.75
PEAK FLOW RATE(CFS) AT CONFLUENCE =    32.41
*****
FLOW PROCESS FROM NODE    112.00 TO NODE    113.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =   128.00
UPSTREAM ELEVATION(FEET) =    975.00
DOWNSTREAM ELEVATION(FEET) =    950.00
ELEVATION DIFFERENCE(FEET) =    25.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =   100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.288
SUBAREA RUNOFF(CFS) =    0.28
TOTAL AREA(ACRES) =    0.11    TOTAL RUNOFF(CFS) =    0.28
*****
FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    950.00  DOWNSTREAM(FEET) =    875.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   395.00  CHANNEL SLOPE =  0.1899
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.398
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    1.69
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =    4.70
AVERAGE FLOW DEPTH(FEET) =    0.11  TRAVEL TIME(MIN.) =    1.40
Tc(MIN.) =    7.67
SUBAREA AREA(ACRES) =    1.25    SUBAREA RUNOFF(CFS) =    2.80
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =    1.4    PEAK FLOW RATE(CFS) =    3.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.16  FLOW VELOCITY(FEET/SEC.) =    5.84
LONGEST FLOWPATH FROM NODE    112.00 TO NODE    114.00 =    523.00 FEET.
*****
FLOW PROCESS FROM NODE    114.00 TO NODE    111.00 IS CODE =  51
-----

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 875.00 DOWNSTREAM(FEET) = 786.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 668.00 CHANNEL SLOPE = 0.1332
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.612
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.76
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.44
AVERAGE FLOW DEPTH(FEET) = 0.25 TRAVEL TIME(MIN.) = 1.73
Tc(MIN.) = 9.40
SUBAREA AREA(ACRES) = 2.75 SUBAREA RUNOFF(CFS) = 5.40
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.1 PEAK FLOW RATE(CFS) = 8.07
```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.31 FLOW VELOCITY(FEET/SEC.) = 7.25
LONGEST FLOWPATH FROM NODE 112.00 TO NODE 111.00 = 1191.00 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 111.00 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.) = 9.40
RAINFALL INTENSITY(INCH/HR) = 5.61
TOTAL STREAM AREA(ACRES) = 4.11
PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.07
```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	32.41	9.46	5.589	13.75
2	8.07	9.40	5.612	4.11

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	40.28	9.40	5.612
2	40.45	9.46	5.589

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 40.45 Tc(MIN.) = 9.46
TOTAL AREA(ACRES) = 17.9
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 1470.00 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 115.00 IS CODE = 51

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 786.00 DOWNSTREAM(FEET) = 775.00
```

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CHANNEL LENGTH THRU SUBAREA(FEET) = 255.00  CHANNEL SLOPE = 0.0431
CHANNEL BASE(FEET) = 3.00  "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.395
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 41.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.97
AVERAGE FLOW DEPTH(FEET) = 1.03  TRAVEL TIME(MIN.) = 0.53
Tc(MIN.) = 9.99
SUBAREA AREA(ACRES) = 0.86  SUBAREA RUNOFF(CFS) = 1.62
AREA-AVERAGE RUNOFF COEFFICIENT = 0.403
TOTAL AREA(ACRES) = 18.7  PEAK FLOW RATE(CFS) = 40.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.02  FLOW VELOCITY(FEET/SEC.) = 7.94
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 115.00 = 1725.00 FEET.
*****
FLOW PROCESS FROM NODE 115.00 TO NODE 115.00 IS CODE = 10
-----
>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<
=====
*****
FLOW PROCESS FROM NODE 125.00 TO NODE 122.00 IS CODE = 21
-----
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 375.00
UPSTREAM ELEVATION(FEET) = 880.00
DOWNSTREAM ELEVATION(FEET) = 806.00
ELEVATION DIFFERENCE(FEET) = 74.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 1.96
TOTAL AREA(ACRES) = 0.77  TOTAL RUNOFF(CFS) = 1.96
*****
FLOW PROCESS FROM NODE 122.00 TO NODE 122.00 IS CODE = 1
-----
>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.27
RAINFALL INTENSITY(INCH/HR) = 7.29
TOTAL STREAM AREA(ACRES) = 0.77
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.96
*****
FLOW PROCESS FROM NODE 121.00 TO NODE 122.00 IS CODE = 21
-----
>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<
=====

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```
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 500.00
UPSTREAM ELEVATION(FEET) = 869.00
DOWNSTREAM ELEVATION(FEET) = 806.00
ELEVATION DIFFERENCE(FEET) = 63.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 3.42
TOTAL AREA(ACRES) = 1.34 TOTAL RUNOFF(CFS) = 3.42
```

```
*****
FLOW PROCESS FROM NODE 122.00 TO NODE 122.00 IS CODE = 1
-----
```

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

```
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 6.27
RAINFALL INTENSITY(INCH/HR) = 7.29
TOTAL STREAM AREA(ACRES) = 1.34
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.42
```

```
*****
FLOW PROCESS FROM NODE 123.00 TO NODE 124.00 IS CODE = 21
-----
```

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

```
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 87.00
UPSTREAM ELEVATION(FEET) = 847.00
DOWNSTREAM ELEVATION(FEET) = 831.00
ELEVATION DIFFERENCE(FEET) = 16.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.845
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.623
SUBAREA RUNOFF(CFS) = 0.27
TOTAL AREA(ACRES) = 0.10 TOTAL RUNOFF(CFS) = 0.27
```

```
*****
FLOW PROCESS FROM NODE 124.00 TO NODE 122.00 IS CODE = 51
-----
```

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

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 831.00 DOWNSTREAM(FEET) = 806.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 275.00 CHANNEL SLOPE = 0.0909
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.513
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.85
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 2.84
AVERAGE FLOW DEPTH(FEET) = 0.09 TRAVEL TIME(MIN.) = 1.61
```

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Tc(MIN.) = 7.46
 SUBAREA AREA(ACRES) = 0.51 SUBAREA RUNOFF(CFS) = 1.16
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
 TOTAL AREA(ACRES) = 0.6 PEAK FLOW RATE(CFS) = 1.39

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 0.12 FLOW VELOCITY(FEET/SEC.) = 3.43
 LONGEST FLOWPATH FROM NODE 123.00 TO NODE 122.00 = 362.00 FEET.

FLOW PROCESS FROM NODE 122.00 TO NODE 122.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(MIN.) = 7.46
 RAINFALL INTENSITY(INCH/HR) = 6.51
 TOTAL STREAM AREA(ACRES) = 0.61
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.39

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	1.96	6.27	7.288	0.77
2	3.42	6.27	7.288	1.34
3	1.39	7.46	6.513	0.61

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	6.55	6.27	7.288
2	6.55	6.27	7.288
3	6.20	7.46	6.513

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 6.55 Tc(MIN.) = 6.27
 TOTAL AREA(ACRES) = 2.7
 LONGEST FLOWPATH FROM NODE 121.00 TO NODE 122.00 = 500.00 FEET.

FLOW PROCESS FROM NODE 122.00 TO NODE 129.00 IS CODE = 51

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

=====

ELEVATION DATA: UPSTREAM(FEET) = 806.00 DOWNSTREAM(FEET) = 786.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 250.00 CHANNEL SLOPE = 0.0800
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.796
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.03
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.80
 AVERAGE FLOW DEPTH(FEET) = 0.33 TRAVEL TIME(MIN.) = 0.72
 Tc(MIN.) = 6.99
 SUBAREA AREA(ACRES) = 0.40 SUBAREA RUNOFF(CFS) = 0.95

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AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 3.1          PEAK FLOW RATE(CFS) = 7.42

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.34    FLOW VELOCITY(FEET/SEC.) = 5.96
LONGEST FLOWPATH FROM NODE 121.00 TO NODE 129.00 = 750.00 FEET.

*****
FLOW PROCESS FROM NODE 129.00 TO NODE 129.00 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.) = 6.99
RAINFALL INTENSITY(INCH/HR) = 6.80
TOTAL STREAM AREA(ACRES) = 3.12
PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.42

*****
FLOW PROCESS FROM NODE 127.00 TO NODE 128.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 315.00
UPSTREAM ELEVATION(FEET) = 876.00
DOWNSTREAM ELEVATION(FEET) = 804.00
ELEVATION DIFFERENCE(FEET) = 72.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
SUBAREA RUNOFF(CFS) = 3.16
TOTAL AREA(ACRES) = 1.24    TOTAL RUNOFF(CFS) = 3.16

*****
FLOW PROCESS FROM NODE 128.00 TO NODE 129.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 804.00    DOWNSTREAM(FEET) = 786.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 185.00    CHANNEL SLOPE = 0.0973
CHANNEL BASE(FEET) = 3.00    "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.864
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.64
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.05
AVERAGE FLOW DEPTH(FEET) = 0.21    TRAVEL TIME(MIN.) = 0.61
Tc(MIN.) = 6.88
SUBAREA AREA(ACRES) = 0.40    SUBAREA RUNOFF(CFS) = 0.96
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.6    PEAK FLOW RATE(CFS) = 3.94

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

```

                                P-100.TXT
DEPTH(FEET) = 0.22    FLOW VELOCITY(FEET/SEC.) = 5.10
LONGEST FLOWPATH FROM NODE    127.00 TO NODE    129.00 = 500.00 FEET.
*****
FLOW PROCESS FROM NODE    129.00 TO NODE    129.00 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.) = 6.88
RAINFALL INTENSITY(INCH/HR) = 6.86
TOTAL STREAM AREA(ACRES) = 1.64
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.94

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
    1         7.42        6.99        6.796        3.12
    2         3.94        6.88        6.864        1.64

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
    1        11.29        6.88        6.864
    2        11.32        6.99        6.796

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 11.32    Tc(MIN.) = 6.99
TOTAL AREA(ACRES) = 4.8
LONGEST FLOWPATH FROM NODE    121.00 TO NODE    129.00 = 750.00 FEET.
*****
FLOW PROCESS FROM NODE    129.00 TO NODE    130.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 786.00    DOWNSTREAM(FEET) = 780.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 95.00    CHANNEL SLOPE = 0.0632
CHANNEL BASE(FEET) = 3.00    "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030    MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.642
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 11.41
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.29
AVERAGE FLOW DEPTH(FEET) = 0.46    TRAVEL TIME(MIN.) = 0.25
Tc(MIN.) = 7.24
SUBAREA AREA(ACRES) = 0.08    SUBAREA RUNOFF(CFS) = 0.19
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.8    PEAK FLOW RATE(CFS) = 11.32

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.46    FLOW VELOCITY(FEET/SEC.) = 6.27
LONGEST FLOWPATH FROM NODE    121.00 TO NODE    130.00 = 845.00 FEET.
*****

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```

                                P-100.TXT
FLOW PROCESS FROM NODE      130.00 TO NODE      130.00 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.) =  7.24
RAINFALL INTENSITY(INCH/HR) =  6.64
TOTAL STREAM AREA(ACRES) =    4.84
PEAK FLOW RATE(CFS) AT CONFLUENCE =    11.32

*****
FLOW PROCESS FROM NODE      131.00 TO NODE      132.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  0
INITIAL SUBAREA FLOW-LENGTH(FEET) =  105.00
UPSTREAM ELEVATION(FEET) =  814.00
DOWNSTREAM ELEVATION(FEET) =  804.00
ELEVATION DIFFERENCE(FEET) =  10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =  6.369
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =  100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.212
SUBAREA RUNOFF(CFS) =  0.25
TOTAL AREA(ACRES) =  0.10    TOTAL RUNOFF(CFS) =  0.25

*****
FLOW PROCESS FROM NODE      132.00 TO NODE      130.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =  804.00  DOWNSTREAM(FEET) =  780.00
CHANNEL LENGTH THRU SUBAREA(FEET) =  337.00  CHANNEL SLOPE =  0.0712
CHANNEL BASE(FEET) =  3.00  "Z" FACTOR =  2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =  10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.877
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =  0.60
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  2.36
AVERAGE FLOW DEPTH(FEET) =  0.08  TRAVEL TIME(MIN.) =  2.38
Tc(MIN.) =  8.75
SUBAREA AREA(ACRES) =  0.34    SUBAREA RUNOFF(CFS) =  0.70
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =  0.4    PEAK FLOW RATE(CFS) =  0.91

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.10  FLOW VELOCITY(FEET/SEC.) =  2.77
LONGEST FLOWPATH FROM NODE      131.00 TO NODE      130.00 =  442.00 FEET.

*****
FLOW PROCESS FROM NODE      130.00 TO NODE      130.00 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.) = 8.75
RAINFALL INTENSITY(INCH/HR) = 5.88
TOTAL STREAM AREA(ACRES) = 0.44
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.91

```

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	11.32	7.24	6.642	4.84
2	0.91	8.75	5.877	0.44

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	12.07	7.24	6.642
2	10.92	8.75	5.877

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

```

PEAK FLOW RATE(CFS) = 12.07 Tc(MIN.) = 7.24
TOTAL AREA(ACRES) = 5.3
LONGEST FLOWPATH FROM NODE 121.00 TO NODE 130.00 = 845.00 FEET.

```

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*****
FLOW PROCESS FROM NODE 130.00 TO NODE 115.00 IS CODE = 51

```

```

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

```

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 780.00 DOWNSTREAM(FEET) = 775.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 130.00 CHANNEL SLOPE = 0.0385
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.428
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.68
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 5.73
AVERAGE FLOW DEPTH(FEET) = 0.61 TRAVEL TIME(MIN.) = 0.38
Tc(MIN.) = 7.61
SUBAREA AREA(ACRES) = 2.32 SUBAREA RUNOFF(CFS) = 5.22
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 7.6 PEAK FLOW RATE(CFS) = 17.10

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

DEPTH(FEET) = 0.66 FLOW VELOCITY(FEET/SEC.) = 5.99
LONGEST FLOWPATH FROM NODE 121.00 TO NODE 115.00 = 975.00 FEET.

```

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*****
FLOW PROCESS FROM NODE 115.00 TO NODE 115.00 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.) = 7.61
RAINFALL INTENSITY(INCH/HR) = 6.43

```

```

                                P-100.TXT
TOTAL STREAM AREA(ACRES) =      7.60
PEAK FLOW RATE(CFS) AT CONFLUENCE =      17.10
*****
FLOW PROCESS FROM NODE      133.00 TO NODE      115.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  0
INITIAL SUBAREA FLOW-LENGTH(FEET) =  305.00
UPSTREAM ELEVATION(FEET) =  794.00
DOWNSTREAM ELEVATION(FEET) =  775.00
ELEVATION DIFFERENCE(FEET) =  19.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =  7.337
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =  100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.583
SUBAREA RUNOFF(CFS) =  0.83
TOTAL AREA(ACRES) =  0.36  TOTAL RUNOFF(CFS) =  0.83
*****
FLOW PROCESS FROM NODE      115.00 TO NODE      115.00 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.) =  7.34
RAINFALL INTENSITY(INCH/HR) =  6.58
TOTAL STREAM AREA(ACRES) =  0.36
PEAK FLOW RATE(CFS) AT CONFLUENCE =  0.83

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
  1          17.10      7.61      6.428        7.60
  2           0.83      7.34      6.583        0.36

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
  1          17.52      7.34      6.583
  2          17.91      7.61      6.428

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =  17.91  Tc(MIN.) =  7.61
TOTAL AREA(ACRES) =  8.0
LONGEST FLOWPATH FROM NODE  121.00 TO NODE  115.00 =  975.00 FEET.
*****
FLOW PROCESS FROM NODE      115.00 TO NODE      115.00 IS CODE =  11
-----
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====

```

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** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	17.91	7.61	6.428	7.96

LONGEST FLOWPATH FROM NODE 121.00 TO NODE 115.00 = 975.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	40.67	9.99	5.395	18.72

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 115.00 = 1725.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	48.90	7.61	6.428
2	55.70	9.99	5.395

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 55.70 Tc(MIN.) = 9.99
TOTAL AREA(ACRES) = 26.7

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 26.7 TC(MIN.) = 9.99
PEAK FLOW RATE(CFS) = 55.70

END OF RATIONAL METHOD ANALYSIS

□

BASIN B SEE RUN 2000 FOR THE CONTINUATION OF BASIN B



Job Name: Valiano

Proposed Hydrology
100 Year Design Storm

Job #: 2690-007-02

Date:
NOVEMBER 2014

Run Name:
P-200.DAT

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
200	201	2	1000	970	200	0.35	0.16	
201	202	5	970	924	460	0.35	1.23	
202	203	5	924	906	190	0.35	0.41	
203	203	1						1 of 2
204	205	2	1030	1025	80	0.35	0.13	
205	206	5	1025	970	380	0.35	1.71	
206	207	5	970	930	235	0.35	1.46	
207	203	5	930	906	220	0.35	0.74	
203	203	1						2 of 2
203	208	5	906	870	320	0.35	3.13	
208	210	3	864	826	400			
210	211	9	826	760	400	0.35	2.46	
211	231	5	760	742	260	0.35	1.47	
231	231	1						1 of 2
234	233	2	882	850	100	0.35	0.21	
233	231	5	850	742	520	0.35	2.47	
231	231	1						2 of 2
231	231	10						save to bank 1
212	213	2	874	871	150	0.71	0.22	
213	214	6	871	867	305	0.71	2.17	one side
214	215	3	861	860.5	45			
215	215	1						1 of 2
216	217	2	882	880	100	0.71	0.09	
217	218	6	880	867	650	0.71	2.53	
218	215	3	861	859.9	60			
215	215	1						2 of 2
215	225	3	859.9	804	425			
225	225	1						1 of 3
220	221	2	870.3	868.3	100	0.71	0.28	
221	219	6	866.0	810	460	0.71	1.48	
219	225	3	804.5	804	25			
225	225	1						2 of 3
223	224	2	841	839	100	0.71	0.39	
224	225	6	839	810	310	0.71	2.82	
225	225	1						3 of 3
225	226	3	804	784.8	310			

226	226	1						1 of 3
209	222.4	2	810	800	65	0.71	0.09	
222.4	222.2	6	800	791	230	0.71	0.77	one side
222.2	226	3	785	784.8	10			
226	226	1						2 of 3
227	232	2	804.4	802.8	80	0.71	0.24	
232	226	6	803	790	240	0.71	0.21	one side
226	226	1						3 of 3
226	228	3	784	770	140			
228	229	5	770	768	200	0.35	0.74	
229	230	3	768	759	60			
230	230	10						save to bank 2
268	269	2	818	812	90	0.71	0.08	
269	280	6	812	781	360	0.71	0.59	one side
280	276	3	775	774.5	25			
276	276	1						1 of 2
272	269	2	818	812	90	0.71	0.05	
269	276	6	812	781	350	0.71	0.16	one side
276	276	1						2 of 2
276	284	3	774.5	770	30			
284	284	1						1 of 2
277.5	277	2	777.8	776.8	100	0.71	0.48	
277	278	6	776.8	774	300	0.71	2.03	one side
278	284	3	771	770	25			
284	284	1						2 of 2
284	230	3	770	759	180			
230	230	11						add bank 2
230	230	12						clear bank 2
230	231	5	759	742	140			
231	231	11						add bank1
231	231	12						clear bank 1
231	265	5	742	720	465	0.35	4.26	
265	265	10						save to bank 1
283	285	2	806	760	330	0.71	0.29	
285	282	3	754	753.6	20			
282	282	1						1 of 2
280	281	2	781	760	350	0.71	0.33	
281	282	3	754	753.6	5			
282	282	1						2 of 2
282	286	3	753.6	746	120			

286	286	1						1 of 2
287	288	2	760	758	100	0.71	0.29	
288	289	6	758	754	300	0.71	1.67	one side
289	286	3	748	746	50			
286	286	1						2 of 2
286	290	3	746	735.5	175			
290	290	1						1 of 3
291	292	2	752	750	100	0.71	0.41	
292	293	6	750	742	300	0.71	2.19	one side
293	290	3	736	735.5	50			
290	290	1						2 of 3
281	299	2	760	752	100	0.71	0.12	
299	290	6	752	742	175	0.71	0.17	
290	290	1						3 of 3
290	295	3	739.5	739	50			
295	295	1						1 of 2
295	295	2	739	738.5	50	0.35	0.33	
295	295	1						2 of 2
295	284.2	3	739	730	50			
284.2	265	5	730	720	180			
265	265	11						add bank 1
265	265	12						clear bank 1
265	254	3	720	714	125			
254	253	5	714	692	370	0.71	3.8	
253	246.5	3	692	684.33	140			
246.5	246.5	10						save to bank
253.8	253.7	2	711.9	709.9	100	0.71	0.19	
253.7	253.1	6	709.9	696	340	0.71	0.75	
253.1	253.3	3	690.7	690.3	40			
253.3	253.3	1						1 of 2
253.5	253.4	2	709.11	707.11	100	0.71	0.21	
253.4	253.3	6	707	696	350	0.71	0.63	
253.3	253.3	1						2 of 2
253.3	253.2	3	690.3	690	25			
253.2	250.6	3	690	684.8	240			
250.6	250.6	10						save to bank 2
238	239	2	864	852	80	0.35	0.2	
239	240	5	852	770	370	0.35	2.14	
240	241	3	767	733.7	75			
241	243.5	3	733.7	731	270			
243.5	243.5	1						1 of 2

242	243	2	864	750	400	0.35	1.8	
243	243.5	5	750	731	145	0.71	0.67	
243.5	243.5	1						2 of 2
243.5	244	5	731	726	65			
244	246	3	726	724	75			
246	246.5	5	724	686.5	500	0.71	2.02	
246.5	246.5	11						add bank 1
246.5	246.5	12						clear bank 1
246.5	250	3	684.33	684.21	25			
250	250	10						save to bank 1
247	248	2	862	828	180	0.35	0.3	
248	249	5	828	716	1030	0.35	6.78	
249	249	1						1 of 2
251	252	2	790	780	270	0.35	0.63	
252	249	5	780	718	420	0.35	3.26	
249	249	1						2 of 2
249	250	5	718	686	350			
250	250	11						add bank 1
250	250	12						clear bank 1
250	250.6	3	684.21	684.01	25			
250.6	250.6	1						add bank 2
250.6	250.6	12						clear bank 2
250.6	250.7	3	684.21	684	15			
250.7	257	5	684	672	310			
257	257	1						1 of 2
255	256	2	790	758	400	0.35	1.62	
256	257	5	758	672	600	0.35	3.51	
257	257	1						2 of 2

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
 Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
 2003,1985,1981 HYDROLOGY MANUAL
 (c) Copyright 1982-2012 Advanced Engineering Software (aes)
 Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fuscoe Engineering
 6390 Greenwich Dr.
 Suite 170
 San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
 * VALIANO HYDROLOGY STUDY *
 * PROPOSED BASIN 200 *
 * OCTOBER 20, 2014 *

FILE NAME: P-200.DAT
 TIME/DATE OF STUDY: 17:13 10/20/2014

 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
 6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
 NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
 USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	16.0	8.0	0.020/0.020/0.020	0.33	0.10 0.0100 0.010	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.33 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.*

 FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 200.00
 UPSTREAM ELEVATION(FEET) = 1000.00
 DOWNSTREAM ELEVATION(FEET) = 970.00
 ELEVATION DIFFERENCE(FEET) = 30.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

```

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      THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
      (Reference: Table 3-1B of Hydrology Manual)
      THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
      SUBAREA RUNOFF(CFS) = 0.41
      TOTAL AREA(ACRES) = 0.16 TOTAL RUNOFF(CFS) = 0.41

*****
FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 970.00 DOWNSTREAM(FEET) = 924.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 460.00 CHANNEL SLOPE = 0.1000
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.122
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.73
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 3.94
AVERAGE FLOW DEPTH(FEET) = 0.13 TRAVEL TIME(MIN.) = 1.95
Tc(MIN.) = 8.21
SUBAREA AREA(ACRES) = 1.23 SUBAREA RUNOFF(CFS) = 2.64
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.4 PEAK FLOW RATE(CFS) = 2.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.19 FLOW VELOCITY(FEET/SEC.) = 4.70
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 660.00 FEET.

*****
FLOW PROCESS FROM NODE 202.00 TO NODE 203.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 924.00 DOWNSTREAM(FEET) = 906.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 190.00 CHANNEL SLOPE = 0.0947
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.830
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.40
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.91
AVERAGE FLOW DEPTH(FEET) = 0.20 TRAVEL TIME(MIN.) = 0.65
Tc(MIN.) = 8.86
SUBAREA AREA(ACRES) = 0.41 SUBAREA RUNOFF(CFS) = 0.84
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 3.67

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.22 FLOW VELOCITY(FEET/SEC.) = 4.94
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 203.00 = 850.00 FEET.

*****
FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 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.) = 8.86
RAINFALL INTENSITY(INCH/HR) = 5.83
TOTAL STREAM AREA(ACRES) = 1.80
PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.67
*****
FLOW PROCESS FROM NODE 204.00 TO NODE 205.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 80.00
UPSTREAM ELEVATION(FEET) = 1030.00
DOWNSTREAM ELEVATION(FEET) = 1025.00
ELEVATION DIFFERENCE(FEET) = 5.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.556
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.080
SUBAREA RUNOFF(CFS) = 0.32
TOTAL AREA(ACRES) = 0.13 TOTAL RUNOFF(CFS) = 0.32
*****
FLOW PROCESS FROM NODE 205.00 TO NODE 206.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 1025.00 DOWNSTREAM(FEET) = 970.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 380.00 CHANNEL SLOPE = 0.1447
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.291
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.21
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.81
AVERAGE FLOW DEPTH(FEET) = 0.14 TRAVEL TIME(MIN.) = 1.32
Tc(MIN.) = 7.87
SUBAREA AREA(ACRES) = 1.71 SUBAREA RUNOFF(CFS) = 3.76
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 4.05

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.20 FLOW VELOCITY(FEET/SEC.) = 5.92
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 206.00 = 460.00 FEET.
*****
FLOW PROCESS FROM NODE 206.00 TO NODE 207.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 970.00 DOWNSTREAM(FEET) = 930.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 235.00 CHANNEL SLOPE = 0.1702
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.017
*USER SPECIFIED(SUBAREA):

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USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.59
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.96
AVERAGE FLOW DEPTH(FEET) = 0.23 TRAVEL TIME(MIN.) = 0.56
Tc(MIN.) = 8.44
SUBAREA AREA(ACRES) = 1.46 SUBAREA RUNOFF(CFS) = 3.07
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 3.3 PEAK FLOW RATE(CFS) = 6.95

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.26 FLOW VELOCITY(FEET/SEC.) = 7.52
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 207.00 = 695.00 FEET.

FLOW PROCESS FROM NODE 207.00 TO NODE 203.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 930.00 DOWNSTREAM(FEET) = 906.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 220.00 CHANNEL SLOPE = 0.1091
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.777

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.70
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.67
AVERAGE FLOW DEPTH(FEET) = 0.32 TRAVEL TIME(MIN.) = 0.55
Tc(MIN.) = 8.99
SUBAREA AREA(ACRES) = 0.74 SUBAREA RUNOFF(CFS) = 1.50
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 4.0 PEAK FLOW RATE(CFS) = 8.17

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.33 FLOW VELOCITY(FEET/SEC.) = 6.74
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 203.00 = 915.00 FEET.

FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 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.) = 8.99
RAINFALL INTENSITY(INCH/HR) = 5.78
TOTAL STREAM AREA(ACRES) = 4.04
PEAK FLOW RATE(CFS) AT CONFLUENCE = 8.17

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	3.67	8.86	5.830	1.80
2	8.17	8.99	5.777	4.04

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	11.73	8.86	5.830
2	11.81	8.99	5.777

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 11.81 Tc(MIN.) = 8.99

TOTAL AREA(ACRES) = 5.8

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 203.00 = 915.00 FEET.

FLOW PROCESS FROM NODE 203.00 TO NODE 208.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 906.00 DOWNSTREAM(FEET) = 870.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 320.00 CHANNEL SLOPE = 0.1125

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.526

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 14.83

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.34

AVERAGE FLOW DEPTH(FEET) = 0.45 TRAVEL TIME(MIN.) = 0.64

Tc(MIN.) = 9.63

SUBAREA AREA(ACRES) = 3.13 SUBAREA RUNOFF(CFS) = 6.05

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 9.0 PEAK FLOW RATE(CFS) = 17.35

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.50 FLOW VELOCITY(FEET/SEC.) = 8.70

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 208.00 = 1235.00 FEET.

FLOW PROCESS FROM NODE 208.00 TO NODE 210.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 864.00 DOWNSTREAM(FEET) = 826.00

FLOW LENGTH(FEET) = 400.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.3 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 17.46

ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 17.35

PIPE TRAVEL TIME(MIN.) = 0.38 Tc(MIN.) = 10.01

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 210.00 = 1635.00 FEET.

FLOW PROCESS FROM NODE 210.00 TO NODE 211.00 IS CODE = 51

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

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

ELEVATION DATA: UPSTREAM(FEET) = 826.00 DOWNSTREAM(FEET) = 760.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 2.46 CHANNEL SLOPE = 26.8293

CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.389

*USER SPECIFIED(SUBAREA):

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USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 19.67
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 55.71
AVERAGE FLOW DEPTH(FEET) = 0.11 TRAVEL TIME(MIN.) = 0.00
Tc(MIN.) = 10.01
SUBAREA AREA(ACRES) = 2.46 SUBAREA RUNOFF(CFS) = 4.64
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 11.4 PEAK FLOW RATE(CFS) = 21.56

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.12 FLOW VELOCITY(FEET/SEC.) = 56.82
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 211.00 = 1637.46 FEET.
*****
FLOW PROCESS FROM NODE 211.00 TO NODE 231.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 760.00 DOWNSTREAM(FEET) = 742.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 260.00 CHANNEL SLOPE = 0.0692
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/ HOUR) = 5.209
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 22.90
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 8.02
AVERAGE FLOW DEPTH(FEET) = 0.66 TRAVEL TIME(MIN.) = 0.54
Tc(MIN.) = 10.55
SUBAREA AREA(ACRES) = 1.47 SUBAREA RUNOFF(CFS) = 2.68
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 12.9 PEAK FLOW RATE(CFS) = 23.52

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.67 FLOW VELOCITY(FEET/SEC.) = 8.02
LONGEST FLOWPATH FROM NODE 204.00 TO NODE 231.00 = 1897.46 FEET.
*****
FLOW PROCESS FROM NODE 231.00 TO NODE 231.00 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.) = 10.55
RAINFALL INTENSITY(INCH/HR) = 5.21
TOTAL STREAM AREA(ACRES) = 12.90
PEAK FLOW RATE(CFS) AT CONFLUENCE = 23.52
*****
FLOW PROCESS FROM NODE 234.00 TO NODE 233.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 882.00
DOWNSTREAM ELEVATION(FEET) = 850.00

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ELEVATION DIFFERENCE(FEET) =      32.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =      6.267
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      7.288
SUBAREA RUNOFF(CFS) =           0.54
TOTAL AREA(ACRES) =           0.21   TOTAL RUNOFF(CFS) =           0.54

*****
FLOW PROCESS FROM NODE      233.00 TO NODE      231.00 IS CODE =   51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      850.00  DOWNSTREAM(FEET) =      742.00
CHANNEL LENGTH THRU SUBAREA(FEET) =      520.00  CHANNEL SLOPE =      0.2077
CHANNEL BASE(FEET) =       3.00  "Z" FACTOR =      2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =      10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =      6.390
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =      0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =           3.32
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =      6.11
AVERAGE FLOW DEPTH(FEET) =      0.16  TRAVEL TIME(MIN.) =      1.42
Tc(MIN.) =       7.68
SUBAREA AREA(ACRES) =       2.47   SUBAREA RUNOFF(CFS) =       5.52
AREA-AVERAGE RUNOFF COEFFICIENT =      0.350
TOTAL AREA(ACRES) =       2.7   PEAK FLOW RATE(CFS) =           5.99

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =      0.23  FLOW VELOCITY(FEET/SEC.) =      7.68
LONGEST FLOWPATH FROM NODE      234.00 TO NODE      231.00 =      620.00 FEET.

*****
FLOW PROCESS FROM NODE      231.00 TO NODE      231.00 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.) =      7.68
RAINFALL INTENSITY(INCH/HR) =      6.39
TOTAL STREAM AREA(ACRES) =       2.68
PEAK FLOW RATE(CFS) AT CONFLUENCE =           5.99

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
  1         23.52      10.55         5.209         12.90
  2          5.99       7.68         6.390          2.68

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)
  1         25.17       7.68         6.390
  2         28.41      10.55         5.209

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      28.41  Tc(MIN.) =      10.55

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TOTAL AREA(ACRES) = 15.6
 LONGEST FLOWPATH FROM NODE 204.00 TO NODE 231.00 = 1897.46 FEET.

FLOW PROCESS FROM NODE 231.00 TO NODE 231.00 IS CODE = 10

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

FLOW PROCESS FROM NODE 212.00 TO NODE 213.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .7100

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 150.00

UPSTREAM ELEVATION(FEET) = 874.00

DOWNSTREAM ELEVATION(FEET) = 871.00

ELEVATION DIFFERENCE(FEET) = 3.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 80.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431

NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 1.32

TOTAL AREA(ACRES) = 0.22 TOTAL RUNOFF(CFS) = 1.32

FLOW PROCESS FROM NODE 213.00 TO NODE 214.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>(STREET TABLE SECTION # 1 USED)<<<<

UPSTREAM ELEVATION(FEET) = 871.00 DOWNSTREAM ELEVATION(FEET) = 867.00

STREET LENGTH(FEET) = 305.00 CURB HEIGHT(INCHES) = 4.0

STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.77

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.31

HALFSTREET FLOOD WIDTH(FEET) = 14.72

AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.12

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.98

STREET FLOW TRAVEL TIME(MIN.) = 1.63 Tc(MIN.) = 6.61

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.041

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .7100

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.710

SUBAREA AREA(ACRES) = 2.17 SUBAREA RUNOFF(CFS) = 10.85

```

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TOTAL AREA(ACRES) =          2.4      PEAK FLOW RATE(CFS) =          11.95

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.34      HALFSTREET FLOOD WIDTH(FEET) = 16.23
FLOW VELOCITY(FEET/SEC.) = 3.30      DEPTH*VELOCITY(FT*FT/SEC.) = 1.11
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
      AND L = 305.0 FT WITH ELEVATION-DROP = 4.0 FT, IS 12.4 CFS,
      WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 214.00
LONGEST FLOWPATH FROM NODE 212.00 TO NODE 214.00 = 455.00 FEET.

*****
FLOW PROCESS FROM NODE 214.00 TO NODE 215.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 861.00 DOWNSTREAM(FEET) = 860.50
FLOW LENGTH(FEET) = 45.00 MANNING'S N = 0.030
DEPTH OF FLOW IN 27.0 INCH PIPE IS 19.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.82
ESTIMATED PIPE DIAMETER(INCH) = 27.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 11.95
PIPE TRAVEL TIME(MIN.) = 0.20 Tc(MIN.) = 6.81
LONGEST FLOWPATH FROM NODE 212.00 TO NODE 215.00 = 500.00 FEET.

*****
FLOW PROCESS FROM NODE 215.00 TO NODE 215.00 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.) = 6.81
RAINFALL INTENSITY(INCH/HR) = 6.91
TOTAL STREAM AREA(ACRES) = 2.39
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.95

*****
FLOW PROCESS FROM NODE 216.00 TO NODE 217.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 882.00
DOWNSTREAM ELEVATION(FEET) = 880.00
ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
      THE MAXIMUM OVERLAND FLOW LENGTH = 80.00
      (Reference: Table 3-1B of Hydrology Manual)
      THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.54
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) = 0.54

*****
FLOW PROCESS FROM NODE 217.00 TO NODE 218.00 IS CODE = 62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

```

>>>>(STREET TABLE SECTION # 1 USED)<<<<

=====

UPSTREAM ELEVATION(FEET) = 880.00 DOWNSTREAM ELEVATION(FEET) = 867.00
 STREET LENGTH(FEET) = 650.00 CURB HEIGHT(INCHES) = 4.0
 STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

*TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 6.22
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.28
 HALFSTREET FLOOD WIDTH(FEET) = 13.16
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.59
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.01
 STREET FLOW TRAVEL TIME(MIN.) = 3.02 Tc(MIN.) = 8.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.226
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
 SUBAREA AREA(ACRES) = 2.53 SUBAREA RUNOFF(CFS) = 11.18
 TOTAL AREA(ACRES) = 2.6 PEAK FLOW RATE(CFS) = 11.58

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 16.23
 FLOW VELOCITY(FEET/SEC.) = 4.07 DEPTH*VELOCITY(FT*FT/SEC.) = 1.38
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 650.0 FT WITH ELEVATION-DROP = 13.0 FT, IS 15.1 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 218.00
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 218.00 = 750.00 FEET.

FLOW PROCESS FROM NODE 218.00 TO NODE 215.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 860.50 DOWNSTREAM(FEET) = 859.90
 FLOW LENGTH(FEET) = 60.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 13.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.89
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 11.58
 PIPE TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 8.15
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 215.00 = 810.00 FEET.

FLOW PROCESS FROM NODE 215.00 TO NODE 215.00 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.) = 8.15
 RAINFALL INTENSITY(INCH/HR) = 6.15

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TOTAL STREAM AREA(ACRES) = 2.62
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.58

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	11.95	6.81	6.909	2.39
2	11.58	8.15	6.154	2.62

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	21.63	6.81	6.909
2	22.22	8.15	6.154

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 22.22 Tc(MIN.) = 8.15
TOTAL AREA(ACRES) = 5.0
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 215.00 = 810.00 FEET.

FLOW PROCESS FROM NODE 215.00 TO NODE 225.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 859.90 DOWNSTREAM(FEET) = 804.00
FLOW LENGTH(FEET) = 425.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 12.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 20.65
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 22.22
PIPE TRAVEL TIME(MIN.) = 0.34 Tc(MIN.) = 8.49
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 225.00 = 1235.00 FEET.

FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 8.49
RAINFALL INTENSITY(INCH/HR) = 5.99
TOTAL STREAM AREA(ACRES) = 5.01
PEAK FLOW RATE(CFS) AT CONFLUENCE = 22.22

FLOW PROCESS FROM NODE 220.00 TO NODE 221.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 870.30
DOWNSTREAM ELEVATION(FEET) = 868.30
ELEVATION DIFFERENCE(FEET) = 2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984

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WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 80.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) = 1.68
 TOTAL AREA(ACRES) = 0.28 TOTAL RUNOFF(CFS) = 1.68

FLOW PROCESS FROM NODE 221.00 TO NODE 219.00 IS CODE = 62

>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>(STREET TABLE SECTION # 1 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 866.00 DOWNSTREAM ELEVATION(FEET) = 810.00
 STREET LENGTH(FEET) = 460.00 CURB HEIGHT(INCHES) = 4.0
 STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.58
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.20
 HALFSTREET FLOOD WIDTH(FEET) = 9.03
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 6.83
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 1.36
 STREET FLOW TRAVEL TIME(MIN.) = 1.12 Tc(MIN.) = 6.11
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.411
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
 SUBAREA AREA(ACRES) = 1.48 SUBAREA RUNOFF(CFS) = 7.79
 TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 9.26

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.24 HALFSTREET FLOOD WIDTH(FEET) = 10.91
 FLOW VELOCITY(FEET/SEC.) = 7.78 DEPTH*VELOCITY(FT*FT/SEC.) = 1.84
 LONGEST FLOWPATH FROM NODE 220.00 TO NODE 219.00 = 560.00 FEET.

FLOW PROCESS FROM NODE 219.00 TO NODE 225.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 804.50 DOWNSTREAM(FEET) = 804.00
 FLOW LENGTH(FEET) = 25.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 8.51
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.26
 PIPE TRAVEL TIME(MIN.) = 0.05 Tc(MIN.) = 6.16
 LONGEST FLOWPATH FROM NODE 220.00 TO NODE 225.00 = 585.00 FEET.

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 FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.16
 RAINFALL INTENSITY(INCH/HR) = 7.37
 TOTAL STREAM AREA(ACRES) = 1.76
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.26

 FLOW PROCESS FROM NODE 223.00 TO NODE 224.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(Feet) = 100.00
 UPSTREAM ELEVATION(Feet) = 841.00
 DOWNSTREAM ELEVATION(Feet) = 839.00
 ELEVATION DIFFERENCE(Feet) = 2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 80.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) = 2.33
 TOTAL AREA(ACRES) = 0.39 TOTAL RUNOFF(CFS) = 2.33

 FLOW PROCESS FROM NODE 224.00 TO NODE 225.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 1 USED)<<<<<

=====

UPSTREAM ELEVATION(Feet) = 839.00 DOWNSTREAM ELEVATION(Feet) = 810.00
 STREET LENGTH(Feet) = 310.00 CURB HEIGHT(INCHES) = 4.0
 STREET HALFWIDTH(Feet) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(Feet) = 8.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 2
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 9.99
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(Feet) = 0.20
 HALFSTREET FLOOD WIDTH(Feet) = 9.09
 AVERAGE FLOW VELOCITY(Feet/Sec.) = 6.03
 PRODUCT OF DEPTH&VELOCITY(Feet*Feet/Sec.) = 1.20
 STREET FLOW TRAVEL TIME(MIN.) = 0.86 Tc(MIN.) = 5.84
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.627
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100

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S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
SUBAREA AREA(ACRES) = 2.82 SUBAREA RUNOFF(CFS) = 15.27
TOTAL AREA(ACRES) = 3.2 PEAK FLOW RATE(CFS) = 17.38

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.24 HALFSTREET FLOOD WIDTH(FEET) = 11.22
FLOW VELOCITY(FEET/SEC.) = 6.90 DEPTH*VELOCITY(FT*FT/SEC.) = 1.67
LONGEST FLOWPATH FROM NODE 223.00 TO NODE 225.00 = 410.00 FEET.

FLOW PROCESS FROM NODE 225.00 TO NODE 225.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 5.84
RAINFALL INTENSITY(INCH/HR) = 7.63
TOTAL STREAM AREA(ACRES) = 3.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 17.38

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	22.22	8.49	5.993	5.01
2	9.26	6.16	7.373	1.76
3	17.38	5.84	7.627	3.21

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	43.63	5.84	7.627
2	44.13	6.16	7.373
3	43.41	8.49	5.993

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 44.13 Tc(MIN.) = 6.16
TOTAL AREA(ACRES) = 10.0
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 225.00 = 1235.00 FEET.

FLOW PROCESS FROM NODE 225.00 TO NODE 226.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 804.00 DOWNSTREAM(FEET) = 784.80
FLOW LENGTH(FEET) = 310.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 16.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 19.00
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 44.13
PIPE TRAVEL TIME(MIN.) = 0.27 Tc(MIN.) = 6.43
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 226.00 = 1545.00 FEET.

FLOW PROCESS FROM NODE 226.00 TO NODE 226.00 IS CODE = 1

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

```
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 6.43
RAINFALL INTENSITY(INCH/HR) = 7.17
TOTAL STREAM AREA(ACRES) = 9.98
PEAK FLOW RATE(CFS) AT CONFLUENCE = 44.13
```

```
FLOW PROCESS FROM NODE 209.00 TO NODE 222.40 IS CODE = 21
```

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

```
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 65.00
UPSTREAM ELEVATION(FEET) = 810.00
DOWNSTREAM ELEVATION(FEET) = 800.00
ELEVATION DIFFERENCE(FEET) = 10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 2.627
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.54
TOTAL AREA(ACRES) = 0.09 TOTAL RUNOFF(CFS) = 0.54
```

```
FLOW PROCESS FROM NODE 222.40 TO NODE 222.20 IS CODE = 62
```

```
>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>(STREET TABLE SECTION # 1 USED)<<<<<
```

```
=====
UPSTREAM ELEVATION(FEET) = 800.00 DOWNSTREAM ELEVATION(FEET) = 791.00
STREET LENGTH(FEET) = 230.00 CURB HEIGHT(INCHES) = 4.0
STREET HALFWIDTH(FEET) = 16.00
```

```
DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020
```

```
SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150
```

```
**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.84
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.19
HALFSTREET FLOOD WIDTH(FEET) = 8.66
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.79
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.72
STREET FLOW TRAVEL TIME(MIN.) = 1.01 Tc(MIN.) = 3.64
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
SUBAREA AREA(ACRES) = 0.77 SUBAREA RUNOFF(CFS) = 4.61
TOTAL AREA(ACRES) = 0.9 PEAK FLOW RATE(CFS) = 5.15
```

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END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.23 HALFSTREET FLOOD WIDTH(FEET) = 10.84
 FLOW VELOCITY(FEET/SEC.) = 4.37 DEPTH*VELOCITY(FT*FT/SEC.) = 1.03
 LONGEST FLOWPATH FROM NODE 209.00 TO NODE 222.20 = 295.00 FEET.

 FLOW PROCESS FROM NODE 229.00 TO NODE 226.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	785.00	DOWNSTREAM(FEET) =	784.80
FLOW LENGTH(FEET) =	10.00	MANNING'S N =	0.013
DEPTH OF FLOW IN	15.0 INCH	PIPE IS	8.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =	7.36		
ESTIMATED PIPE DIAMETER(INCH) =	15.00	NUMBER OF PIPES =	1
PIPE-FLOW(CFS) =	5.15		
PIPE TRAVEL TIME(MIN.) =	0.02	Tc(MIN.) =	3.66
LONGEST FLOWPATH FROM NODE	209.00	TO NODE	226.00 =
			305.00 FEET.

 FLOW PROCESS FROM NODE 226.00 TO NODE 226.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS =	3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:	
TIME OF CONCENTRATION(MIN.) =	3.66
RAINFALL INTENSITY(INCH/HR) =	8.43
TOTAL STREAM AREA(ACRES) =	0.86
PEAK FLOW RATE(CFS) AT CONFLUENCE =	5.15

 FLOW PROCESS FROM NODE 227.00 TO NODE 232.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT =	.7100
S.C.S. CURVE NUMBER (AMC II) =	0
INITIAL SUBAREA FLOW-LENGTH(FEET) =	80.00
UPSTREAM ELEVATION(FEET) =	804.40
DOWNSTREAM ELEVATION(FEET) =	802.80
ELEVATION DIFFERENCE(FEET) =	1.60
SUBAREA OVERLAND TIME OF FLOW(MIN.) =	4.984
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =	8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.	
SUBAREA RUNOFF(CFS) =	1.44
TOTAL AREA(ACRES) =	0.24
TOTAL RUNOFF(CFS) =	1.44

 FLOW PROCESS FROM NODE 232.00 TO NODE 226.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 1 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) =	803.00	DOWNSTREAM ELEVATION(FEET) =	790.00
STREET LENGTH(FEET) =	240.00	CURB HEIGHT(INCHES) =	4.0
STREET HALFWIDTH(FEET) =	16.00		

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =	8.00
INSIDE STREET CROSSFALL(DECIMAL) =	0.020
OUTSIDE STREET CROSSFALL(DECIMAL) =	0.020

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SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.00
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(Feet) = 0.16
 HALFSTREET FLOOD WIDTH(Feet) = 7.11
 AVERAGE FLOW VELOCITY(Feet/Sec.) = 3.94
 PRODUCT OF DEPTH&VELOCITY(Feet*Feet/Sec.) = 0.63
 STREET FLOW TRAVEL TIME(Min.) = 1.01 Tc(Min.) = 6.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.497
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
 SUBAREA AREA(ACRES) = 0.21 SUBAREA RUNOFF(CFS) = 1.12
 TOTAL AREA(ACRES) = 0.4 PEAK FLOW RATE(CFS) = 2.40

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(Feet) = 0.17 HALFSTREET FLOOD WIDTH(Feet) = 7.66
 FLOW VELOCITY(Feet/Sec.) = 4.07 DEPTH*VELOCITY(Feet*Feet/Sec.) = 0.70
 LONGEST FLOWPATH FROM NODE 227.00 TO NODE 226.00 = 320.00 FEET.

FLOW PROCESS FROM NODE 226.00 TO NODE 226.00 IS CODE = 1

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

=====

TOTAL NUMBER OF STREAMS = 3
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
 TIME OF CONCENTRATION(Min.) = 6.00
 RAINFALL INTENSITY(INCH/HR) = 7.50
 TOTAL STREAM AREA(ACRES) = 0.45
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 2.40

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (Min.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	44.13	6.43	7.171	9.98
2	5.15	3.66	8.431	0.86
3	2.40	6.00	7.497	0.45

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (Min.)	INTENSITY (INCH/HOUR)
1	44.14	3.66	8.431
2	49.18	6.00	7.497
3	50.80	6.43	7.171

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 50.80 Tc(Min.) = 6.43
 TOTAL AREA(ACRES) = 11.3
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 226.00 = 1545.00 FEET.

FLOW PROCESS FROM NODE 226.00 TO NODE 228.00 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) = 784.00 DOWNSTREAM(FEET) = 770.00
FLOW LENGTH(FEET) = 140.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 24.0 INCH PIPE IS 15.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 23.70
ESTIMATED PIPE DIAMETER(INCH) = 24.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 50.80
PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 6.53
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 228.00 = 1685.00 FEET.

*****
FLOW PROCESS FROM NODE 228.00 TO NODE 229.00 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 770.00 DOWNSTREAM(FEET) = 768.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 200.00 CHANNEL SLOPE = 0.0100
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.665
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 51.66
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 4.96
AVERAGE FLOW DEPTH(FEET) = 1.65 TRAVEL TIME(MIN.) = 0.67
Tc(MIN.) = 7.20
SUBAREA AREA(ACRES) = 0.74 SUBAREA RUNOFF(CFS) = 1.73
AREA-AVERAGE RUNOFF COEFFICIENT = 0.688
TOTAL AREA(ACRES) = 12.0 PEAK FLOW RATE(CFS) = 55.15

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 1.70 FLOW VELOCITY(FEET/SEC.) = 5.05
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 229.00 = 1885.00 FEET.

*****
FLOW PROCESS FROM NODE 229.00 TO NODE 230.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 768.00 DOWNSTREAM(FEET) = 759.00
FLOW LENGTH(FEET) = 60.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 16.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 27.54
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 55.15
PIPE TRAVEL TIME(MIN.) = 0.04 Tc(MIN.) = 7.23
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 230.00 = 1945.00 FEET.

*****
FLOW PROCESS FROM NODE 230.00 TO NODE 230.00 IS CODE = 10
-----
>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE 268.00 TO NODE 269.00 IS CODE = 21
-----

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

=====

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .7100

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 90.00

UPSTREAM ELEVATION(FEET) = 818.00

DOWNSTREAM ELEVATION(FEET) = 812.00

ELEVATION DIFFERENCE(FEET) = 6.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.539

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431

NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 0.48

TOTAL AREA(ACRES) = 0.08 TOTAL RUNOFF(CFS) = 0.48

FLOW PROCESS FROM NODE 269.00 TO NODE 280.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>(STREET TABLE SECTION # 1 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 812.00 DOWNSTREAM ELEVATION(FEET) = 781.00

STREET LENGTH(FEET) = 360.00 CURB HEIGHT(INCHES) = 4.0

STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00

INSIDE STREET CROSSFALL(DECIMAL) = 0.020

OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1

STREET PARKWAY CROSSFALL(DECIMAL) = 0.020

Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150

Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.24

STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:

STREET FLOW DEPTH(FEET) = 0.16

HALFSTREET FLOOD WIDTH(FEET) = 6.86

AVERAGE FLOW VELOCITY(FEET/SEC.) = 4.76

PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.74

STREET FLOW TRAVEL TIME(MIN.) = 1.26 Tc(MIN.) = 4.80

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431

NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .7100

S.C.S. CURVE NUMBER (AMC II) = 0

AREA-AVERAGE RUNOFF COEFFICIENT = 0.710

SUBAREA AREA(ACRES) = 0.59 SUBAREA RUNOFF(CFS) = 3.53

TOTAL AREA(ACRES) = 0.7 PEAK FLOW RATE(CFS) = 4.01

END OF SUBAREA STREET FLOW HYDRAULICS:

DEPTH(FEET) = 0.19 HALFSTREET FLOOD WIDTH(FEET) = 8.47

FLOW VELOCITY(FEET/SEC.) = 5.58 DEPTH*VELOCITY(FT*FT/SEC.) = 1.05

LONGEST FLOWPATH FROM NODE 268.00 TO NODE 280.00 = 450.00 FEET.

FLOW PROCESS FROM NODE 280.00 TO NODE 276.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 775.00 DOWNSTREAM(FEET) = 774.50

FLOW LENGTH(FEET) = 25.00 MANNING'S N = 0.013

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DEPTH OF FLOW IN 12.0 INCH PIPE IS 8.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.81
ESTIMATED PIPE DIAMETER(INCH) = 12.00    NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.01
PIPE TRAVEL TIME(MIN.) = 0.06    Tc(MIN.) = 4.86
LONGEST FLOWPATH FROM NODE 268.00 TO NODE 276.00 = 475.00 FEET.

*****
FLOW PROCESS FROM NODE 276.00 TO NODE 276.00 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.) = 4.86
RAINFALL INTENSITY(INCH/HR) = 8.43
TOTAL STREAM AREA(ACRES) = 0.67
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.01

*****
FLOW PROCESS FROM NODE 272.00 TO NODE 269.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 90.00
UPSTREAM ELEVATION(FEET) = 818.00
DOWNSTREAM ELEVATION(FEET) = 812.00
ELEVATION DIFFERENCE(FEET) = 6.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.539
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 0.30
TOTAL AREA(ACRES) = 0.05    TOTAL RUNOFF(CFS) = 0.30

*****
FLOW PROCESS FROM NODE 269.00 TO NODE 276.00 IS CODE = 62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 1 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) = 812.00    DOWNSTREAM ELEVATION(FEET) = 781.00
STREET LENGTH(FEET) = 350.00    CURB HEIGHT(INCHES) = 4.0
STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.77
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.11
HALFSTREET FLOOD WIDTH(FEET) = 4.57
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.66
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.40
STREET FLOW TRAVEL TIME(MIN.) = 1.59    Tc(MIN.) = 5.13

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100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.290
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
SUBAREA AREA(ACRES) = 0.16      SUBAREA RUNOFF(CFS) = 0.94
TOTAL AREA(ACRES) = 0.2        PEAK FLOW RATE(CFS) = 1.24

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.13  HALFSTREET FLOOD WIDTH(FEET) = 5.44
FLOW VELOCITY(FEET/SEC.) = 4.16  DEPTH*VELOCITY(FT*FT/SEC.) = 0.53
LONGEST FLOWPATH FROM NODE 272.00 TO NODE 276.00 = 440.00 FEET.

*****
FLOW PROCESS FROM NODE 276.00 TO NODE 276.00 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.) = 5.13
RAINFALL INTENSITY(INCH/HR) = 8.29
TOTAL STREAM AREA(ACRES) = 0.21
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.24

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)    (ACRE)
  1          4.01      4.86      8.431          0.67
  2          1.24      5.13      8.290          0.21

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
  1          5.18      4.86      8.431
  2          5.18      5.13      8.290

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 5.18  Tc(MIN.) = 4.86
TOTAL AREA(ACRES) = 0.9
LONGEST FLOWPATH FROM NODE 268.00 TO NODE 276.00 = 475.00 FEET.

*****
FLOW PROCESS FROM NODE 276.00 TO NODE 284.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 774.50  DOWNSTREAM(FEET) = 770.00
FLOW LENGTH(FEET) = 30.00  MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
DEPTH OF FLOW IN 12.0 INCH PIPE IS 5.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 15.69
ESTIMATED PIPE DIAMETER(INCH) = 12.00  NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 5.18
PIPE TRAVEL TIME(MIN.) = 0.03  Tc(MIN.) = 4.89
LONGEST FLOWPATH FROM NODE 268.00 TO NODE 284.00 = 505.00 FEET.

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FLOW PROCESS FROM NODE      284.00 TO NODE      284.00 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.) = 4.89
RAINFALL INTENSITY(INCH/HR) = 8.43
TOTAL STREAM AREA(ACRES) = 0.88
PEAK FLOW RATE(CFS) AT CONFLUENCE = 5.18

*****
FLOW PROCESS FROM NODE      277.50 TO NODE      277.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
UPSTREAM ELEVATION(FEET) = 777.80
DOWNSTREAM ELEVATION(FEET) = 776.80
ELEVATION DIFFERENCE(FEET) = 1.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.660
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 65.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.783
SUBAREA RUNOFF(CFS) = 2.65
TOTAL AREA(ACRES) = 0.48 TOTAL RUNOFF(CFS) = 2.65

*****
FLOW PROCESS FROM NODE      277.00 TO NODE      278.00 IS CODE =  62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 1 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) = 776.80 DOWNSTREAM ELEVATION(FEET) = 774.00
STREET LENGTH(FEET) = 300.00 CURB HEIGHT(INCHES) = 4.0
STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.35
***STREET FLOW SPLITS OVER STREET-CROWN***
FULL DEPTH(FEET) = 0.34 FLOOD WIDTH(FEET) = 16.23
FULL HALF-STREET VELOCITY(FEET/SEC.) = 2.78
SPLIT DEPTH(FEET) = 0.10 SPLIT FLOOD WIDTH(FEET) = 4.33
SPLIT FLOW(CFS) = 0.22 SPLIT VELOCITY(FEET/SEC.) = 1.18
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.34
HALFSTREET FLOOD WIDTH(FEET) = 16.23
AVERAGE FLOW VELOCITY(FEET/SEC.) = 2.78
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.94
STREET FLOW TRAVEL TIME(MIN.) = 1.80 Tc(MIN.) = 7.46

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100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.515
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
 SUBAREA AREA(ACRES) = 2.03 SUBAREA RUNOFF(CFS) = 9.39
 TOTAL AREA(ACRES) = 2.5 PEAK FLOW RATE(CFS) = 11.61

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.34 HALFSTREET FLOOD WIDTH(FEET) = 16.23
 FLOW VELOCITY(FEET/SEC.) = 2.78 DEPTH*VELOCITY(FT*FT/SEC.) = 0.94
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 300.0 FT WITH ELEVATION-DROP = 2.8 FT, IS 11.2 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 278.00
 LONGEST FLOWPATH FROM NODE 277.50 TO NODE 278.00 = 400.00 FEET.

 FLOW PROCESS FROM NODE 278.00 TO NODE 284.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	771.00	DOWNSTREAM(FEET) =	770.00
FLOW LENGTH(FEET) =	25.00	MANNING'S N =	0.013
DEPTH OF FLOW IN	15.0 INCH PIPE IS	11.6 INCHES	
PIPE-FLOW VELOCITY(FEET/SEC.) =	11.36		
ESTIMATED PIPE DIAMETER(INCH) =	15.00	NUMBER OF PIPES =	1
PIPE-FLOW(CFS) =	11.61		
PIPE TRAVEL TIME(MIN.) =	0.04	Tc(MIN.) =	7.49
LONGEST FLOWPATH FROM NODE	277.50 TO NODE	284.00 =	425.00 FEET.

 FLOW PROCESS FROM NODE 284.00 TO NODE 284.00 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.) =	7.49
RAINFALL INTENSITY(INCH/HR) =	6.49
TOTAL STREAM AREA(ACRES) =	2.51
PEAK FLOW RATE(CFS) AT CONFLUENCE =	11.61

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	5.18	4.89	8.431	0.88
2	11.61	7.49	6.494	2.51

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	12.76	4.89	8.431
2	15.60	7.49	6.494

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) = 15.60 Tc(MIN.) = 7.49
 TOTAL AREA(ACRES) = 3.4
 LONGEST FLOWPATH FROM NODE 268.00 TO NODE 284.00 = 505.00 FEET.

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*****
FLOW PROCESS FROM NODE      284.00 TO NODE      230.00 IS CODE =  31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   770.00  DOWNSTREAM(FEET) =   759.00
FLOW LENGTH(FEET) =   180.00  MANNING'S N =   0.013
DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  14.76
ESTIMATED PIPE DIAMETER(INCH) =  18.00  NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =   15.60
PIPE TRAVEL TIME(MIN.) =   0.20  Tc(MIN.) =   7.70
LONGEST FLOWPATH FROM NODE      268.00 TO NODE      230.00 =   685.00 FEET.

*****
FLOW PROCESS FROM NODE      230.00 TO NODE      230.00 IS CODE =  11
-----
>>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
=====
** MAIN STREAM CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
   1         15.60       7.70         6.383         3.39
LONGEST FLOWPATH FROM NODE      268.00 TO NODE      230.00 =   685.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
   1         55.15       7.23         6.644        12.03
LONGEST FLOWPATH FROM NODE      216.00 TO NODE      230.00 =  1945.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)
   1         69.82       7.23         6.644
   2         68.59       7.70         6.383

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =   69.82  Tc(MIN.) =   7.23
TOTAL AREA(ACRES) =   15.4

*****
FLOW PROCESS FROM NODE      230.00 TO NODE      230.00 IS CODE =  12
-----
>>>>>CLEAR MEMORY BANK # 2 <<<<<
=====
*****
FLOW PROCESS FROM NODE      230.00 TO NODE      231.00 IS CODE =  52
-----
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   759.00  DOWNSTREAM(FEET) =   742.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   140.00  CHANNEL SLOPE =   0.1214
NOTE: CHANNEL SLOPE OF .1 WAS ASSUMED IN VELOCITY ESTIMATION
CHANNEL FLOW THRU SUBAREA(CFS) =   69.82
FLOW VELOCITY(FEET/SEC) =  13.49 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.17  Tc(MIN.) =   7.41
LONGEST FLOWPATH FROM NODE      216.00 TO NODE      231.00 =  2085.00 FEET.

```

 FLOW PROCESS FROM NODE 231.00 TO NODE 231.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	69.82	7.41	6.543	15.42

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 231.00 = 2085.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	28.41	10.55	5.209	15.58

LONGEST FLOWPATH FROM NODE 204.00 TO NODE 231.00 = 1897.46 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	89.76	7.41	6.543
2	83.99	10.55	5.209

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 89.76 Tc(MIN.) = 7.41
 TOTAL AREA(ACRES) = 31.0

 FLOW PROCESS FROM NODE 231.00 TO NODE 231.00 IS CODE = 12

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

 FLOW PROCESS FROM NODE 231.00 TO NODE 265.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 742.00 DOWNSTREAM(FEET) = 720.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 465.00 CHANNEL SLOPE = 0.0473
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.148

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 94.35

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 10.32

AVERAGE FLOW DEPTH(FEET) = 1.52 TRAVEL TIME(MIN.) = 0.75

Tc(MIN.) = 8.16

SUBAREA AREA(ACRES) = 4.26 SUBAREA RUNOFF(CFS) = 9.17

AREA-AVERAGE RUNOFF COEFFICIENT = 0.500

TOTAL AREA(ACRES) = 35.3 PEAK FLOW RATE(CFS) = 108.37

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 1.62 FLOW VELOCITY(FEET/SEC.) = 10.70

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 265.00 = 2550.00 FEET.

 FLOW PROCESS FROM NODE 265.00 TO NODE 265.00 IS CODE = 10

```

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

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*****
FLOW PROCESS FROM NODE      283.00 TO NODE      285.00 IS CODE =  21
-----

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

```

```

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =  330.00
UPSTREAM ELEVATION(FEET) =    806.00
DOWNSTREAM ELEVATION(FEET) =    760.00
ELEVATION DIFFERENCE(FEET) =     46.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.259
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =  100.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =      1.74
TOTAL AREA(ACRES) =      0.29   TOTAL RUNOFF(CFS) =      1.74

```

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*****
FLOW PROCESS FROM NODE      285.00 TO NODE      282.00 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) =  754.00 DOWNSTREAM(FEET) =  753.60
FLOW LENGTH(FEET) =    20.00 MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
DEPTH OF FLOW IN 12.0 INCH PIPE IS  5.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =    5.60
ESTIMATED PIPE DIAMETER(INCH) =  12.00   NUMBER OF PIPES =    1
PIPE-FLOW(CFS) =      1.74
PIPE TRAVEL TIME(MIN.) =    0.06   Tc(MIN.) =    3.32
LONGEST FLOWPATH FROM NODE      283.00 TO NODE      282.00 =    350.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE      282.00 TO NODE      282.00 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.) =    3.32
RAINFALL INTENSITY(INCH/HR) =    8.43
TOTAL STREAM AREA(ACRES) =    0.29
PEAK FLOW RATE(CFS) AT CONFLUENCE =      1.74

```

```

*****
FLOW PROCESS FROM NODE      280.00 TO NODE      281.00 IS CODE =  21
-----

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```

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

```

```

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =  350.00

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                                P-200.TXT
UPSTREAM ELEVATION(FEET) =    781.00
DOWNSTREAM ELEVATION(FEET) =    760.00
ELEVATION DIFFERENCE(FEET) =    21.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =    3.863
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =    100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
    100 YEAR RAINFALL INTENSITY(INCH/HOUR) =    8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =    1.98
TOTAL AREA(ACRES) =    0.33    TOTAL RUNOFF(CFS) =    1.98

*****
FLOW PROCESS FROM NODE    281.00 TO NODE    282.00 IS CODE =    31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    754.00 DOWNSTREAM(FEET) =    753.60
FLOW LENGTH(FEET) =    5.00    MANNING'S N =    0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
DEPTH OF FLOW IN    12.0 INCH PIPE IS    3.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =    9.59
ESTIMATED PIPE DIAMETER(INCH) =    12.00    NUMBER OF PIPES =    1
PIPE-FLOW(CFS) =    1.98
PIPE TRAVEL TIME(MIN.) =    0.01    Tc(MIN.) =    3.87
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    355.00 FEET.

*****
FLOW PROCESS FROM NODE    282.00 TO NODE    282.00 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.) =    3.87
RAINFALL INTENSITY(INCH/HR) =    8.43
TOTAL STREAM AREA(ACRES) =    0.33
PEAK FLOW RATE(CFS) AT CONFLUENCE =    1.98

** CONFLUENCE DATA **
STREAM    RUNOFF    Tc    INTENSITY    AREA
NUMBER    (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
    1        1.74    3.32        8.431        0.29
    2        1.98    3.87        8.431        0.33

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

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF    Tc    INTENSITY
NUMBER    (CFS)    (MIN.)    (INCH/HOUR)
    1        3.43    3.32        8.431
    2        3.71    3.87        8.431

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    3.71    Tc(MIN.) =    3.87
TOTAL AREA(ACRES) =    0.6
LONGEST FLOWPATH FROM NODE    280.00 TO NODE    282.00 =    355.00 FEET.

*****

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                                P-200.TXT
FLOW PROCESS FROM NODE      282.00 TO NODE      286.00 IS CODE =  31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =  753.60  DOWNSTREAM(FEET) =  746.00
FLOW LENGTH(FEET) =  120.00  MANNING'S N =  0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
DEPTH OF FLOW IN  12.0 INCH PIPE IS  5.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  10.46
ESTIMATED PIPE DIAMETER(INCH) =  12.00  NUMBER OF PIPES =  1
PIPE-FLOW(CFS) =  3.71
PIPE TRAVEL TIME(MIN.) =  0.19  Tc(MIN.) =  4.06
LONGEST FLOWPATH FROM NODE  280.00 TO NODE  286.00 =  475.00 FEET.

*****
FLOW PROCESS FROM NODE      286.00 TO NODE      286.00 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.) =  4.06
RAINFALL INTENSITY(INCH/HR) =  8.43
TOTAL STREAM AREA(ACRES) =  0.62
PEAK FLOW RATE(CFS) AT CONFLUENCE =  3.71

*****
FLOW PROCESS FROM NODE      287.00 TO NODE      288.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) =  0
INITIAL SUBAREA FLOW-LENGTH(FEET) =  100.00
UPSTREAM ELEVATION(FEET) =  760.00
DOWNSTREAM ELEVATION(FEET) =  758.00
ELEVATION DIFFERENCE(FEET) =  2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =  4.984
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH =  80.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
          100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =  1.74
TOTAL AREA(ACRES) =  0.29  TOTAL RUNOFF(CFS) =  1.74

*****
FLOW PROCESS FROM NODE      288.00 TO NODE      289.00 IS CODE =  62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) =  758.00  DOWNSTREAM ELEVATION(FEET) =  754.00
STREET LENGTH(FEET) =  300.00  CURB HEIGHT(INCHES) =  4.0
STREET HALFWIDTH(FEET) =  16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  8.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL) =  0.020

```


P-200.TXT

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 5.92
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(Feet) = 0.30
 HALFSTREET FLOOD WIDTH(Feet) = 13.97
 AVERAGE FLOW VELOCITY(Feet/Sec.) = 3.03
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.90
 STREET FLOW TRAVEL TIME(MIN.) = 1.65 Tc(MIN.) = 6.63
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.027
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
 SUBAREA AREA(ACRES) = 1.67 SUBAREA RUNOFF(CFS) = 8.33
 TOTAL AREA(ACRES) = 2.0 PEAK FLOW RATE(CFS) = 9.78

END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(Feet) = 0.34 HALFSTREET FLOOD WIDTH(Feet) = 16.23
 FLOW VELOCITY(Feet/Sec.) = 3.32 DEPTH*VELOCITY(FT*FT/SEC.) = 1.12
 *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
 AND L = 300.0 FT WITH ELEVATION-DROP = 4.0 FT, IS 9.6 CFS,
 WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE 289.00
 LONGEST FLOWPATH FROM NODE 287.00 TO NODE 289.00 = 400.00 FEET.

 FLOW PROCESS FROM NODE 289.00 TO NODE 286.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 748.00 DOWNSTREAM(Feet) = 746.00
 FLOW LENGTH(Feet) = 50.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.1 INCHES
 PIPE-FLOW VELOCITY(Feet/Sec.) = 11.09
 ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 9.78
 PIPE TRAVEL TIME(MIN.) = 0.08 Tc(MIN.) = 6.71
 LONGEST FLOWPATH FROM NODE 287.00 TO NODE 286.00 = 450.00 FEET.

 FLOW PROCESS FROM NODE 286.00 TO NODE 286.00 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.) = 6.71
 RAINFALL INTENSITY(INCH/HR) = 6.98
 TOTAL STREAM AREA(ACRES) = 1.96
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 9.78

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	3.71	4.06	8.431	0.62
2	9.78	6.71	6.976	1.96

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	9.64	4.06	8.431
2	12.85	6.71	6.976

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 12.85 Tc(MIN.) = 6.71

TOTAL AREA(ACRES) = 2.6

LONGEST FLOWPATH FROM NODE 280.00 TO NODE 286.00 = 475.00 FEET.

FLOW PROCESS FROM NODE 286.00 TO NODE 290.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 746.00 DOWNSTREAM(FEET) = 735.50

FLOW LENGTH(FEET) = 175.00 MANNING'S N = 0.013

DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.7 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 13.75

ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 12.85

PIPE TRAVEL TIME(MIN.) = 0.21 Tc(MIN.) = 6.92

LONGEST FLOWPATH FROM NODE 280.00 TO NODE 290.00 = 650.00 FEET.

FLOW PROCESS FROM NODE 290.00 TO NODE 290.00 IS CODE = 1

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

TOTAL NUMBER OF STREAMS = 3

CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 6.92

RAINFALL INTENSITY(INCH/HR) = 6.84

TOTAL STREAM AREA(ACRES) = 2.58

PEAK FLOW RATE(CFS) AT CONFLUENCE = 12.85

FLOW PROCESS FROM NODE 291.00 TO NODE 292.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .7100

S.C.S. CURVE NUMBER (AMC II) = 0

INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00

UPSTREAM ELEVATION(FEET) = 752.00

DOWNSTREAM ELEVATION(FEET) = 750.00

ELEVATION DIFFERENCE(FEET) = 2.00

SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984

WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

THE MAXIMUM OVERLAND FLOW LENGTH = 80.00

(Reference: Table 3-1B of Hydrology Manual)

THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431

NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

SUBAREA RUNOFF(CFS) = 2.45

TOTAL AREA(ACRES) = 0.41 TOTAL RUNOFF(CFS) = 2.45

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                                P-200.TXT
FLOW PROCESS FROM NODE      292.00 TO NODE      293.00 IS CODE =  62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) =  750.00  DOWNSTREAM ELEVATION(FEET) =  742.00
STREET LENGTH(FEET) =   300.00  CURB HEIGHT(INCHES) =   4.0
STREET HALFWIDTH(FEET) =  16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
INSIDE STREET CROSSFALL(DECIMAL) =   0.020
OUTSIDE STREET CROSSFALL(DECIMAL) =   0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =   1
STREET PARKWAY CROSSFALL(DECIMAL) =   0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) =   0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =           8.20
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =   0.29
  HALFSTREET FLOOD WIDTH(FEET) =   13.84
  AVERAGE FLOW VELOCITY(FEET/SEC.) =   4.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   1.26
  STREET FLOW TRAVEL TIME(MIN.) =   1.17  Tc(MIN.) =   6.15
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   7.375
  *USER SPECIFIED(SUBAREA):
  USER-SPECIFIED RUNOFF COEFFICIENT = .7100
  S.C.S. CURVE NUMBER (AMC II) =   0
  AREA-AVERAGE RUNOFF COEFFICIENT =   0.710
  SUBAREA AREA(ACRES) =   2.19  SUBAREA RUNOFF(CFS) =   11.47
  TOTAL AREA(ACRES) =   2.6  PEAK FLOW RATE(CFS) =   13.61

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) =  0.34  HALFSTREET FLOOD WIDTH(FEET) =   16.23
FLOW VELOCITY(FEET/SEC.) =   4.70  DEPTH*VELOCITY(FT*FT/SEC.) =   1.59
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
      AND L =  300.0 FT WITH ELEVATION-DROP =   8.0 FT, IS   13.1 CFS,
      WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE   293.00
LONGEST FLOWPATH FROM NODE   291.00 TO NODE   293.00 =   400.00 FEET.

*****
FLOW PROCESS FROM NODE      293.00 TO NODE      290.00 IS CODE =  31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   736.00  DOWNSTREAM(FEET) =   735.50
FLOW LENGTH(FEET) =   50.00  MANNING'S N =   0.013
DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   7.08
ESTIMATED PIPE DIAMETER(INCH) =  21.00  NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =   13.61
PIPE TRAVEL TIME(MIN.) =   0.12  Tc(MIN.) =   6.27
LONGEST FLOWPATH FROM NODE   291.00 TO NODE   290.00 =   450.00 FEET.

*****
FLOW PROCESS FROM NODE      290.00 TO NODE      290.00 IS CODE =   1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
=====
TOTAL NUMBER OF STREAMS =   3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:

```

P-200.TXT
 TIME OF CONCENTRATION(MIN.) = 6.27
 RAINFALL INTENSITY(INCH/HR) = 7.29
 TOTAL STREAM AREA(ACRES) = 2.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 13.61

 FLOW PROCESS FROM NODE 281.00 TO NODE 299.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 130.00
 UPSTREAM ELEVATION(FEET) = 760.00
 DOWNSTREAM ELEVATION(FEET) = 752.00
 ELEVATION DIFFERENCE(FEET) = 8.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 3.831
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) = 0.72
 TOTAL AREA(ACRES) = 0.12 TOTAL RUNOFF(CFS) = 0.72

 FLOW PROCESS FROM NODE 299.00 TO NODE 290.00 IS CODE = 62

>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>(STREET TABLE SECTION # 1 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 752.00 DOWNSTREAM ELEVATION(FEET) = 742.00
 STREET LENGTH(FEET) = 175.00 CURB HEIGHT(INCHES) = 4.0
 STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 1.23
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.14
 HALFSTREET FLOOD WIDTH(FEET) = 5.87
 AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.55
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.48
 STREET FLOW TRAVEL TIME(MIN.) = 0.82 Tc(MIN.) = 4.65
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
 SUBAREA AREA(ACRES) = 0.17 SUBAREA RUNOFF(CFS) = 1.02
 TOTAL AREA(ACRES) = 0.3 PEAK FLOW RATE(CFS) = 1.74

END OF SUBAREA STREET FLOW HYDRAULICS:

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                                P-200.TXT
DEPTH(FEET) = 0.15    HALFSTREET FLOOD WIDTH(FEET) = 6.67
FLOW VELOCITY(FEET/SEC.) = 3.89    DEPTH*VELOCITY(FT*FT/SEC.) = 0.59
LONGEST FLOWPATH FROM NODE 281.00 TO NODE 290.00 = 305.00 FEET.

*****
FLOW PROCESS FROM NODE 290.00 TO NODE 290.00 IS CODE = 1
-----
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
=====
TOTAL NUMBER OF STREAMS = 3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 3 ARE:
TIME OF CONCENTRATION(MIN.) = 4.65
RAINFALL INTENSITY(INCH/HR) = 8.43
TOTAL STREAM AREA(ACRES) = 0.29
PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.74

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
1           12.85      6.92      6.837      2.58
2           13.61      6.27      7.286      2.60
3            1.74      4.65      8.431      0.29

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR 3 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
1           22.26      4.65      8.431
2           27.17      6.27      7.286
3           27.03      6.92      6.837

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 27.17    Tc(MIN.) = 6.27
TOTAL AREA(ACRES) = 5.5
LONGEST FLOWPATH FROM NODE 280.00 TO NODE 290.00 = 650.00 FEET.

*****
FLOW PROCESS FROM NODE 290.00 TO NODE 295.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 739.50    DOWNSTREAM(FEET) = 739.00
FLOW LENGTH(FEET) = 50.00    MANNING'S N = 0.013
DEPTH OF FLOW IN 27.0 INCH PIPE IS 20.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.39
ESTIMATED PIPE DIAMETER(INCH) = 27.00    NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 27.17
PIPE TRAVEL TIME(MIN.) = 0.10    Tc(MIN.) = 6.37
LONGEST FLOWPATH FROM NODE 280.00 TO NODE 295.00 = 700.00 FEET.

*****
FLOW PROCESS FROM NODE 295.00 TO NODE 295.00 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.) = 6.37
RAINFALL INTENSITY(INCH/HR) = 7.21

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                                P-200.TXT
TOTAL STREAM AREA(ACRES) =      5.47
PEAK FLOW RATE(CFS) AT CONFLUENCE =      27.17
*****
FLOW PROCESS FROM NODE      295.00 TO NODE      295.00 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  0
INITIAL SUBAREA FLOW-LENGTH(FEET) =      50.00
UPSTREAM ELEVATION(FEET) =      739.00
DOWNSTREAM ELEVATION(FEET) =      738.50
ELEVATION DIFFERENCE(FEET) =      0.50
SUBAREA OVERLAND TIME OF FLOW(MIN.) =      9.546
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.556
SUBAREA RUNOFF(CFS) =      0.64
TOTAL AREA(ACRES) =      0.33  TOTAL RUNOFF(CFS) =      0.64
*****
FLOW PROCESS FROM NODE      295.00 TO NODE      295.00 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) =      5.56
TOTAL STREAM AREA(ACRES) =      0.33
PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.64

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
  1          27.17      6.37          7.212          5.47
  2           0.64      9.55          5.556          0.33

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)
  1          27.60      6.37          7.212
  2          21.57      9.55          5.556

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =      27.60  Tc(MIN.) =      6.37
TOTAL AREA(ACRES) =      5.8
LONGEST FLOWPATH FROM NODE      280.00 TO NODE      295.00 =      700.00 FEET.
*****
FLOW PROCESS FROM NODE      295.00 TO NODE      284.20 IS CODE =  31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =      739.00  DOWNSTREAM(FEET) =      730.00
FLOW LENGTH(FEET) =      50.00  MANNING'S N =  0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 10.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  25.49

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                                P-200.TXT
ESTIMATED PIPE DIAMETER(INCH) = 18.00    NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 27.60
PIPE TRAVEL TIME(MIN.) = 0.03    Tc(MIN.) = 6.40
LONGEST FLOWPATH FROM NODE 280.00 TO NODE 284.20 = 750.00 FEET.

*****
FLOW PROCESS FROM NODE 284.20 TO NODE 265.00 IS CODE = 52
-----
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 730.00 DOWNSTREAM(FEET) = 720.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 180.00 CHANNEL SLOPE = 0.0556
CHANNEL FLOW THRU SUBAREA(CFS) = 27.60
FLOW VELOCITY(FEET/SEC) = 7.71 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.39    Tc(MIN.) = 6.79
LONGEST FLOWPATH FROM NODE 280.00 TO NODE 265.00 = 930.00 FEET.

*****
FLOW PROCESS FROM NODE 265.00 TO NODE 265.00 IS CODE = 11
-----
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====

** MAIN STREAM CONFLUENCE DATA **
STREAM    RUNOFF    Tc    INTENSITY    AREA
NUMBER    (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
1         27.60    6.79    6.920    5.80
LONGEST FLOWPATH FROM NODE 280.00 TO NODE 265.00 = 930.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM    RUNOFF    Tc    INTENSITY    AREA
NUMBER    (CFS)    (MIN.)    (INCH/HOUR)    (ACRE)
1         108.37    8.16    6.148    35.26
LONGEST FLOWPATH FROM NODE 216.00 TO NODE 265.00 = 2550.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM    RUNOFF    Tc    INTENSITY
NUMBER    (CFS)    (MIN.)    (INCH/HOUR)
1         117.81    6.79    6.920
2         132.89    8.16    6.148

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 132.89    Tc(MIN.) = 8.16
TOTAL AREA(ACRES) = 41.1

*****
FLOW PROCESS FROM NODE 265.00 TO NODE 265.00 IS CODE = 12
-----
>>>>>CLEAR MEMORY BANK # 1 <<<<<
=====

*****
FLOW PROCESS FROM NODE 265.00 TO NODE 254.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 720.00 DOWNSTREAM(FEET) = 714.00
FLOW LENGTH(FEET) = 125.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 36.0 INCH PIPE IS 28.3 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 22.33
ESTIMATED PIPE DIAMETER(INCH) = 36.00    NUMBER OF PIPES = 1

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P-200.TXT

PIPE-FLOW(CFS) = 132.89
 PIPE TRAVEL TIME(MIN.) = 0.09 Tc(MIN.) = 8.25
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 254.00 = 2675.00 FEET.

FLOW PROCESS FROM NODE 254.00 TO NODE 253.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 714.00 DOWNSTREAM(FEET) = 692.00
 CHANNEL LENGTH THRU SUBAREA(FEET) = 370.00 CHANNEL SLOPE = 0.0595
 CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
 MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.878
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 140.82
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 12.46
 AVERAGE FLOW DEPTH(FEET) = 1.74 TRAVEL TIME(MIN.) = 0.49
 Tc(MIN.) = 8.75
 SUBAREA AREA(ACRES) = 3.80 SUBAREA RUNOFF(CFS) = 15.86
 AREA-AVERAGE RUNOFF COEFFICIENT = 0.542
 TOTAL AREA(ACRES) = 44.9 PEAK FLOW RATE(CFS) = 142.98

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) = 1.76 FLOW VELOCITY(FEET/SEC.) = 12.49
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 253.00 = 3045.00 FEET.

FLOW PROCESS FROM NODE 253.00 TO NODE 246.50 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

ELEVATION DATA: UPSTREAM(FEET) = 692.00 DOWNSTREAM(FEET) = 684.33
 FLOW LENGTH(FEET) = 140.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 36.0 INCH PIPE IS 28.4 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 23.87
 ESTIMATED PIPE DIAMETER(INCH) = 36.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 142.98
 PIPE TRAVEL TIME(MIN.) = 0.10 Tc(MIN.) = 8.84
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 246.50 = 3185.00 FEET.

FLOW PROCESS FROM NODE 246.50 TO NODE 246.50 IS CODE = 10

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

FLOW PROCESS FROM NODE 253.80 TO NODE 253.70 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 711.90
 DOWNSTREAM ELEVATION(FEET) = 709.90
 ELEVATION DIFFERENCE(FEET) = 2.00


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                                P-200.TXT
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
          THE MAXIMUM OVERLAND FLOW LENGTH = 80.00
          (Reference: Table 3-1B of Hydrology Manual)
          THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) = 1.14
TOTAL AREA(ACRES) = 0.19 TOTAL RUNOFF(CFS) = 1.14

*****
FLOW PROCESS FROM NODE 253.70 TO NODE 253.10 IS CODE = 62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION # 1 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) = 709.90 DOWNSTREAM ELEVATION(FEET) = 696.00
STREET LENGTH(FEET) = 340.00 CURB HEIGHT(INCHES) = 4.0
STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
INSIDE STREET CROSSFALL(DECIMAL) = 0.020
OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) = 0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.05
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) = 0.19
HALFSTREET FLOOD WIDTH(FEET) = 8.84
AVERAGE FLOW VELOCITY(FEET/SEC.) = 3.90
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.76
STREET FLOW TRAVEL TIME(MIN.) = 1.45 Tc(MIN.) = 6.44
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.163
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
SUBAREA AREA(ACRES) = 0.75 SUBAREA RUNOFF(CFS) = 3.81
TOTAL AREA(ACRES) = 0.9 PEAK FLOW RATE(CFS) = 4.78

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.23 HALFSTREET FLOOD WIDTH(FEET) = 10.47
FLOW VELOCITY(FEET/SEC.) = 4.36 DEPTH*VELOCITY(FT*FT/SEC.) = 0.99
LONGEST FLOWPATH FROM NODE 253.80 TO NODE 253.10 = 440.00 FEET.

*****
FLOW PROCESS FROM NODE 253.10 TO NODE 253.30 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 690.70 DOWNSTREAM(FEET) = 690.30
FLOW LENGTH(FEET) = 40.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 5.52
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.78
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 6.56
LONGEST FLOWPATH FROM NODE 253.80 TO NODE 253.30 = 480.00 FEET.

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```

*****
FLOW PROCESS FROM NODE      253.30 TO NODE      253.30 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.) =   6.56
RAINFALL INTENSITY(INCH/HR) =   7.08
TOTAL STREAM AREA(ACRES) =    0.94
PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.78
*****
FLOW PROCESS FROM NODE      253.50 TO NODE      253.40 IS CODE =  21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) =    0
INITIAL SUBAREA FLOW-LENGTH(FEET) =  100.00
UPSTREAM ELEVATION(FEET) =   709.11
DOWNSTREAM ELEVATION(FEET) =   707.11
ELEVATION DIFFERENCE(FEET) =     2.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =   4.984
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =   80.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
SUBAREA RUNOFF(CFS) =     1.26
TOTAL AREA(ACRES) =     0.21  TOTAL RUNOFF(CFS) =     1.26
*****
FLOW PROCESS FROM NODE      253.40 TO NODE      253.30 IS CODE =  62
-----
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STREET TABLE SECTION #  1 USED)<<<<<
=====
UPSTREAM ELEVATION(FEET) =  707.00  DOWNSTREAM ELEVATION(FEET) =  696.00
STREET LENGTH(FEET) =   350.00  CURB HEIGHT(INCHES) =   4.0
STREET HALFWIDTH(FEET) =   16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =   8.00
INSIDE STREET CROSSFALL(DECIMAL) =   0.020
OUTSIDE STREET CROSSFALL(DECIMAL) =   0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =   1
STREET PARKWAY CROSSFALL(DECIMAL) =   0.020
Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) =   0.0150
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.83
STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
STREET FLOW DEPTH(FEET) =   0.20
HALFSTREET FLOOD WIDTH(FEET) =   9.03
AVERAGE FLOW VELOCITY(FEET/SEC.) =   3.47
PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =   0.69
STREET FLOW TRAVEL TIME(MIN.) =   1.68  Tc(MIN.) =   6.67
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   7.004
*USER SPECIFIED(SUBAREA):

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                                P-200.TXT
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
AREA-AVERAGE RUNOFF COEFFICIENT = 0.710
SUBAREA AREA(ACRES) = 0.63      SUBAREA RUNOFF(CFS) = 3.13
TOTAL AREA(ACRES) = 0.8          PEAK FLOW RATE(CFS) = 4.18

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.23      HALFSTREET FLOOD WIDTH(FEET) = 10.41
FLOW VELOCITY(FEET/SEC.) = 3.85      DEPTH*VELOCITY(FT*FT/SEC.) = 0.87
LONGEST FLOWPATH FROM NODE 253.50 TO NODE 253.30 = 450.00 FEET.

*****
FLOW PROCESS FROM NODE 253.30 TO NODE 253.30 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.) = 6.67
RAINFALL INTENSITY(INCH/HR) = 7.00
TOTAL STREAM AREA(ACRES) = 0.84
PEAK FLOW RATE(CFS) AT CONFLUENCE = 4.18

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.) (INCH/HOUR) (ACRE)
  1          4.78      6.56      7.078      0.94
  2          4.18      6.67      7.004      0.84

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.) (INCH/HOUR)
  1          8.89      6.56      7.078
  2          8.91      6.67      7.004

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 8.91      Tc(MIN.) = 6.67
TOTAL AREA(ACRES) = 1.8
LONGEST FLOWPATH FROM NODE 253.80 TO NODE 253.30 = 480.00 FEET.

*****
FLOW PROCESS FROM NODE 253.30 TO NODE 253.20 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 690.30      DOWNSTREAM(FEET) = 690.00
FLOW LENGTH(FEET) = 25.00      MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.89
ESTIMATED PIPE DIAMETER(INCH) = 18.00      NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 8.91
PIPE TRAVEL TIME(MIN.) = 0.06      Tc(MIN.) = 6.73
LONGEST FLOWPATH FROM NODE 253.80 TO NODE 253.20 = 505.00 FEET.

*****
FLOW PROCESS FROM NODE 253.20 TO NODE 250.60 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

```

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 690.00 DOWNSTREAM(FEET) = 684.80
FLOW LENGTH(FEET) = 240.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 12.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 8.38
ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 8.91
PIPE TRAVEL TIME(MIN.) = 0.48 Tc(MIN.) = 7.20
LONGEST FLOWPATH FROM NODE 253.80 TO NODE 250.60 = 745.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 250.60 TO NODE 250.60 IS CODE = 10
-----

```

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

```

*****
FLOW PROCESS FROM NODE 238.00 TO NODE 239.00 IS CODE = 21
-----

```

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

```

=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 80.00
UPSTREAM ELEVATION(FEET) = 864.00
DOWNSTREAM ELEVATION(FEET) = 852.00
ELEVATION DIFFERENCE(FEET) = 12.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 5.605
WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.832
SUBAREA RUNOFF(CFS) = 0.55
TOTAL AREA(ACRES) = 0.20 TOTAL RUNOFF(CFS) = 0.55

```

```

*****
FLOW PROCESS FROM NODE 239.00 TO NODE 240.00 IS CODE = 51
-----

```

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

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

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 852.00 DOWNSTREAM(FEET) = 770.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 370.00 CHANNEL SLOPE = 0.2216
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.050
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 3.20
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.21
AVERAGE FLOW DEPTH(FEET) = 0.16 TRAVEL TIME(MIN.) = 0.99
Tc(MIN.) = 6.60
SUBAREA AREA(ACRES) = 2.14 SUBAREA RUNOFF(CFS) = 5.28
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 2.3 PEAK FLOW RATE(CFS) = 5.77

```

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

```

DEPTH(FEET) = 0.22 FLOW VELOCITY(FEET/SEC.) = 7.69
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 240.00 = 450.00 FEET.

```

```

*****
FLOW PROCESS FROM NODE 240.00 TO NODE 241.00 IS CODE = 31

```

```

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

```

```

=====
ELEVATION DATA: UPSTREAM( FEET ) = 767.00 DOWNSTREAM( FEET ) = 733.70
FLOW LENGTH( FEET ) = 75.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER( INCH ) INCREASED TO 12.000
DEPTH OF FLOW IN 12.0 INCH PIPE IS 4.1 INCHES
PIPE-FLOW VELOCITY( FEET/SEC. ) = 24.02
ESTIMATED PIPE DIAMETER( INCH ) = 12.00 NUMBER OF PIPES = 1
PIPE-FLOW( CFS ) = 5.77
PIPE TRAVEL TIME( MIN. ) = 0.05 Tc( MIN. ) = 6.65
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 241.00 = 525.00 FEET.

```

```

*****

```

```

FLOW PROCESS FROM NODE 241.00 TO NODE 243.50 IS CODE = 31

```

```

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

```

```

=====
ELEVATION DATA: UPSTREAM( FEET ) = 733.70 DOWNSTREAM( FEET ) = 731.00
FLOW LENGTH( FEET ) = 270.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 15.0 INCH PIPE IS 11.6 INCHES
PIPE-FLOW VELOCITY( FEET/SEC. ) = 5.68
ESTIMATED PIPE DIAMETER( INCH ) = 15.00 NUMBER OF PIPES = 1
PIPE-FLOW( CFS ) = 5.77
PIPE TRAVEL TIME( MIN. ) = 0.79 Tc( MIN. ) = 7.44
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 243.50 = 795.00 FEET.

```

```

*****

```

```

FLOW PROCESS FROM NODE 243.50 TO NODE 243.50 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. ) = 7.44
RAINFALL INTENSITY( INCH/HR ) = 6.52
TOTAL STREAM AREA( ACRES ) = 2.34
PEAK FLOW RATE( CFS ) AT CONFLUENCE = 5.77

```

```

*****

```

```

FLOW PROCESS FROM NODE 242.00 TO NODE 243.00 IS CODE = 21

```

```

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

```

```

=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH( FEET ) = 400.00
UPSTREAM ELEVATION( FEET ) = 864.00
DOWNSTREAM ELEVATION( FEET ) = 750.00
ELEVATION DIFFERENCE( FEET ) = 114.00
SUBAREA OVERLAND TIME OF FLOW( MIN. ) = 6.267
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY( INCH/HOUR ) = 7.288
SUBAREA RUNOFF( CFS ) = 4.59
TOTAL AREA( ACRES ) = 1.80 TOTAL RUNOFF( CFS ) = 4.59

```

```

*****

```

```

                                P-200.TXT
FLOW PROCESS FROM NODE      243.00 TO NODE      243.50 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   750.00  DOWNSTREAM(FEET) =   731.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   145.00  CHANNEL SLOPE =   0.1310
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) =   10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) =   7.025
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) =    0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =         6.26
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.55
AVERAGE FLOW DEPTH(FEET) =   0.27  TRAVEL TIME(MIN.) =   0.37
Tc(MIN.) =    6.64
SUBAREA AREA(ACRES) =    0.67      SUBAREA RUNOFF(CFS) =    3.34
AREA-AVERAGE RUNOFF COEFFICIENT =  0.448
TOTAL AREA(ACRES) =    2.5      PEAK FLOW RATE(CFS) =         7.77

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.30  FLOW VELOCITY(FEET/SEC.) =   7.13
LONGEST FLOWPATH FROM NODE      242.00 TO NODE      243.50 =   545.00 FEET.
*****
FLOW PROCESS FROM NODE      243.50 TO NODE      243.50 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.) =    6.64
RAINFALL INTENSITY(INCH/HR) =    7.02
TOTAL STREAM AREA(ACRES) =    2.47
PEAK FLOW RATE(CFS) AT CONFLUENCE =         7.77

** CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)      (ACRE)
    1         5.77         7.44         6.524         2.34
    2         7.77         6.64         7.025         2.47

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

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)      (INCH/HOUR)
    1        12.92         6.64         7.025
    2        12.99         7.44         6.524

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    12.99  Tc(MIN.) =    7.44
TOTAL AREA(ACRES) =    4.8
LONGEST FLOWPATH FROM NODE      238.00 TO NODE      243.50 =   795.00 FEET.
*****
FLOW PROCESS FROM NODE      243.50 TO NODE      244.00 IS CODE =  52
-----
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<

```

P-200.TXT

```

=====
ELEVATION DATA: UPSTREAM(FEET) = 731.00 DOWNSTREAM(FEET) = 726.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 65.00 CHANNEL SLOPE = 0.0769
CHANNEL FLOW THRU SUBAREA(CFS) = 12.99
FLOW VELOCITY(FEET/SEC) = 7.41 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) = 0.15 Tc(MIN.) = 7.59
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 244.00 = 860.00 FEET.

*****
FLOW PROCESS FROM NODE 244.00 TO NODE 246.00 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 726.00 DOWNSTREAM(FEET) = 724.00
FLOW LENGTH(FEET) = 75.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 12.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 10.23
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 12.99
PIPE TRAVEL TIME(MIN.) = 0.12 Tc(MIN.) = 7.71
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 246.00 = 935.00 FEET.

*****
FLOW PROCESS FROM NODE 246.00 TO NODE 246.50 IS CODE = 51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) = 724.00 DOWNSTREAM(FEET) = 686.50
CHANNEL LENGTH THRU SUBAREA(FEET) = 500.00 CHANNEL SLOPE = 0.0750
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.849
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .7100
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 17.17
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.54
AVERAGE FLOW DEPTH(FEET) = 0.55 TRAVEL TIME(MIN.) = 1.10
Tc(MIN.) = 8.81
SUBAREA AREA(ACRES) = 2.02 SUBAREA RUNOFF(CFS) = 8.39
AREA-AVERAGE RUNOFF COEFFICIENT = 0.492
TOTAL AREA(ACRES) = 6.8 PEAK FLOW RATE(CFS) = 19.65

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.60 FLOW VELOCITY(FEET/SEC.) = 7.83
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 246.50 = 1435.00 FEET.

*****
FLOW PROCESS FROM NODE 246.50 TO NODE 246.50 IS CODE = 11
-----
>>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
=====

** MAIN STREAM CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA
NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
1 19.65 8.81 5.849 6.83
LONGEST FLOWPATH FROM NODE 238.00 TO NODE 246.50 = 1435.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **
STREAM RUNOFF Tc INTENSITY AREA

```

P-200.TXT
 NUMBER (CFS) (MIN.) (INCH/HOUR) (ACRE)
 1 142.98 8.84 5.836 44.86
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 246.50 = 3185.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	162.15	8.81	5.849
2	162.58	8.84	5.836

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 162.58 Tc(MIN.) = 8.84
 TOTAL AREA(ACRES) = 51.7

 FLOW PROCESS FROM NODE 246.50 TO NODE 246.50 IS CODE = 12

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

 FLOW PROCESS FROM NODE 246.50 TO NODE 250.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) =	684.33	DOWNSTREAM(FEET) =	684.21
FLOW LENGTH(FEET) =	25.00	MANNING'S N =	0.013
DEPTH OF FLOW IN	60.0 INCH PIPE IS	46.7 INCHES	
PIPE-FLOW VELOCITY(FEET/SEC.) =	9.92		
ESTIMATED PIPE DIAMETER(INCH) =	60.00	NUMBER OF PIPES =	1
PIPE-FLOW(CFS) =	162.58		
PIPE TRAVEL TIME(MIN.) =	0.04	Tc(MIN.) =	8.89
LONGEST FLOWPATH FROM NODE	216.00 TO NODE	250.00 =	3210.00 FEET.

 FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 10

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

 FLOW PROCESS FROM NODE 247.00 TO NODE 248.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .3500
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 180.00
 UPSTREAM ELEVATION(FEET) = 862.00
 DOWNSTREAM ELEVATION(FEET) = 828.00
 ELEVATION DIFFERENCE(FEET) = 34.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.267
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.288
 SUBAREA RUNOFF(CFS) = 0.77
 TOTAL AREA(ACRES) = 0.30 TOTAL RUNOFF(CFS) = 0.77

```

                                P-200.TXT
FLOW PROCESS FROM NODE      248.00 TO NODE      249.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =   828.00  DOWNSTREAM(FEET) =   716.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 1030.00  CHANNEL SLOPE =  0.1087
CHANNEL BASE(FEET) =    3.00  "Z" FACTOR =    2.000
MANNING'S FACTOR = 0.030  MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.849
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =    7.78
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  6.74
AVERAGE FLOW DEPTH(FEET) =  0.32  TRAVEL TIME(MIN.) =  2.55
Tc(MIN.) =    8.81
SUBAREA AREA(ACRES) =    6.78  SUBAREA RUNOFF(CFS) = 13.88
AREA-AVERAGE RUNOFF COEFFICIENT =  0.350
TOTAL AREA(ACRES) =    7.1  PEAK FLOW RATE(CFS) = 14.49

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.45  FLOW VELOCITY(FEET/SEC.) =  8.15
LONGEST FLOWPATH FROM NODE      247.00 TO NODE      249.00 = 1210.00 FEET.
*****
FLOW PROCESS FROM NODE      249.00 TO NODE      249.00 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.) =  8.81
RAINFALL INTENSITY(INCH/HR) =  5.85
TOTAL STREAM AREA(ACRES) =  7.08
PEAK FLOW RATE(CFS) AT CONFLUENCE = 14.49
*****
FLOW PROCESS FROM NODE      251.00 TO NODE      252.00 IS CODE = 21
-----
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
=====
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) =  0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 270.00
UPSTREAM ELEVATION(FEET) =  790.00
DOWNSTREAM ELEVATION(FEET) =  780.00
ELEVATION DIFFERENCE(FEET) =  10.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) =  8.583
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
         THE MAXIMUM OVERLAND FLOW LENGTH =  96.76
         (Reference: Table 3-1B of Hydrology Manual)
         THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.950
SUBAREA RUNOFF(CFS) =    1.31
TOTAL AREA(ACRES) =    0.63  TOTAL RUNOFF(CFS) =    1.31
*****
FLOW PROCESS FROM NODE      252.00 TO NODE      249.00 IS CODE =  51
-----
>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

```

P-200.TXT

```
=====
ELEVATION DATA: UPSTREAM(FEET) = 780.00 DOWNSTREAM(FEET) = 718.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 420.00 CHANNEL SLOPE = 0.1476
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 5.492
```

*USER SPECIFIED(SUBAREA):

USER-SPECIFIED RUNOFF COEFFICIENT = .3500

S.C.S. CURVE NUMBER (AMC II) = 0

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 4.45

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 6.17

AVERAGE FLOW DEPTH(FEET) = 0.21 TRAVEL TIME(MIN.) = 1.13

Tc(MIN.) = 9.72

SUBAREA AREA(ACRES) = 3.26 SUBAREA RUNOFF(CFS) = 6.27

AREA-AVERAGE RUNOFF COEFFICIENT = 0.350

TOTAL AREA(ACRES) = 3.9 PEAK FLOW RATE(CFS) = 7.48

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.29 FLOW VELOCITY(FEET/SEC.) = 7.34

LONGEST FLOWPATH FROM NODE 251.00 TO NODE 249.00 = 690.00 FEET.

FLOW PROCESS FROM NODE 249.00 TO NODE 249.00 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.) = 9.72

RAINFALL INTENSITY(INCH/HR) = 5.49

TOTAL STREAM AREA(ACRES) = 3.89

PEAK FLOW RATE(CFS) AT CONFLUENCE = 7.48

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	14.49	8.81	5.849	7.08
2	7.48	9.72	5.492	3.89

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO

CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	21.28	8.81	5.849
2	21.09	9.72	5.492

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 21.28 Tc(MIN.) = 8.81

TOTAL AREA(ACRES) = 11.0

LONGEST FLOWPATH FROM NODE 247.00 TO NODE 249.00 = 1210.00 FEET.

FLOW PROCESS FROM NODE 249.00 TO NODE 250.00 IS CODE = 52

>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<

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

=====

```
ELEVATION DATA: UPSTREAM(FEET) = 718.00 DOWNSTREAM(FEET) = 686.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 350.00 CHANNEL SLOPE = 0.0914
CHANNEL FLOW THRU SUBAREA(CFS) = 21.28
```

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FLOW VELOCITY(FEET/SEC) = 9.21 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) = 0.63 Tc(MIN.) = 9.45
 LONGEST FLOWPATH FROM NODE 247.00 TO NODE 250.00 = 1560.00 FEET.

FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	21.28	9.45	5.593	10.97

LONGEST FLOWPATH FROM NODE 247.00 TO NODE 250.00 = 1560.00 FEET.

** MEMORY BANK # 1 CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	162.58	8.89	5.819	51.69

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 250.00 = 3210.00 FEET.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	182.59	8.89	5.819
2	177.55	9.45	5.593

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 182.59 Tc(MIN.) = 8.89
 TOTAL AREA(ACRES) = 62.7

FLOW PROCESS FROM NODE 250.00 TO NODE 250.00 IS CODE = 12

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

FLOW PROCESS FROM NODE 250.00 TO NODE 250.60 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 684.21 DOWNSTREAM(FEET) = 684.01
 FLOW LENGTH(FEET) = 25.00 MANNING'S N = 0.013
 DEPTH OF FLOW IN 57.0 INCH PIPE IS 44.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 12.37
 ESTIMATED PIPE DIAMETER(INCH) = 57.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 182.59
 PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 8.92
 LONGEST FLOWPATH FROM NODE 216.00 TO NODE 250.60 = 3235.00 FEET.

FLOW PROCESS FROM NODE 250.60 TO NODE 250.60 IS CODE = 11

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

** MAIN STREAM CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	182.59	8.92	5.804	62.66

```

                                P-200.TXT
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    250.60 =    3235.00 FEET.

** MEMORY BANK # 2 CONFLUENCE DATA **
STREAM      RUNOFF      Tc      INTENSITY      AREA
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)  (ACRE)
    1         8.91       7.20       6.662       1.78
LONGEST FLOWPATH FROM NODE    253.80 TO NODE    250.60 =    745.00 FEET.

** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc      INTENSITY
NUMBER      (CFS)      (MIN.)  (INCH/HOUR)
    1       156.38       7.20       6.662
    2       190.35       8.92       5.804

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =    190.35    Tc(MIN.) =    8.92
TOTAL AREA(ACRES) =    64.4

*****
FLOW PROCESS FROM NODE    250.60 TO NODE    250.60 IS CODE = 12
-----
>>>>>CLEAR MEMORY BANK # 2 <<<<<
=====

*****
FLOW PROCESS FROM NODE    250.60 TO NODE    250.70 IS CODE = 31
-----
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    684.21  DOWNSTREAM(FEET) =    684.00
FLOW LENGTH(FEET) =    15.00  MANNING'S N =    0.013
DEPTH OF FLOW IN  54.0 INCH PIPE IS  38.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =    15.61
ESTIMATED PIPE DIAMETER(INCH) =    54.00  NUMBER OF PIPES =    1
PIPE-FLOW(CFS) =    190.35
PIPE TRAVEL TIME(MIN.) =    0.02  Tc(MIN.) =    8.94
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    250.70 =    3250.00 FEET.

*****
FLOW PROCESS FROM NODE    250.70 TO NODE    257.00 IS CODE = 52
-----
>>>>>COMPUTE NATURAL VALLEY CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
=====
ELEVATION DATA: UPSTREAM(FEET) =    684.00  DOWNSTREAM(FEET) =    672.00
CHANNEL LENGTH THRU SUBAREA(FEET) =    310.00  CHANNEL SLOPE =    0.0387
CHANNEL FLOW THRU SUBAREA(CFS) =    190.35
FLOW VELOCITY(FEET/SEC) =    11.36 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =    0.45  Tc(MIN.) =    9.39
LONGEST FLOWPATH FROM NODE    216.00 TO NODE    257.00 =    3560.00 FEET.

*****
FLOW PROCESS FROM NODE    257.00 TO NODE    257.00 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.) =    9.39
RAINFALL INTENSITY(INCH/HR) =    5.61
TOTAL STREAM AREA(ACRES) =    64.44
PEAK FLOW RATE(CFS) AT CONFLUENCE =    190.35

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P-200.TXT

FLOW PROCESS FROM NODE 255.00 TO NODE 256.00 IS CODE = 21

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

*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
INITIAL SUBAREA FLOW-LENGTH(FEET) = 400.00
UPSTREAM ELEVATION(FEET) = 790.00
DOWNSTREAM ELEVATION(FEET) = 758.00
ELEVATION DIFFERENCE(FEET) = 32.00
SUBAREA OVERLAND TIME OF FLOW(MIN.) = 6.750
WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
THE MAXIMUM OVERLAND FLOW LENGTH = 100.00
(Reference: Table 3-1B of Hydrology Manual)
THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.947
SUBAREA RUNOFF(CFS) = 3.94
TOTAL AREA(ACRES) = 1.62 TOTAL RUNOFF(CFS) = 3.94

FLOW PROCESS FROM NODE 256.00 TO NODE 257.00 IS CODE = 51

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

ELEVATION DATA: UPSTREAM(FEET) = 758.00 DOWNSTREAM(FEET) = 672.00
CHANNEL LENGTH THRU SUBAREA(FEET) = 600.00 CHANNEL SLOPE = 0.1433
CHANNEL BASE(FEET) = 3.00 "Z" FACTOR = 2.000
MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 10.00
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 6.168
*USER SPECIFIED(SUBAREA):
USER-SPECIFIED RUNOFF COEFFICIENT = .3500
S.C.S. CURVE NUMBER (AMC II) = 0
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 7.74
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 7.32
AVERAGE FLOW DEPTH(FEET) = 0.29 TRAVEL TIME(MIN.) = 1.37
Tc(MIN.) = 8.12
SUBAREA AREA(ACRES) = 3.51 SUBAREA RUNOFF(CFS) = 7.58
AREA-AVERAGE RUNOFF COEFFICIENT = 0.350
TOTAL AREA(ACRES) = 5.1 PEAK FLOW RATE(CFS) = 11.07

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) = 0.36 FLOW VELOCITY(FEET/SEC.) = 8.23
LONGEST FLOWPATH FROM NODE 255.00 TO NODE 257.00 = 1000.00 FEET.

FLOW PROCESS FROM NODE 257.00 TO NODE 257.00 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.) = 8.12
RAINFALL INTENSITY(INCH/HR) = 6.17
TOTAL STREAM AREA(ACRES) = 5.13
PEAK FLOW RATE(CFS) AT CONFLUENCE = 11.07

** CONFLUENCE DATA **

STREAM	RUNOFF	Tc	INTENSITY	AREA
--------	--------	----	-----------	------

P-200.TXT				
NUMBER	(CFS)	(MIN.)	(INCH/HOUR)	(ACRE)
1	190.35	9.39	5.615	64.44
2	11.07	8.12	6.168	5.13

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

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	175.62	8.12	6.168
2	200.43	9.39	5.615

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 200.43 Tc(MIN.) = 9.39

TOTAL AREA(ACRES) = 69.6

LONGEST FLOWPATH FROM NODE 216.00 TO NODE 257.00 = 3560.00 FEET.

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 69.6 TC(MIN.) = 9.39

PEAK FLOW RATE(CFS) = 200.43

=====

END OF RATIONAL METHOD ANALYSIS

□

BASIN B (CONTINUED FROM RUN 200)



Job Name: Valiano
Proposed Hydrology
100 Year Design Storm
Job #: 2690-007-02

Date:
August-13
Run Name:
P-2000.DAT

Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
2000	2001	2	748.3	746.3	100	0.71	0.14	
2001	2002	6	745.0	723.0	380.0	0.71	0.49	one side
2002	2006	3	717.0	716.8	5.0			
2006	2006	1						1 of 2
2003	2004	2	747.9	745.9	100.0	0.71	0.15	
2004	2005	6	745.0	723.0	280.0	0.71	0.54	one side
2005	2006	3	717.0	716.8	25.0			
2006	2006	1						2 of 2
2006	2013	3	716.8	713.5	260.0			
2013	2013	10						save to bank 1
2007	2008	2	726.0	722.0	75.0	0.71	0.3	
2008	2009	6	722.0	719.5	200.0	0.71	0.19	
2009	2009	1						1 of 2
2014	2015	2	740.0	731.0	130.0	0.71	0.13	
2015	2009	6	731.0	719.5	250.0	0.71	0.22	one side
2009	2009	1						2 of 2
2009	2013	3	713.4	713.3	3.0			
2013	2013	10						save to bank 2
2010	2011	2	726.0	722.0	75.0	0.71	0.04	
2011	2012	6	722.0	719.5	200.0	0.71	0.23	one side
2012	2012	1						1 of 2
2016	2017	2	740.0	731.0	160.0	0.71	0.09	
2017	2012	6	731.0	719.5	275.0	0.71	0.14	one side
2012	2012	1						2 of 2
2012	2013	3	713.5	713.3	20.0			
2013	2013	11						add bank 1
2013	2013	11						add bank 2
2013	2013	12						clear bank 1
2013	2013	12						clear bank 2



Job Name: Valiano
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Date:
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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
2013	2019	3	713.3	712.5	85.0			
2019	2025	3	712.5	702.3	390.0			
2025	2025	1						1 of 2
2020	2021	2	721	718	90	0.71	0.06	
2021	2022.5	6	718	708.5	275	0.71	0.54	one side
2022.5	2025	3	702.5	702.25	25			
2025	2025	1						2 of 2
2025	2027	3	702.25	698	315			
2027	2027	1						1 of 2
2023	2024	2	721	715.5	130	0.71	0.2	
2024	2026	6	715.5	704	600	0.71	3.0	
2026	2027	3	698.25	698	25			
2027	2027	1						2 of 2
2027	2028	3	698	695.55	245			
2028	2029	3	695.55	690	140			
2029	2030	3	690	686	40			
2030	2041	5	686	660	340			
2041	2041	10						save to bank 1
2031	2032	2	742	740	100	0.41	0.18	
2032	2039	5	740	690	760	0.41	2.64	
2039	2039	10						save to bank 2
2034	2035	2	745	744.5	50	0.41	0.1	
2035	2038	5	744.5	706	490	0.41	1.11	
2038	2038	1						1 of 2
2036	2037	2	760	754	60	0.41	0.1	
2037	2038	5	754	706	360	0.41	1.99	
2038	2038	1						2 of 2
2038	2039	5	706	690	230	0.41	1.99	
2039	2039	11						add bank 2
2039	2039	12						clear bank 2



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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
2039	2040	5	690	680	205	0.41	1.74	
2040	2041	5	680	660	310	0.41	2.51	
2041	2041	11						add bank 1
2041	2041	12						clear bank 1
2041	2042	5	660	649	215	0.41	0.86	
2042	2047	5	649	640	200			
2047	2047	1						1 of 2
2043	2044	2	696	686	130	0.71	0.17	
2044	2045	5	686	672	370	0.71	0.94	
2045	2046	5	672	649	425	0.71	2.19	
2046	2047	5	649	640	310	0.41	0.88	
2047	2047	1						2 of 2
2047	2058	5	640	634	125			
2058	2058	1						1 of 4
2048	2049	2	748	742	90	0.41	0.11	
2049	2050	5	742	694	380	0.41	0.92	
2050	2058	5	694	634	860	0.41	1.3	
2058	2058	1						2 of 4
2051	2052	2	638	637.5	70	0.41	0.1	
2052	2053	5	637.5	637.1	40	0.41	2.23	
2053	2058	5	637.1	634	250	0.41	3.23	
2058	2058	1						3 of 4
2054	2055	2	760	750	100	0.41	0.1	
2055	2056	5	750	684	500	0.41	1.44	
2056	2057	5	684	670	280	0.41	2.77	
2057	2058	5	670	634	760	0.41	2.25	
2058	2058	1						4 of 4
2058	2076	5	634	630	260	0.41	0.33	
2076	2076	10						Save to Bank 1
257	257	7	Q = 200.43 cfs A = 69.6 ac Tc = 9.39 min					FROM RUN 200



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 Proposed Hydrology
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Date:
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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
257	2062	5	672	654	200			
2062	2062	1						1 of 2
2060	2061	2	724	700	100	0.35	0.1	
2061	2062	5	700	654	400	0.35	1.67	
2062	2062	1						2 of 2
2062	2071	5	654	651	225	0.35	0.43	
2071	2071	1						1 of 3
2063	2064	2	762	752	100	0.35	0.1	
2064	2065	5	752	732	200	0.35	0.8	
2065	2066	5	732	702	300	0.35	2.85	
2066	2067	5	702	672	300	0.35	2.61	
2067	2071	5	672	651	240	0.35	0.85	
2071	2071	1						2 of 3
2068	2069	2	740	732	100	0.35	0.1	
2069	2070	5	732	654	650	0.35	2.18	
2070	2071	5	654	651	100			
2071	2071	1						3 of 3
2071	2076	5	651	630	590			
2076	2076	1						1 of 3
2072	2073	2	664	654	100	0.35	0.26	
2073	2074	5	654	638	260	0.35	0.95	
2074	2076	5	638	630	355	0.35	2.39	
2076	2076	1						2 of 3
2075	2075	7	Q = 5.4 cfs A = 3.43 Tc = 10min					
2075	2076	5	660	630	720	0.35	1.53	
2076	2076	1						3 of 3
2076	2076	11						Add Bank 1
2076	2076	12						Clear Bank 1
2076	2077	5	630	629	125	0.35	0.93	
2077	2077	10						



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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
2079	2080	2	646	644	100	0.71	0.31	
2080	2081	6	643.5	641	360	0.71	2.08	one side
2081	2082	3	635	632.4	40			
2082	2082	1						1 of 2
2081.1	2081.2	2	646	644	100	0.71	0.32	
2081.2	2082	6	644	641	260	0.71	1.29	one side
2082	2082	1						2 of 2
2082	2083	3	632.4	632	40			
2083	2083	1						1 of 2
2082.1	2082.2	2	640	638	100	0.71	0.17	
2082.2	2082.3	6	638	637	100	0.71	0.3	two sides
2082.3	2083	3	632.3	632	30			
2083	2083	1						2 of 2
2083	2076.5	3	632	631	25			
2076.5	2077	5	631	629	100			
2077	2077	11						add bank 1
2077	2077	12						clear bank 1
2077	2078	3	629	627.5	115			
2078	2102	5	627.5	626	275	0.35	1.31	
2102	2102	10						Save to Bank 1
2088	2089	2	698.4	696.4	100	0.71	0.18	
2089	2093	6	695	670	375	0.71	1.17	one side
2093	2093	1						1 of 2

2090	2091	2	695	692	90	0.71	0.08	
2091	2092	6	692	670	250	0.71	0.67	one side
2092	2093	3	663.3	663	30			
2093	2093	1						
								2 of 2
2093	2097	3	663	632	570			
2097	2097	1						1 of 2
2095	2096	2	669.7	667.7	100	0.71	0.13	



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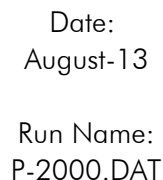
Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
2096	2097	6	666	638	520	0.71	1.67	one side
2097	2097	1						2 of 2
2097	2098	3	636	635.7	30			
2098	2098	1						1 of 2
2094.5	2094	2	672.8	670.8	100	0.71	0.11	
2094	2098	6	668	638	475	0.71	1.25	one side
2098	2098	1						2 of 2
2098	2100	3	635.7	635	65			
2100	2100	1						1 of 2
2084	2085	2	695.6	693.6	100	0.71	0.16	
2085	2086	6	693.6	683	300	0.71	2.55	two sides
2086	2087	3	677	676	100			
2087	2100	3	676	635	175			
2100	2100	1						2 of 2
2100	2101	5	635	634.5	50	0.35	2.26	
2100	2101	3	635	634.5	35			
2101	2102	5	631	626	240			
2102	2102	1						1 of 2
2103	2103	7	Q = 16.2 cfs A = 14.53 ac Tc = 10 min					
2103	2102.5	3	638.8	627	425			
2102.5	2102	5	627	626	120			
2102	2102	1						2 of 2
2102	2102	11						Add Bank 1
2102	2102	12						Clear Bank 1
2102	2104	5	626	618.5	600	0.71	4.85	
2104	2104	1						1 of 3
2103.5	2103.5	7	Q = 24.9 cfs A = 26.68 ac Tc = 10 min					
2103.5	2104	3	628.81	618.5	325			
2104	2104	1						2 of 3



Job Name: Valiano
 Proposed Hydrology
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Node to Node		Code	Elev 1 (feet)	Elev 2 (feet)	Length (feet)	C Factor	Area (ac.)	Comments
2103.1	2103.2	2	644	642	100	0.71	0.19	
2103.2	2103.3	6	641	634	220	0.71	1.64	
2103.3	2135	5	634	626	680	0.71	2.73	
2135	2104	3	618.3	617	165			
2104	2104	1						3 OF 3
2104	2131	5	618.5	612	210			
2131	2131	10						Save to Bank 1
2108	2109	2	698.4	696.4	100	0.71	0.16	
2109	2110	6	695	667	390	0.71	0.54	one side
2110	2110	1						1 of 2
2105	2106	2	695	689	125	0.71	0.08	
2106	2107	6	689	667	260	0.71	0.17	one side
2107	2110	3	661	660.7	30			
2110	2110	1						2 of 2
2110	2116	3	660.7	622.5	600			
2116	2116	1						1 of 3
2111	2112	2	665	663	100	0.71	0.07	
2112	2113	6	663	625.5	700	0.71	2.18	
2113	2116	3	622.8	622.5	30			
2116	2116	1						2 of 3
2114	2115	2	662	654	85	0.71	0.05	
2115	2116	6	654	625.5	485	0.71	1.84	
2116	2116							3 of 3
2116	2117	3	622.5	621	40			
2117	2117	1						1 of 2
2117.1	2117	2	622	621	100	0.35	0.25	
2117	2117	1						2 of 2
2117	2131	3	621	612	50			
2131	2131	10						save to bank 2

[illegible]

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
 Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
 2003,1985,1981 HYDROLOGY MANUAL
 (c) Copyright 1982-2012 Advanced Engineering Software (aes)
 Ver. 19.0 Release Date: 06/01/2012 License ID 1355

Analysis prepared by:

Fusco Engineering
 6390 Greenwich Dr.
 Suite 170
 San Diego, CA 92122

***** DESCRIPTION OF STUDY *****
 * VALIANO *
 * PROPOSED HYDROLOGY - 2000 SERIES *
 * OCTOBER 20, 2014 *

FILE NAME: P-2000.DAT
 TIME/DATE OF STUDY: 08:56 10/22/2014

 USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

2003 SAN DIEGO MANUAL CRITERIA

USER SPECIFIED STORM EVENT(YEAR) = 100.00
 6-HOUR DURATION PRECIPITATION (INCHES) = 3.200
 SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
 SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
 SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
 NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
 USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	16.0	8.0	0.020/0.020/0.020	0.33	0.10 0.0100 0.010	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.33 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.*

 FLOW PROCESS FROM NODE 2001.00 TO NODE 2001.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 748.30
 DOWNSTREAM ELEVATION(FEET) = 746.30
 ELEVATION DIFFERENCE(FEET) = 2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN

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      THE MAXIMUM OVERLAND FLOW LENGTH =    80.00
      (Reference: Table 3-1B of Hydrology Manual)
      THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.431
      NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
      SUBAREA RUNOFF(CFS) =          0.84
      TOTAL AREA(ACRES) =          0.14    TOTAL RUNOFF(CFS) =          0.84

*****
      FLOW PROCESS FROM NODE    2001.00 TO NODE    2002.00 IS CODE =  62
-----
      >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
      >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
=====
      UPSTREAM ELEVATION(FEET) =  745.00  DOWNSTREAM ELEVATION(FEET) =  723.00
      STREET LENGTH(FEET) =   380.00    CURB HEIGHT(INCHES) =   4.0
      STREET HALFWIDTH(FEET) =  16.00

      DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =    8.00
      INSIDE STREET CROSSFALL(DECIMAL) =   0.020
      OUTSIDE STREET CROSSFALL(DECIMAL) =   0.020

      SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
      STREET PARKWAY CROSSFALL(DECIMAL) =   0.020
      Manning's FRICTION FACTOR for Streetflow Section(curbs-to-curbs) =   0.0150
      Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0150

      **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =          2.08
      STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
      STREET FLOW DEPTH(FEET) =   0.16
      HALFSTREET FLOOD WIDTH(FEET) =    7.17
      AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.03
      PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.65
      STREET FLOW TRAVEL TIME(MIN.) =   1.57    Tc(MIN.) =    6.55
      100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  7.080
      *USER SPECIFIED(SUBAREA):
      USER-SPECIFIED RUNOFF COEFFICIENT = .7100
      S.C.S. CURVE NUMBER (AMC II) =    0
      AREA-AVERAGE RUNOFF COEFFICIENT =   0.710
      SUBAREA AREA(ACRES) =    0.49    SUBAREA RUNOFF(CFS) =    2.46
      TOTAL AREA(ACRES) =    0.6    PEAK FLOW RATE(CFS) =    3.17

      END OF SUBAREA STREET FLOW HYDRAULICS:
      DEPTH(FEET) = 0.19    HALFSTREET FLOOD WIDTH(FEET) =    8.41
      FLOW VELOCITY(FEET/SEC.) = 4.47    DEPTH*VELOCITY(FT*FT/SEC.) =    0.83
      LONGEST FLOWPATH FROM NODE    2001.00 TO NODE    2002.00 =    480.00 FEET.

*****
      FLOW PROCESS FROM NODE    2002.00 TO NODE    2006.00 IS CODE =  31
-----
      >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
      >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====
      ELEVATION DATA: UPSTREAM(FEET) =  717.00  DOWNSTREAM(FEET) =  716.75
      FLOW LENGTH(FEET) =    5.00    MANNING'S N =  0.013
      ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 12.000
      DEPTH OF FLOW IN 12.0 INCH PIPE IS  5.4 INCHES
      PIPE-FLOW VELOCITY(FEET/SEC.) =    9.20
      ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =    1
      PIPE-FLOW(CFS) =    3.17
      PIPE TRAVEL TIME(MIN.) =    0.01    Tc(MIN.) =    6.56
      LONGEST FLOWPATH FROM NODE    2001.00 TO NODE    2006.00 =    485.00 FEET.

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 FLOW PROCESS FROM NODE 2006.00 TO NODE 2006.00 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.) = 6.56
 RAINFALL INTENSITY(INCH/HR) = 7.07
 TOTAL STREAM AREA(ACRES) = 0.63
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 3.17

 FLOW PROCESS FROM NODE 2003.00 TO NODE 2004.00 IS CODE = 21

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

=====

*USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100
 S.C.S. CURVE NUMBER (AMC II) = 0
 INITIAL SUBAREA FLOW-LENGTH(FEET) = 100.00
 UPSTREAM ELEVATION(FEET) = 747.90
 DOWNSTREAM ELEVATION(FEET) = 745.90
 ELEVATION DIFFERENCE(FEET) = 2.00
 SUBAREA OVERLAND TIME OF FLOW(MIN.) = 4.984
 WARNING: INITIAL SUBAREA FLOW PATH LENGTH IS GREATER THAN
 THE MAXIMUM OVERLAND FLOW LENGTH = 80.00
 (Reference: Table 3-1B of Hydrology Manual)
 THE MAXIMUM OVERLAND FLOW LENGTH IS USED IN Tc CALCULATION!
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 8.431
 NOTE: RAINFALL INTENSITY IS BASED ON Tc = 5-MINUTE.
 SUBAREA RUNOFF(CFS) = 0.90
 TOTAL AREA(ACRES) = 0.15 TOTAL RUNOFF(CFS) = 0.90

 FLOW PROCESS FROM NODE 2004.00 TO NODE 2005.00 IS CODE = 62

>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION # 1 USED)<<<<<

=====

UPSTREAM ELEVATION(FEET) = 745.00 DOWNSTREAM ELEVATION(FEET) = 723.00
 STREET LENGTH(FEET) = 280.00 CURB HEIGHT(INCHES) = 4.0
 STREET HALFWIDTH(FEET) = 16.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) = 8.00
 INSIDE STREET CROSSFALL(DECIMAL) = 0.020
 OUTSIDE STREET CROSSFALL(DECIMAL) = 0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF = 1
 STREET PARKWAY CROSSFALL(DECIMAL) = 0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) = 0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section = 0.0150

**TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 2.34
 STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
 STREET FLOW DEPTH(FEET) = 0.16
 HALFSTREET FLOOD WIDTH(FEET) = 7.04
 AVERAGE FLOW VELOCITY(FT/SEC.) = 4.71
 PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) = 0.75
 STREET FLOW TRAVEL TIME(MIN.) = 0.99 Tc(MIN.) = 5.98
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 7.516
 *USER SPECIFIED(SUBAREA):
 USER-SPECIFIED RUNOFF COEFFICIENT = .7100